



Ground Investigation Report

E-Scrap Sample Preparation Plant

Britannia Refined Metals Ltd

Prepared by:

SLR Consulting Limited

Treenwood House, Rowden Lane, Bradford on Avon,
BA15 2AU

SLR Project No.: 402.064683.00001

19 October 2023

Revision: v2

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
01	6 October 2023	AK	JAA	MR
02	19 October 2023	AK	JAA	MR

Basis of Report

This document has been prepared by SLR Consulting Limited (SLR) with reasonable skill, care and diligence, and taking account of the timescales and resources devoted to it by agreement with Britannia Refined Metals Ltd (the Client) as part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

SLR shall not be liable for the use of or reliance on any information, advice, recommendations, and opinions in this document for any purpose by any person other than the Client. Reliance may be granted to a third party only in the event that SLR and the third party have executed a reliance agreement or collateral warranty.

Information reported herein may be based on the interpretation of public domain data collected by SLR, and/or information supplied by the Client and/or its other advisors and associates. These data have been accepted in good faith as being accurate and valid.

The copyright and intellectual property in all drawings, reports, specifications, bills of quantities, calculations and other information set out in this report remain vested in SLR unless the terms of appointment state otherwise.

This document may contain information of a specialised and/or highly technical nature and the Client is advised to seek clarification on any elements which may be unclear to it.

Information, advice, recommendations, and opinions in this document should only be relied upon in the context of the whole document and any documents referenced explicitly herein and should then only be used within the context of the appointment.



Table of Contents

Basis of Report	i
1.0 Introduction	1
1.1 Appointment	1
1.1 Background and Objectives	1
1.2 Scope of Works	1
2.0 Site Description	3
2.1 Summary Site Details	3
2.2 Physical Site Setting	3
3.0 Ground Investigation	6
3.1 Rationale	6
3.2 Field Work Summary	6
3.3 Ground Conditions	6
3.3.1 Concrete	7
3.3.2 Made Ground	7
3.3.3 Alluvium	7
3.3.4 Boyn Hill Gravel Member	8
3.3.5 Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation (Undifferentiated)	8
3.3.6 Groundwater Observations	8
3.3.7 Field / Visual Observations of Contamination	8
3.3.8 Standard Penetration Tests (SPTs)	8
4.0 Groundwater and Gas Monitoring	11
4.1 Groundwater Monitoring	11
4.1.1 Sample Recovery and Analysis	11
4.2 Gas Monitoring	11
5.0 Laboratory Chemical Analysis	13
6.0 Generic Quantitative Risk Assessment	14
6.1 Soils	14
6.1.1 Human Health GQRA	15
6.1.2 Asbestos in Soils	17
6.2 Controlled Waters	17
6.3 Ground Gases	18
6.3.1 Ground Gas Source	18
6.3.2 Assessment Approach	18
6.3.3 Characteristic Situation	19
6.4 Conclusions	19



7.0 Geotechnical Laboratory Results.....	21
8.0 Discussion of Geotechnical Laboratory Results	24
8.1 Classification Testing	24
8.2 Chalk Testing	24
8.3 Strength Testing.....	26
8.4 Density Testing	26
8.5 Settlement Testing	26
8.6 Chemical Testing.....	27
9.0 Geotechnical Conclusions & Recommendations	28
9.1 Geotechnical Parameters.....	28
9.2 Foundation Options.....	28
9.2.1 Piled Foundations.....	28
9.3 Floor Slabs.....	30
9.4 General	30

Tables in Text

Table 2-1: Site Details	3
Table 2-2: Site Setting	3
Table 3-1: Summary of Strata Encountered.....	7
Table 4-1: Groundwater Monitoring Data.....	11
Table 4-2: Ground Gas Concentrations	12
Table 6-1: Generic Human Health Risk Assessment - Metals.....	15
Table 6-2: Generic Human Health Risk Assessment – PAHs	15
Table 6-3: Generic Human Health Risk Assessment – Petroleum Hydrocarbons & BTEX..	16
Table 6-4: Generic Controlled Waters Risk Assessment.....	18
Table 7-1: Geotechnical Laboratory Test Results; Classification and Chemical Testing	21
Table 7-2: Geotechnical Laboratory Test Results; Particle Size Distribution	22
Table 7-3: Geotechnical Laboratory Test Results; Chalk Classification Testing.....	22
Table 7-4: Geotechnical Laboratory Test Results; Oedometer Consolidation	23
Table 7-5: Geotechnical Laboratory Test Results; Strength and Density Tests.....	23
Table 9-1: Geotechnical Design Parameters	28
Table 9-2: Outline Pile Capacities.....	29

Figures in Text

Figure 3-1: SPT N value with Depth.....	9
Figure 3-2: Undrained Shear Strength with Depth.....	10



Figure 8-1: Water Content with Depth.....	25
Figure 8-2: Atterberg Plasticity Limits.....	26

Appendices

Appendix A	Borehole Location Plan
Appendix B	Borehole Logs
Appendix C	Photographs
Appendix D	Chemical Laboratory Test Certificates
Appendix E	Generic Risk Assessment Summary Sheets
Appendix F	Geotechnical Laboratory Test Certificates



1.0 Introduction

1.1 Appointment

SLR Consulting Ltd (SLR) was instructed by Britannia Refined Metals (BRM) Limited to prepare a Phase Two Ground Investigation Report (GIR) for the proposed Sample Preparation Facility at the BRM site on Botany Road, Northfleet, Gravesend, Kent, DA11 9BG.

1.1 Background and Objectives

A geo-environmental ground investigation was previously proposed for the original option of raft foundations for two smaller buildings to house a sample preparation facility. A geo-environmental assessment was required to assess the risk to construction workers due to anticipated high levels of heavy metals, and elevated ground gases of methane and carbon dioxide.

However, following a review of the ground conditions and the nature of the proposed development, the preferred design option is currently the construction of one larger building with piled foundations. Therefore, a ground investigation was required to provide an overview of the general site conditions, inform geotechnical parameters for piled foundations, assess the geotechnical and geo-environmental risks, and provide outline piled foundation design.

Prior to a ground investigation, a Phase One report¹ was prepared by SLR to provide an initial understanding of conceptual ground risks from both geotechnical and land contamination perspectives. The report confirmed the need that a piled foundation solution was required due to the presence of soft compressible alluvial deposits. An assessment of soil and groundwater contamination was also required so that it could be demonstrated that the formation of deep piles potentially penetrating into the chalk aquifer at depth would not pose a significant risk to this sensitive controlled water receptor.

The objective of the report is to determine the composition, depth, and geotechnical properties of the underlying ground conditions. Analysis of field observations, in-situ and laboratory test results will determine the ground conditions and geotechnical parameters.

1.2 Scope of Works

The scope of work comprised the following tasks:

1.2.1 Preliminary works:

- preparation of relevant health and safety documentation including a detailed Health & Safety Plan, Risk Assessments and Method Statements for the proposed works;
- review of the current and historic uses of the Site and surrounding area;
- provision of a desk-based utility search; and,
- provision a Phase 1 report prior to the intrusive site investigation.

¹ SLR Consulting Ltd (2023) E-Scrap Sample Preparation Plant_Phase 1. Prepared for Britannia Refined Metals Ltd. Ref: 402.064683.00001



1.2.2 Geotechnical Investigation works:

- procure and manage all site investigation works;
- clearance of all exploratory locations by an on-site survey utilising a Ground Penetrating Radar (GPR) and Cable Avoidance Tool (C.A.T) & Genny;
- concrete coring at 2No. locations;
- 2No. dynamic sampling boreholes with rotary follow on to 32.20m below ground level (bgl);
- Installation of gas and groundwater monitoring wells in both locations;
- supervision and logging of all boreholes in accordance with BS5930:2015+A1:2020² by a suitably qualified engineer;
- carry out environmental and geotechnical laboratory testing to characterise the underlying soils; and,
- produce an interpretative GIR detailing the findings of the investigation.

² British Standards Institution (2020). BS 5930:2015+A1: 2020 BSI Standards Publication Code of Practice for Ground Investigations



2.0 Site Description

2.1 Summary Site Details

Table 2-1 summarises the property details. Information has been obtained from Ordnance Survey (OS), Environment Agency (EA) and British Geological Survey (BGS) mapping, and data supplied by Groundsure.

Table 2-1: Site Details

Site Details		
Site Address	Britannia Refined Metals (BRM) site located at Botany Road, Northfleet, Gravesend, Kent, DA11 9BG.	
National Grid Reference	The Site is centred on National Grid reference TQ 61385 75330	
Site Area	Approximately 560m ²	
Site Description	The Site currently comprises concrete hardstanding and is situated adjacent to the existing silver plant building. The west of the Site is bounded by heras fencing, with above ground services. There are three concrete plinths supporting the overhead ducting. The Site is currently used for storing skips.	
Surrounding Land Use	North	BRM Site with other industrial land uses beyond including transportation services and concrete plant.
	East	BRM silver plant building and River Thames beyond.
	South	BRM site with other industrial land uses beyond including transportation services and concrete supplier
	West	BRM offices and site entrance with Manor Way Road and Botany Marshes beyond.

2.2 Physical Site Setting

The Site environmental setting including geography, geology, hydrogeology, and hydrology is summarised in Table 2-2. More information on the Site is included within the Phase 1 Desk Study Report.

Table 2-2: Site Setting

Site Setting			
Geography and Hydrology	Topography, Elevation and Gradient	The Site is flat, and level situated between 3.78m and 3.96m Above Ordnance Datum (AOD)	
	Surface Water	There are no surface water features onsite. However, within a 500m radius towards the southwest, there are eight surface water features located at Botany Marshes comprising inland rivers. The River Thames is located 180m east of the Site.	
	Flooding	The Site is at very low risk of flooding and is an area benefitting from flood defences. There was one historical flood event onsite in 1953 associated with a tidal flood event when sea water overtopped the flood defences. When ignoring the presence of flood defences, the Site is classified as a Flood Zone 3.	



Site Setting		
		The highest risk of surface water flooding onsite is along the western boundary with a 1 in 30-year event (0.3 – 1.0m). Groundwater flooding risk onsite is classified as moderate to high, with a high risk on the southwestern boundary.
Geology and Hydrogeology	Geology	A review of the British Geological Survey (BGS) indicates the following ground conditions: Made Ground is mapped onsite and across the wider BRM site. Superficial Deposits of Alluvium is mapped onsite and across the wider BRM site comprising clay, silt, sand, and gravel. The underlying Bedrock Geology is recorded as the Lewes Nodular Chalk Formation, Seaford Chalk Formation And Newhaven Chalk Formation (Undifferentiated). It should be noted that a review of reports relating to historical phases of ground investigation performed by others across the wider BRM facility that was carried out as part of the Phase 1 assessment identified superficial deposits of Boyn Hill Gravel comprising gravel, occasionally gravelly sand beneath the Alluvium.
	BGS Borehole	A review of publicly available boreholes revealed a borehole approximately 115m southeast of the Site. The BGS borehole record (Ref: TQ67NW79/B) identified Made Ground to 1.2m below ground level (bgl), underlain by clay and peat to 10m bgl, sand and gravel to 22m bgl onto the bedrock chalk.
	Groundwater	Groundwater strikes of 3.7m and 5.8m bgl were recorded in BGS boreholes in the vicinity of the Site (TQ67NW366 & TQ67NW79/B). Groundwater is anticipated to be relatively shallow considering the above, and the proximity to the River Thames and surrounding surface water bodies.
	Aquifer status	The underlying superficial deposits are designated as a Secondary Undifferentiated Aquifer. The underlying bedrock is designated a Principal Aquifer.
	Abstractions	There are no groundwater abstractions onsite. However, there are 24 within a 2,000m radius. The closest active abstraction is 714m northwest for mineral washing. There are no potable abstractions onsite or within a 2,000m radius. There is one record of a surface water abstraction 518m southeast for mineral washing.
Sensitivity	Groundwater	The Site falls within the West Kent Daren and Cray Chalk groundwater water body catchment under the Water Framework Directive (WFD). It has an overall poor rating.



Site Setting		
		The Site is situated within a Source Protection Zone (SPZ) 2. An SPZ 3 is located 84m northwest of the Site. The groundwater within superficial deposit is classified as high vulnerability and the bedrock classified as medium vulnerability. Although the superficial Alluvium, Secondary Undifferentiated Aquifer, is of relatively low, the sensitivity the underlying principal chalk bedrock aquifer is judged to be of high sensitivity, particularly as the study area is within an EA designated an SPZ 2 with abstraction located in the vicinity.
	Surface Water	There are no surface water features onsite. It is assumed that there are interceptors onsite and therefore, surface water sensitivity is considered moderate.



3.0 Ground Investigation

3.1 Rationale

The rationale for the investigation was to provide the client with information on the underlying ground conditions to inform the design for a new sample preparation facility.

3.2 Field Work Summary

SLR conducted an intrusive ground investigation at the Site in August 2023. The scope of the investigation included the following:

- clearance of all exploratory locations by onsite survey utilising a Ground Penetrating Radar and C.A.T & Genny by a specialist sub-contractor;
- concrete coring at 2No. locations through the existing concrete slab;
- hand pitting to 1.2m bgl to ensure absence of services;
- 2No. dynamic sampling boreholes (BH2023-01 & BH2023-02) with rotary follow on to 32.2m bgl;
- in-situ Standard Penetration Testing (SPTs) at 1.0m centres to a depth of 5.0m bgl and 1.5m centres at depths >5m bgl;
- recovery of soil samples for geotechnical and environmental laboratory analysis;
- supervision and logging of all exploratory locations in accordance with BS5930:2015 +A1:2020 by a suitability qualified engineer;
- installation of shallow gas and groundwater monitoring wells and deeper groundwater monitoring wells;
- one round of groundwater monitoring and recovery of samples for laboratory testing; and
- three rounds of ground gas monitoring permed upon the shallow wells with installs located above groundwater level.

The locations of all exploratory locations are shown on Appendix A, which shows the Site in its current layout.

Geotechnical laboratory analysis is being undertaken by Geolabs Limited and the environmental laboratory analysis by Element Materials Technology.

3.3 Ground Conditions

Detailed descriptions of the underlying geology are provided within the borehole logs in Appendix B with photographs included in Appendix C. A summary of site geology is provided with Table 3-1

A total of two dynamic sampling boreholes (BH01 and BH02) with rotary follow on to a maximum depth of 32.2m bgl were drilled between 14th and 24th August 2023.



Table 3-1: Summary of Strata Encountered

Ground Type	Formation	Description	Depth Range (m bgl)
Hardstanding	Concrete	Concrete Hardstanding with 1 – 2cm rebar	Ground Level – 0.58
Made Ground	Made Ground	Very soft to firm black/greyish brown/dark grey slightly gravelly sandy clay. Loose to medium dense dark grey sandy gravel. Anthropogenic inclusions of concrete, flint, slag, bricks metal, glass, and asphalt.	0.42 – 4.40
	Reworked Clay	Very soft to firm dark grey/brown clay	1.30 – 4.80
Superficial Deposits	Alluvium	Very soft to soft silty clay. Occasionally gravelly with flint. Occasionally with organic matter and wood.	4.40 – 13.10
	Peat	Soft dark brown spongy peat with frequent wood and organic matter	8.80 – 12.80
	Boyn Hill Gravel Member	Very loose to very dense organish/yellowish/greyish brown, brown, multicoloured sandy gravel of flint / gravelly sand.	13.10 – 22.50
Solid Deposit	Lewes Nodular Chalk Formation, Seaford Chalk Formation And Newhaven Chalk Formation (Undifferentiated).	Grade Dm - Structureless chalk composed of clay. Clasts are weak low density.	21.70 – 29.50
		Grade Dc - Structureless chalk composed of gravel. Clasts are weak and medium density.	29.10 – 32.20

3.3.1 Concrete

Concrete hardstanding was encountered in both borehole locations from ground level to depths of 0.42m and 0.58m bgl. In BH2023-02, the concrete contained rebar of 1 – 2cm width.

3.3.2 Made Ground

Made Ground was encountered in both locations immediately beneath the concrete. In BH2023-01, the Made Ground comprised soft to firm sandy gravelly clay with brick, concrete, flint, asphalt, and glass to 1.30m bgl. This was underlain by reworked natural clay comprising very soft to firm dark grey/greyish brown clay to 4.8m bgl. In BH2023-02, the Made Ground comprised loose to medium dense sandy gravel of concrete and flint with cobbles of slag to 2.9m bgl, which was underlain by a fine-grained deposit of very soft to soft gravelly clay with concrete, slag, brick, and metal to 4.4m bgl.

3.3.3 Alluvium

Alluvium was encountered in both borehole locations beneath the Made Ground at depths of 4.8m and 4.4m bgl. The Alluvium comprised very soft to soft silty clay, which occasionally contained gravel of flint and organic matter and wood and extended to 13.10m bgl.

In BH2023-01 from between 8.80m and 12.80m, a layer of soft spongy peat was encountered. In BH2023-02, peat was encountered between 12.10m and 12.55m bgl.



3.3.4 Boyn Hill Gravel Member

The Boyn Hill Gravel Member was encountered in both borehole locations beneath the Alluvium at a depth of 13.10m. The deposits comprised predominately dense to very dense sandy gravel of flint to depths of 21.70m and 22.50m bgl. In BH2023-02, the deposit has bands of sand, gravelly sand, and clayey gravelly sand with bands of gravel that were very loose to medium dense.

3.3.5 Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation (Undifferentiated).

Bedrock chalk was encountered in both locations from 21.70m and 22.50m bgl to the base of the boreholes at 32.2m bgl. The chalk was weathered and identified as Grade Dm structureless chalk to 29.10m and 29.50m bgl, becoming structureless Grade Dc chalk. The clasts were described in the field as weak, low to medium density.

3.3.6 Groundwater Observations

Groundwater was encountered in both exploratory holes. In BH2023-02 shallow perched groundwater was encountered within the Made Ground at 1.1m bgl.

Due to adding water during the drilling process it was not possible to observe accurate groundwater strikes. However, on completion of drilling groundwater was observed at 3.1m bgl in BH2023-01 and 4m bgl in BH2023-02.

Both exploratory hole locations were installed with shallow and deep groundwater monitoring wells. The aim of these due installations was to facilitate the recovery of groundwater samples from both the shallow/perched groundwater within the Made Ground and the deeper groundwater within the underlying natural deposits and establish if piled foundations could result in the creation of a preferential migration pathway linking the two.

Install details are presented on the borehole logs attached as Appendix B. Post fieldwork groundwater monitoring will be undertaken and is discussed further in section 4.0 below.

3.3.7 Field / Visual Observations of Contamination

Made Ground was encountered in both exploratory hole locations to a maximum depth of 4.8m bgl (BH2023-01). No evidence of visual contamination, such as oily staining and/or olfactory indicators, was encountered; however, the Made Ground was noted to contain potentially contaminative fill materials including asphalt and ash/slag.

Field screening of soil samples from both exploratory locations was undertaken using a Photo Ionisation Detector (PID) with no organic vapour concentrations recorded throughout (<1ppm).

3.3.8 Standard Penetration Tests (SPTs)

A total of thirty-eight in-situ Standard Penetration Tests (SPTs) were conducted in boreholes BH2023-01 and BH2023-02 from 1.2m to a maximum depth of 32.2m bgl. Results are presented on the borehole logs in Appendix B and in Figure 3-1 below.

Four tests were conducted within the Made Ground. In BH2023-01, the tests were conducted in the fine-grained deposits comprising clay and resulted in N values of 4 and 0 (self-weight penetration) indicative of very low strength material comparable with the field descriptions identifying the material as very soft to soft. In BH2023-02, the Made Ground was described as coarse-grained material comprising gravel. The two tests resulted in variable values of 4 and 16, indicative of very loose to dense material, highlighting the variability in composition of Made Ground.

Seven tests were conducted within the Alluvium from a minimum depth of 4.1m bgl to 11.2m bgl. N values of between 0 and 9 were recorded which is comparable with the field descriptions



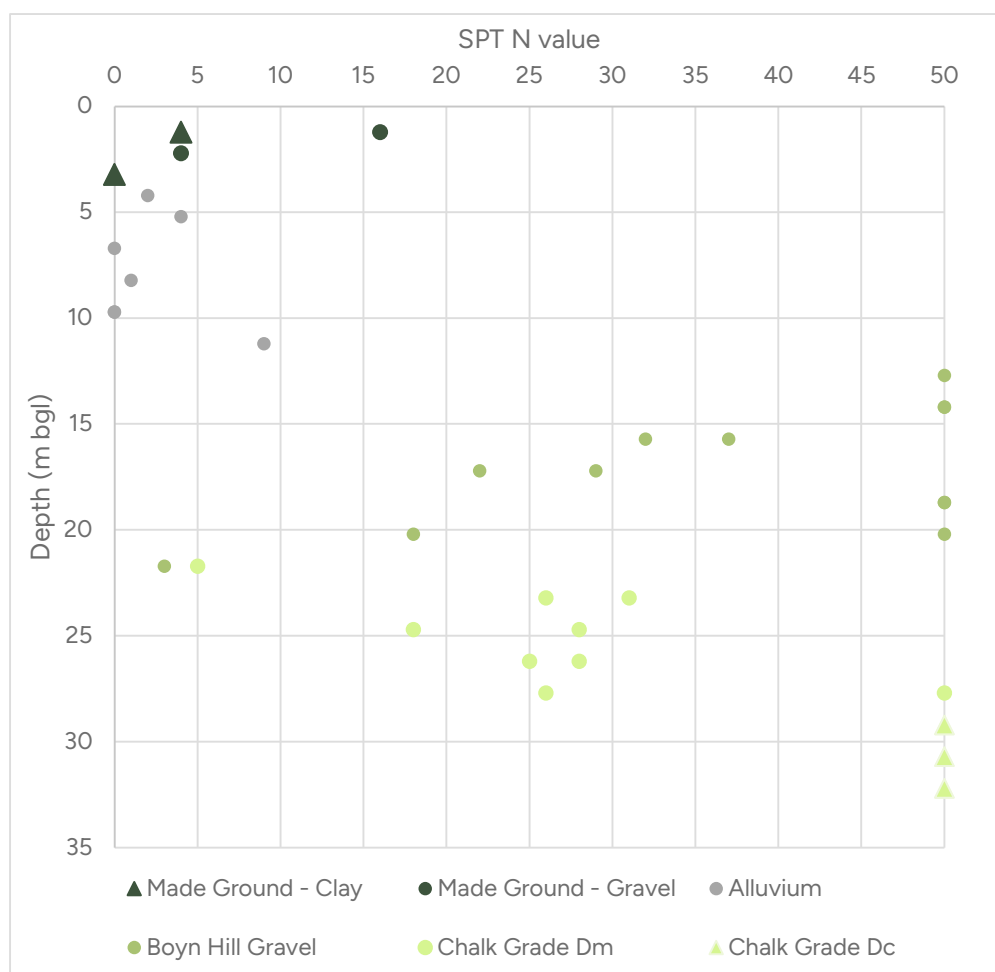
and indicative of very soft to medium strength material. Figure 3-1 shows a slight increase in N value with depth.

Twelve tests were conducted within the Boyn Hill Gravel Member from a minimum depth of 12.7m to a depth of 21.7m bgl. N values of between 3 and refusal (>50 blows) was recorded. The value of 3 was recorded in BH2023-02 at 21.7m bgl. Discounting this value, the N values range between 18 and refusal, indicative of medium to very dense material. The material does not appear to have a correlation with N value and depth as shown in Figure 3-1.

Nine tests were conducted within the Grade Dm Chalk from 21.7m to 27.7m bgl which resulted in N values of between 5 and refusal showing a slight increase in strength with depth. As anticipated, in the Grade Dc chalk, the N values increase from the Grade Dm material and resulted in refusals.

A correlation between undrained strength in clay and SPT N-value is proposed by Stroud³ (1989) with values against depth presented in Figure 3-2; which indicates the fine-grained Made Ground deposits as a very low strength material with undrained shear strengths of between 0kPa and 20kPa. The Alluvium resulted in undrained shear strengths of between 0kPa and 45kPa indicative of very low to medium strength material. However, the relationship is not considered to be as reliable as laboratory testing and alternative in-situ test methods.

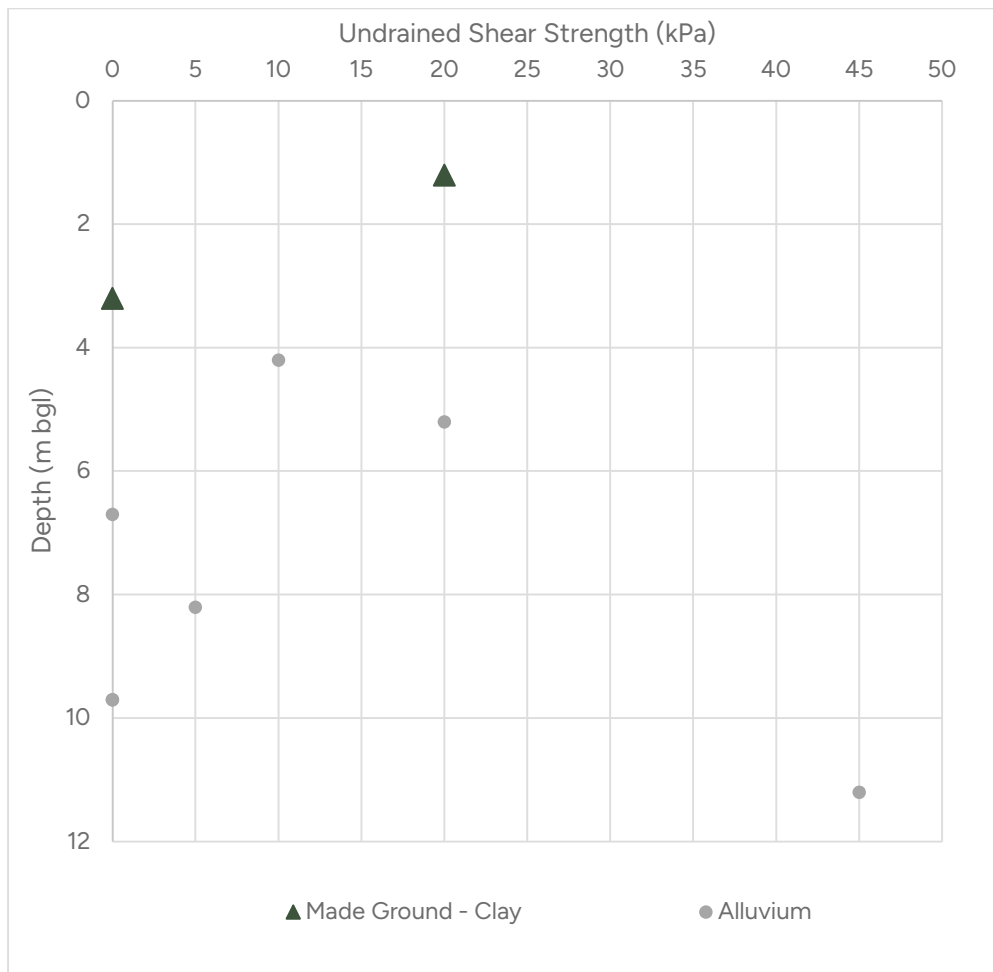
Figure 3-1: SPT N value with Depth



³ Stroud, M.A. (1989). *The Standard Penetration Test – its application and interpretation. Penetration testing in the UK*, Thomas Telford.



Figure 3-2: Undrained Shear Strength with Depth



4.0 Groundwater and Gas Monitoring

4.1 Groundwater Monitoring

Post fieldwork, SLR revisited the Site to undertake three rounds of groundwater monitoring in the newly installed boreholes. The 2No. wells were monitored to measure the depth to groundwater and establish the presence/absence of light non aqueous phase liquid (LNAPL). A portable photo ionisation detector (PID) was also used to measure the concentration of volatile organic compounds (VOCs) within the wells.

A summary of the groundwater monitoring data is shown in Table 4-1 below.

Table 4-1: Groundwater Monitoring Data

BH Ref	BH Elevation (mAOD)	Borehole Screen Interval (m bgl)	Date	Well Headspace (ppm)	Depth to Water (m)	Groundwater Elevation (mAOD)	Notes
BH2023-01S	3.85	0.5-1.5	20/09/2023	<1	0.83	3.02	Sampled
			02/10/2023	<1	0.83	3.02	
			06/10/2023	<1	0.93	2.92	
BH2023-01D	3.85	14.0-20.0	20/09/2023	<1	3.48	0.37	Sampled
			02/10/2023	<1	3.44	0.41	
			06/10/2023	<1	3.47	0.38	
BH2023-02S	3.79	1.0-3.0	20/09/2023	<1	Dry	-	
			02/10/2023	<1	Dry	-	
			06/10/2023	<1	Dry	-	
BH2023-02D	3.79	13.0-20.0	20/09/2023	<1	1.03	2.76	Sampled
			02/10/2023	<1	1.21	2.58	
			06/10/2023	<1	1.01	2.78	

mAOD- metres above ordnance datum

4.1.1 Sample Recovery and Analysis

During the visit on 20/09/2023 samples of the groundwater were obtained using low flow techniques and submitted for laboratory testing under full chain of custody. The results of the groundwater analysis are discussed in Section 6.0.

4.2 Gas Monitoring

During the three return visits SLR also carried out ground gas monitoring in the shallow monitoring wells⁴, using a GA5000. The encountered gas concentrations are provided in Table 4-2 overleaf and analysis of the gas risk is discussed further in Section 6.0.

⁴ Given the screened interval of the deep monitoring wells, these are not deemed suitable for ground gas monitoring.



Table 4-2: Ground Gas Concentrations

BH Ref	Date	Baro Pressure (mbar)	VOCs (ppm)	Methane (%v/v)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Flow (l/hr)
BH2023-01S	20/09/23	1002	<1	<0.1	0.3	20.2	<0.1
	02/10/23	1017	<1	<0.1	0.1	20.4	<0.1
	06/10/23	1024	<1	<0.1	0.1	20.9	0.1
BH2023-02S	20/09/23	1001	<1	<0.1	<0.1	21.0	<0.1
	02/10/23	1018	<1	<0.1	0.4	20.1	<0.1
	06/10/23	1025	<1	<0.1	<0.1	21.1	<0.1

Each visit was carried out during different barometric pressure conditions, which allows for a greater understanding of any potential ground gases beneath the site. It should be noted that the initial site visit was carried out during a period of relatively low and falling pressure, measured from 1002mbar to 1001mbar.

Methane concentrations were below 0.1% v/v during all three visits. Carbon dioxide concentrations remained generally low and consistent, with the highest reading of 0.4% v/v, detected in BH2023-02S on 02 October 2023. Flow readings were also consistently low and did not exceed 0.1l/hr. Oxygen levels remained generally consistent with a range of 20.2% to 21.1% v/v.

The monitored concentrations of VOCs were less than the instrumental detection limit of 1ppm during all three visits.



5.0 Laboratory Chemical Analysis

To ascertain whether the soils encountered beneath the study site could pose a significant risk to human and environmental receptors a series of soil samples representative of the various ground conditions encountered were recovered from the exploratory holes.

Three Made Ground, two Alluvium, two Boyn Hill Gravel Member and two chalk samples were scheduled for a general suite of commonly occurring potential contaminants that included:

- A suite of metals;
- Poly aromatic hydrocarbons (PAHs);
- Petroleum hydrocarbons (TPH CWG including BTEX and MTBE);
- Volatile Organic Compounds (VOCs);
- Semi-volatile Organic Compounds (SVOCs); and
- Asbestos screen and identification.

Laboratory certificates are presented in full as Appendix D and are summarised in the following section.

The groundwater samples were scheduled for the following:

- Speciated petroleum hydrocarbons (TPH CWG including BTEX and MTBE);
- PAHs;
- VOCs; and
- A suite of metals.

The results of the groundwater analysis are presented in Appendix D and discussed in the following section.



6.0 Generic Quantitative Risk Assessment

6.1 Soils

Following receipt of the laboratory test results, generic risk assessment criteria for the assessment of soil results were drawn from several sources of guidance, some from non-statutory guidance and some informal. SLR uses a combination of assessment criteria that are currently available to assist in the screening of soil data prior to determining whether further action is required. The following assessment criteria will be used for the assessment of contaminant levels in soil:

- Soil Guideline Values – since March 2002, the Department for Environment, Food and Rural Affairs (Defra) and the EA have been involved in publishing a series of reports that provide a scientifically based framework for the assessment of risks to human health from land contamination.
- LQM/CIEH Generic Assessment Criteria (GAC) – Land Quality Management and the Chartered Institute of Environmental Health have published GAC derived following CLR technical guidance and using the EA's CLEA UK model.
- LQM/CIEH Suitable for Use Levels (S4ULs) – in 2015 Land Quality Management and the Chartered Institute of Environmental Health published S4ULs derived following CLEA technical guidance and using the EA's CLEA UK model, with updated toxicological and exposure parameters and land uses following the publication of the draft C4SLs.
- SLR's own in-house screening criteria derived following CLR technical guidance using the CLEA UK model.
- CLAIRE/AGS/EIC Generic Assessment Criteria (GAC) – these institutions have published publicly available GAC derived following CLR technical guidance and using the EA's CLEA UK model.
- Category 4 Screening Levels (DEFRA).

The SGVs and GAC have been developed as a guide for regulators and developers; if the concentrations recorded on site are lower than the SGV/GAC it is generally accepted that the contaminants in question are present at acceptable concentrations which are not capable of putting human health at significant risk - as long as the humans make normal use of the site. An exceedance of these values indicates to an assessor that soil contaminant concentrations need to be considered further. SGV/GAC combine both authoritative science and policy judgements.

The SGVs, GAC and S4ULs/C4SLs used have been derived using the CLEA model according to several typical land uses:

- residential with and without homegrown produce (RwHP/RwoHP);
- allotments;
- commercial/Industrial;
- public Open Space residential (POS1); and
- public Open space park (POS2).

Based upon the continued use of the site as a refinery the most applicable GACs were judged to be those for commercial/industrial land use.



6.1.1 Human Health GQRA

The laboratory results referenced in this section are attached as Appendix D and the corresponding risk assessment summary tables are included as Appendix E.

The results of the Generic Quantitative Risk Assessment are presented in the following tables:

Table 6-1: Generic Human Health Risk Assessment - Metals

Contaminant	No. Tested Samples	No. Non-Detects	Commercial GAC (mg/kg)	Max Conc. (mg/kg)	No. over GAC
Arsenic	9	0	640	780	1
Cadmium	9	6	190	3.3	0
Chromium	9	0	8600	110	0
Copper	9	0	68000	970	0
Lead	9	0	2330	52000	2
Mercury	9	5	1100	1.2	0
Nickel	9	0	980	65	0
Selenium	9	6	12000	2	0
Zinc	9	0	730 000	180 000	0

As the above table indicates the recorded concentrations of metals were predominantly less than the corresponding commercial GAC. However, the samples of shallow Made Ground recovered from BH01 at 0.5m and BH02 at 1.3m bgl recorded significantly elevated concentrations of arsenic and lead that exceeded the respective GAC. It is therefore judged that the Made Ground soils beneath the study area could have the potential to pose a risk to human receptors.

A summary of the recorded concentrations of PAHs is presented in the following table:

Table 6-2: Generic Human Health Risk Assessment – PAHs

Contaminant	No. Tested Samples	No. Non-Detects	Commercial GAC (mg/kg)	Max Conc. (mg/kg)	No. over GAC
Naphthalene	9	7	190	0.14	0
Acenaphthylene	9	8	83000	0.05	0
Acenaphthene	9	9	84000	0.05	0
Fluorene	9	8	63000	0.08	0
Phenanthrene	9	7	22000	0.95	0
Anthracene	9	7	520000	0.23	0
Fluoranthene	9	7	23000	1.3	0
Pyrene	9	7	54000	1.1	0



Contaminant	No. Tested Samples	No. Non-Detects	Commercial GAC (mg/kg)	Max Conc. (mg/kg)	No. over GAC
Benzo(a)a/cene	9	7	170	0.59	0
Chrysene	9	7	350	0.64	0
Benzo(b)f/ene	9	7	44	0.79	0
Benzo(k)f/ene	9	7	1200	0.31	0
Benzo(a)pyrene	9	7	35	0.66	0
Indeno(123cd)p	9	7	500	0.39	0
Dibenzo(ah)a/ene	9	7	3.5	0.09	0
Benzo(ghi)perylene	9	7	3900	0.45	0

In all instances the concentrations of the PAH compounds tested were relatively low and did not exceed the corresponding GAC in any instance. These results show no indication that the concentrations of PAHs in the soils beneath the site have the potential to pose a significant risk to human health.

A summary of the recorded concentrations of petroleum hydrocarbon and BTEX compounds detected by the analysis is provided in the following table:

Table 6-3: Generic Human Health Risk Assessment – Petroleum Hydrocarbons & BTEX

Contaminant	No. Tested Samples	No. Non-Detects	Commercial (mg/kg)	Max Conc. (mg/kg)	No. over GAC
MTBE	6	6	ND	<0.005	0
Benzene	6	6	27	<0.005	0
Toluene	6	6	56000	<0.005	0
Ethylbenzene	6	6	5700	<0.005	0
m & p Xylene	6	6	5900	<0.005	0
o-Xylene	6	6	6600	<0.005	0
Ali >C5-C6	9	9	3200	<0.1	0
Ali >C6-C8	9	9	7800	<0.1	0
Ali >C8-C10	9	9	2000	<0.1	0
Ali >C10-C12	9	9	9700	<0.2	0
Ali >C12-C16	9	9	59000	<4	0
Ali >C16-C21	9	8	1 600 000	65	0
Ali >C21-C35	9	7		30	0
Aro >EC5-EC7	9	9	26000	<0.1	0



Contaminant	No. Tested Samples	No. Non-Detects	Commercial (mg/kg)	Max Conc. (mg/kg)	No. over GAC
Aro >EC7-EC8	9	9	56000	<0.1	0
Aro >EC8-EC10	9	9	3500	<0.1	0
Aro >EC10-EC12	9	9	16000	<0.2	0
Aro >EC12-EC16	9	9	36000	<4	0
Aro >EC16-EC21	9	6	28000	43	0
Aro >EC21-EC35	9	8	28000	110	0

The concentrations of petroleum hydrocarbons and BTEX were relatively low in all tested samples and are therefore not judged to have the potential to pose a significant risk to human health.

In addition to the above, selected samples of both the Made Ground and deeper natural soils were also tested for a suite of volatile/semi volatile organic compounds (VOC/SVOC). The rationale behind this analysis was to establish if mobile organic compounds originating from off-site sources could have migrated beneath the site via groundwater.

As the results demonstrate, the concentrations of both VOCs and VOCs were predominantly less than the respective analytical detection limits. Sporadic recorded concentrations were detected; in all instances these did not exceed a concentration of 0.12mg/kg (carbazole in BH02 at 1.3m bgl).

6.1.2 Asbestos in Soils

The sample of Made Ground recovered from BH01 at 0.5m bgl was identified as containing asbestos that was found to be in the form of fibre bundles and ACM debris of Chrysotile (white asbestos).

6.2 Controlled Waters

To provide an indication as to whether the shallow and deeper aquifers present beneath the study area could be significant impacted by contamination a single round of groundwater monitoring was carried out on 20 September 2023. During this visit each of the boreholes were purged of three well volumes prior to the recovery of samples in laboratory supplied vessels. It should be noted however that the shallow well installed as BH2023-02S was found to be dry during each of the three post fieldwork site visits.

As the result of the analysis presented in Appendix D demonstrate, a large proportion of the determinants tested were less than their respective analytical limits of detection. Petroleum hydrocarbons, BTEX and VOCs were not detected in any of the three recovered samples, suggesting that conceptual off site sources of mobile contaminants identified by the initial Phase One assessment have not migrated onto the study site via shallow or deeper groundwater.

Where recordable concentrations were encountered, these were screened against generic water quality standards (WQS) that included UK Drinking Water Standards (UK DWS) and Environmental Quality Standards (EQS). It is important to note that these criteria are highly conservative as they consider water quality at the point of compliance i.e. a potable supply or a sensitive surface water receptor.



A comparison of the determinants recorded at concentrations greater than the corresponding WQS are summarised by following Table 6-4, and the supporting risk assessment summary sheets are presented in Appendix E.

Table 6-4: Generic Controlled Waters Risk Assessment

Contaminant	BH2023-01S (mg/l)	BH2023-01D (mg/l)	BH2023-02D (mg/l)	WQS (mg/l)
Fluoranthene	<0.000005	0.000023	<0.000005	0.0000063
Lead	0.0041	<0.0004	0.0019	0.0012
Nickel	0.01	0.0019	0.0042	0.004

As the above table indicates, although the concentrations of fluoranthene, lead and nickel were recorded at concentrations in excess of the selected WQS, the concentrations were relatively low and not indicative of a significant or ongoing source of contamination beneath the study site. Furthermore, it is also important to note that both fluoranthene and nickel were recorded at greater concentrations in the deeper boreholes, indicating that the source of this impact is not the shallow, overlying Made Ground.

6.3 Ground Gases

6.3.1 Ground Gas Source

When assessing ground gas, it is essential that data is scrutinised to ensure that it conforms with the Conceptual Model. In this instance the preliminary Conceptual Model developed as part of SLR's August 2023 Phase One Geotechnical & Environmental Desk Study identified that the wider BRM site was underlain by significant deposits of Made Ground and alluvium, both of which represent conceptual sources of ground gases. Furthermore, desk study research identified a landfill facility operated by BRM some 60m north east of the site that accepted industrial wastes between 1997 and 1998.

Notwithstanding the above, when considering the risks posed to the proposed development it is important to note that relatively shallow groundwater has been identified beneath the study site and that this will inhibit the generation of ground gases originating from deeper potential sources, in particular the layers of peaty organic material identified at depths of approximately 8m to 9m bgl. Furthermore, the migration of gases originating from identified off site sources will be restricted to the near surface unsaturated zone.

6.3.2 Assessment Approach

As discussed in Section 4.2, three initial monitoring visits were carried out during September and October 2023, with one of the visits being carried out during a period of relatively low and falling atmospheric pressure. This monitoring programme is considered appropriate with which to provide an initial understanding of the ground gas regime beneath the site and whether the identified on and off site source could pose as risk to the proposed commercial development and its future users.

The following semi-quantitative assessment of potentially hazardous soil gases and recommended mitigation measures to protect buildings and their occupants is based on the guidance provided within:

- NHBC Report, Guidance on evaluation of development proposals on sites where methane and carbon dioxide are present, March 2007;



- British Standard BS8576:2013, Guidance on Investigations for Ground Gas – Permanent Gases and Volatile Organic Compounds (VOCs).
- British Standard BS8485:2015, Code of Practice for the Characterisation and Remediation from Ground Gas Affected Developments, 2015; and
- The Local Authority Guide to Ground Gas, CIEH, September 2008.

To assess the risk to the existing and proposed buildings from ground gas ingress, a 'worst case' borehole gas flow rate (Q_{hg}) has been derived for both methane and carbon dioxide; based upon the highest gas concentration within any monitoring well and the highest flow rate in any monitoring well.

Q_{hg} has been calculated using the following equation:

$$Q_{hg} = q \left(\frac{C_{hg}}{100} \right)$$

Where:

q is the measured flow rate (in litres per hour) of combined gases from the monitoring standpipe

C_{hg} is the measured hazardous gas concentration (in percentage volume/volume)

6.3.2.1 Carbon Dioxide

Given the maximum recorded carbon dioxide concentration (0.4% v/v) and the maximum flow rate (0.1 l/hr), the preliminary Gas Screening Value (GSV) has been calculated as:

$$(0.4/100) \times 0.1 = 0.0004 \text{ l/hr (GSV)}$$

6.3.2.2 Methane

Given the maximum recorded methane concentration (0.1% v/v) and the maximum flow rate (0.1 l/hr), the preliminary GSV has been calculated as:

$$(0.1/100) \times 0.1 = 0.0001 \text{ l/hr (GSV)}$$

6.3.3 Characteristic Situation

Based upon the low concentrations of ground gases recorded by SLR during the three monitoring visits, the negligible measured flow rates and the resulting GSVs it is judged that Characteristic Situation 1 (CS1, 'very low risk') classification is most applicable to the site.

Interrogation of the Conceptual Model, supplemented by ground gas monitoring data, suggests that the shallow Made Ground soils and underlying alluvium do not have the potential to generate significant volumes of either methane or carbon dioxide. Furthermore, the results indicate that if active landfill gas generation is occurring in the adjacent landfill some 60m to the north west, lateral gas migration onto the site is not occurring via the unsaturated zone within the shallow Made Ground.

6.4 Conclusions

When considering the potential risks posed to human health it is important to note that the shallow Made Ground soils recovered for analysis recorded significantly elevated concentrations of arsenic and lead that exceeded the corresponding commercial GAC thresholds. Furthermore, chrysotile fibres were also recorded in the sample collected from BH01 at 0.5m bgl.



When assessing the significance of these results it is important to consider that, subsequent to development as a sample preparation facility, the site will be surfaced entirely by buildings and permanent hardcover. This physical barrier will prevent future site users from being exposed to contaminated soils via the direct contact, ingestion and dust inhalation pathways in the long term negating the risks posed by the identified contaminants.

Notwithstanding the above, it will be important to consider short term risks posed to construction workers during the development phase as these receptors are far more likely to come into direct contact with the impacted soils. When considering the nature of the contamination identified by this assessment it is considered that the use of appropriate personal protective equipment and health and hygiene practices will effectively ameliorate the associated risks. However, as asbestos has been identified in shallow soils, any such control measures will need to reference the current Control of Asbestos Regulations (CAR2012) and be subject to an asbestos specific risk assessment and plan of works. This will ensure that the asbestos impacted dust with the potential to impact both on and off site human receptors is not generated during the development phase.

With regards to controlled waters, the initial monitoring visit failed to identify significant impact beneath the site. Although concentrations of fluoranthene, lead and nickel were detected at concentrations greater than the conservative WQS against which they were screened, the data is judged to be typical of a site underlain by deposits of Made Ground with a history of commercial/industrial use.

Although the data did not provide any evidence to suggest that the shallow/perched groundwater within the Made Ground soils is more significantly contaminated than that present at depth in the more sensitive gravel and chalk aquifers, it will be important to consider the ground conditions when selecting an appropriate foundation solution to ensure that preferential migration pathways with the potential to pose a future risk to potable groundwater supply are not formed. It is therefore considered likely that if piled foundations are required, this will need to be supported by an appropriate risk assessment that demonstrates selection of the most appropriate technique.

Ground gas concentrations and rates of generation were consistently low in the two shallow wells monitored on three occasions. The data therefore indicates that the Made Ground and alluvium identified beneath the site, and the off-site landfill, do not represent significant sources of ground gases with the potential to impact the proposed commercial development. Furthermore, deeper deposits of organic peaty material are below the measured depth to groundwater and as such the gas generation of these deposits is judged to be negligible.



7.0 Geotechnical Laboratory Results

On completion of the fieldwork several undisturbed, disturbed, and bulk samples were submitted to an accredited Geotechnical Laboratory for testing. Geotechnical and chemical testing comprised the following:

- geotechnical:
 - water content;
 - Atterberg (plasticity) limits;
 - particle size distribution;
 - bulk and dry density;
 - quick undrained triaxial; and,
 - oedometer consolidation testing.
- geochemical:
 - pH; and,
 - sulphate content by 2:1 aqueous

The results from the geotechnical laboratory testing are presented in Table 7-1 to Table 7-5 and included in Appendix F.

Table 7-1: Geotechnical Laboratory Test Results; Classification and Chemical Testing

Location ID	Depth (m bgl)	Water Content (%)	Atterberg Limits (%)				Chemical Tests	
			Liquid Limit	Plastic Limit	Plasticity Index	Passing <425µm Sieve	pH	2:1 WS SO ₄ (g/L)
BH01	2.65	56.7	87	37	50	100	-	-
BH01	2.75	-	-	-	-	-	8.0	0.056
BH01	5.20	49.0	70	28	42	100	-	-
BH01	8.20	112	110	43	67	100	-	-
BH01	11.65	85.9	-	-	-	-	8.3	0.67
BH01	17.20	-	-	-	-	-	9.1	0.099
BH01	21.70	-	-	-	-	-	9.0	0.69
BH01	30.30	-	-	-	-	-	9.0	0.039
BH02	1.20	-	-	-	-	-	10.6	0.21
BH02	5.65	74.6	87	35	52	100	8.5	0.31
BH02	8.65	93.3	134	43	91	100	7.4	1.0
BH02	11.20	95.7	109	39	70	100	-	-
BH02	14.20	-	-	-	-	-	8.6	0.29
BH02	18.70	-	-	-	-	-	8.8	0.014
BH02	23.20	-	-	-	-	-	8.9	<0.010
BH02	32.20	-	-	-	-	-	9.2	0.056



Table 7-2: Geotechnical Laboratory Test Results; Particle Size Distribution

Location ID	Depth (m bgl)	Clay (%)	Silt (%)	Sand (%)	Gravel (%)	Description
BH01	17.20	0.3		0.0	99.7	Medium to coarse GRAVEL
BH02	14.60	8.7		34.1	57.2	Slightly clayey silty very sandy GRAVEL.
BH02	19.00	0.3		27.4	72.3	Very sandy GRAVEL

Table 7-3: Geotechnical Laboratory Test Results; Chalk Classification Testing

Location ID	Depth (m bgl)	Water Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Saturation Water Content (%)	Porosity (%)	Density
BH01	24.7	32.8	1.95	1.47	31	46	Low Density
BH01	26.2	30.3	1.93	1.48	31	45	Low Density
BH01	29.1	26.0	2.00	1.59	26	41	Medium Density
BH01	30.7	23.0	2.07	1.68	22	38	Medium Density
BH02	25.0	27.0	2.06	1.61	25	40	Medium Density
BH02	29.0	24.3	2.01	1.62	25	40	Medium Density
BH02	30.0	25.3	2.00	1.60	25	41	Medium Density
BH02	31.0	24.8	2.02	1.62	25	40	Medium Density



Table 7-4: Geotechnical Laboratory Test Results; Oedometer Consolidation

Location ID	Depth (m bgl)	Water Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Pressure Range (kPa)	M _v (m ² /MN)	c _v (m ² /MN)
BH01	4.2	57.6	1.76	1.12	0 – 21	1.6	0.31
					21 – 42	1.1	0.15
					42 – 84	0.93	0.16
					84 – 168	0.62	0.13
					168 – 336	0.34	0.13
BH02	8.2	63.1	1.60	0.98	0 – 41	1.6	0.52
					41 – 82	1.1	0.36
					82 – 164	0.72	0.36
					164 – 328	0.41	0.38
					328 – 656	0.23	0.38

Table 7-5: Geotechnical Laboratory Test Results; Strength and Density Tests

Location ID	Depth (m bgl)	Water Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Undrained Shear Strength (kPa)
BH01	4.20	52.8	1.79	1.15	14
BH01	11.20	157	1.53	0.59	32
BH02	5.20	72.8	1.62	0.94	7
BH02	8.20	73.5	1.65	0.95	15



8.0 Discussion of Geotechnical Laboratory Results

The ground investigation encountered Made Ground in all locations underlain by Alluvium, Boyn Hill Gravel Member, and chalk bedrock.

8.1 Classification Testing

Three samples of the Boyn Hill Gravel Member were submitted for Particle Size Distribution testing to confirm the findings described during the ground investigation. The results are presented in Table 7-2, and confirm the descriptions recorded in the field identifying the material as a very sandy gravel.

Twenty samples were submitted for water content testing. One sample of Made Ground was tested from BH01 at 2.65m bgl which recorded a water content of 56.7%. Eleven samples of the Alluvium were recovered from depths of between 4.20m and 11.65m bgl, with values ranging between 49% and 157% with an average of 84%. This is considered as high and is assumed to be associated with peat horizons encountered within the Alluvium. Figure 8-1 below show an increase in water content with depth. Eight samples of chalk were submitted for testing which resulted in water content values of between 23.0% and 32.8% and shows a slight decrease with depth.

Six samples of the clay deposit were submitted for plasticity testing to determine Atterberg Limits. One sample was recovered from the Made Ground which plots above the 'A-line' and displays clay like behaviour as shown in Figure 8-2 The clay displays a high plasticity with a high-volume change potential. Five samples from the Alluvium plot above the 'A-line' and display clay like behaviour. As shown in Figure 8-2, the clay has a high to extremely high plasticity with a high-volume change potential.

8.2 Chalk Testing

In accordance with CIRIA Guidance⁵ the density of the chalk can be determined by saturation moisture content or intact dry density. Eight samples of chalk were submitted analysis from between 24.7m and 31.0m bgl which resulted in saturation moisture content values of between 22% and 31%; and intact dry values of between 1.47 Mg/m³ and 1.68 Mg/m³.

Table 7-3 presents the chalk density classification by saturation moisture content, porosity, and intact dry density. Samples highlighted in orange are medium density, and low density in green.

Two samples considered low density were recovered at depths of 24.7m and 26.2m bgl, with density generally increasing with depth, to medium density.

⁵ CIRIA (2002). C574 Engineering in Chalk Part 3: Description and classification of chalk



Figure 8-1: Water Content with Depth

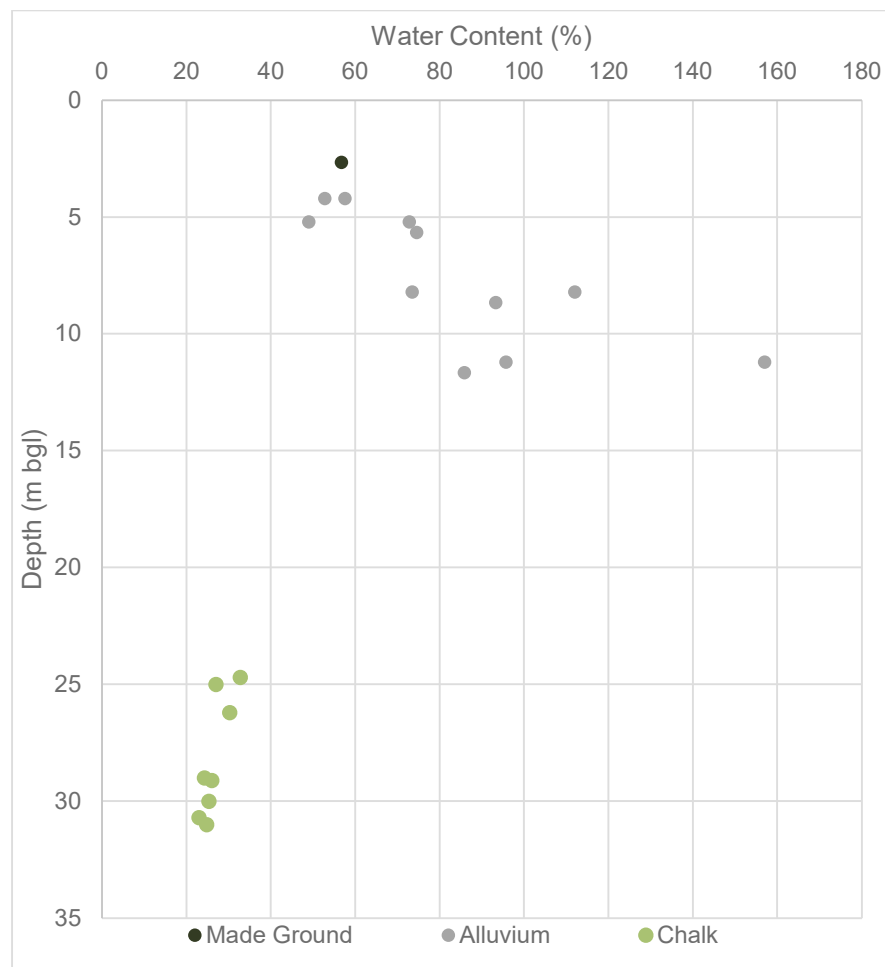
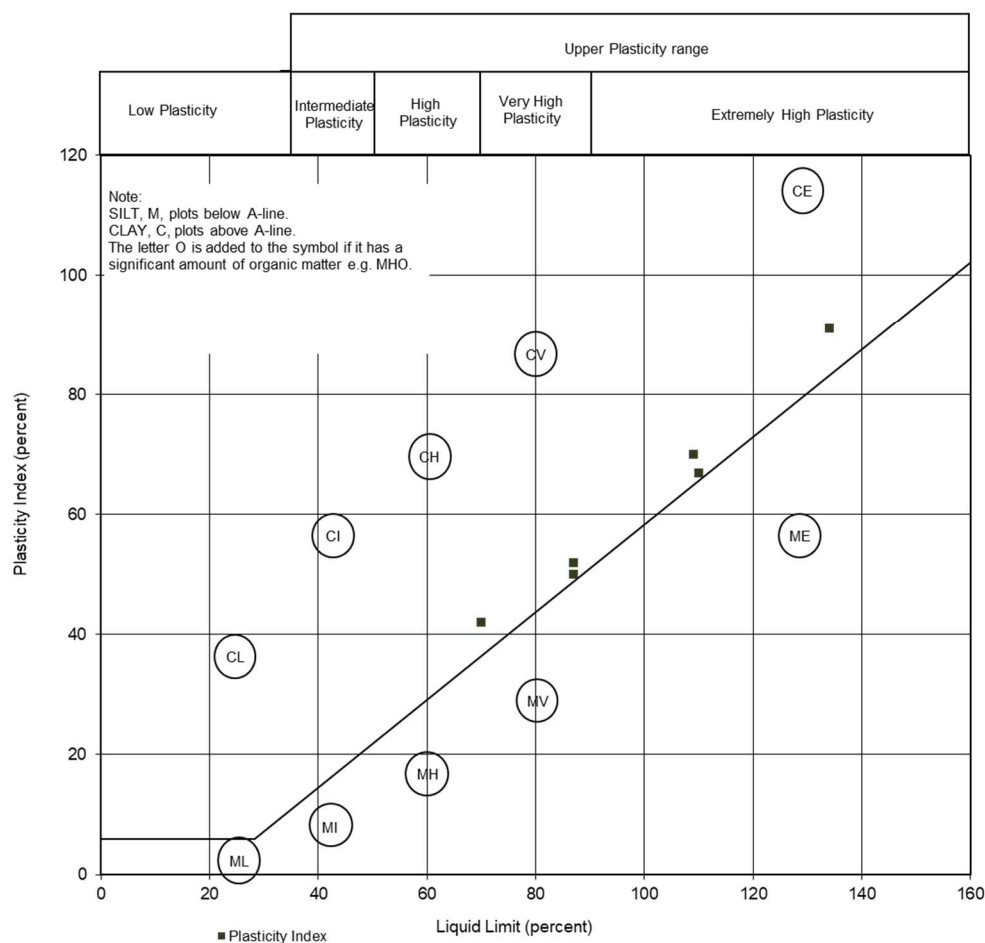


Figure 8-2: Atterberg Plasticity Limits



8.3 Strength Testing

Four undisturbed samples of the Alluvium were submitted for unconsolidated undrained triaxial testing from BH01 at 4.2m and 11.2m bgl and from BH02 at 5.2m and 8.2m bgl. Testing returned undrained shear strengths of between 7kPa and 32kPa which is indicative of an extremely low to low strength material and comparable to the field descriptions.

8.4 Density Testing

Five samples of the Alluvium were tested for bulk density which resulted in values of between 1.53Mg/m³ and 1.79Mg/m³. Nine samples of chalk were tested which resulted in bulk densities of between 1.93Mg/m³ and 2.07Mg/m³.

8.5 Settlement Testing

Two undisturbed samples of the Alluvium were submitted for oedometer consolidation analysis from BH01 at 4.2m and 8.2m bgl.

The sample at 4.2m resulted in a maximum coefficient of volume compressibility (Mv) of 1.6 m²/MN and is indicative of a very high compressibility as anticipated with organic alluvial clay. A maximum coefficient of consolidation (Cv) was recorded as 0.31m²/yr, indicative of a low rate of consolidation.

The sample at 8.2m resulted in a maximum coefficient of volume compressibility (Mv) of 1.6 m²/MN and is indicative of a very high compressibility as anticipated with organic alluvial



clay. A maximum coefficient of consolidation (C_v) was recorded as $0.52\text{m}^2/\text{yr}$, indicative of a low rate of consolidation.

8.6 Chemical Testing

Two samples of Made Ground, two samples of Alluvium, four samples of the Boyn Hill Gravel and four samples of chalk were submitted for chemical testing at depths of between 1.2m and 32.2m bgl. The pH testing recorded values of between 7.4 and 10.6, with water soluble sulphate content values of between $<0.010\text{g/l}$ and 1.0 g/l 2:1 WS SO_4 .

This needs to be considered when selecting the concrete qualities for construction. Based on BRE guidelines the Site is classified as Design Sulphate class DS-1 and DS-2 and as ACEC (aggressive chemical environment for concrete) AC-1s.



9.0 Geotechnical Conclusions & Recommendations

SLR understands that the proposed development comprises the construction of an E-Scrap Sample Preparation Facility, formed of one building.

9.1 Geotechnical Parameters

Table 9-1 details the geotechnical parameters for the Alluvium, Boyn Hill Gravel, and chalk bedrock. Values are derived from laboratory and in-situ test results, relevant published literature, and adapted from similar work undertaken by SLR.

Table 9-1: Geotechnical Design Parameters

Material Parameter	Alluvium	Boyn Hill Gravel	Grade Dc Chalk
Unit Weight (g)	16	19	20
Undrained Shear Strength (S_u)	15	-	-
Effective Cohesion (c' , kPa)	1	0	0
Angle of Internal Friction (ϕ' , °)	20	35	30

9.2 Foundation Options

The ground investigation encountered Made Ground from ground level to a maximum depth of 4.80m bgl. This was underlain by very soft to soft silty clay with organic matter and bands of peat to a depth of 13.10m bgl.

Traditional shallow foundations for the proposed structure are not a viable option due to the thick presence of Made Ground. It is not recommended that foundations are installed in Made Ground due to risk of differential and excessive settlement caused by the varying behaviour of the material, with potential areas of soft spots. It is often recommended that foundations are installed to the base of the Made Ground, however this would result in very deep excavations that may not be stable. In addition, a large volume of spoil would be generated by this approach. Notwithstanding this, the underlying natural strata comprises very soft to soft alluvial clay, which is not a suitable bearing stratum, and would lead to excessive settlement.

Based on the above, it is recommended that a deep, piled foundation solution is required.

9.2.1 Piled Foundations

Due to the underlying ground conditions onsite, and the proximity to other site activities and buildings, it is anticipated that CFA bored piles are required.

Outline pile design calculations have been carried out using data derived from field observations and in-situ testing. Where test result values are not available suitable values have been inferred between samples. Calculations have been conducted for each borehole separately to allow a comparison between boreholes.

The safe working loads for piles of 300mm and 450mm diameter installed to 19.0m within the gravel and 30.0m bgl into the chalk are shown in Table 9-2.



End bearing capacity in the chalk is based on a calculation of 200N (N = interpreted SPT N value). The calculated values are representative of the in-situ conditions, based on the low quantity of flint encountered during drilling.

Shaft friction in chalk has been determined for continuous-flight auger (cfa) piles as outlined by the Federation of Piling Specialists (FPS) and in the CIRIA guidance⁶⁷. An empirical factor is used to calculate adhesion for low to medium density chalk. Calculation of shaft friction for bored piles may be slightly higher. However, where casing is installed the shaft friction will be reduced. Reference should be made to CIRIA guidance when designing a piled foundation in chalk. A conservative factor of 0.45 has been applied in the calculations presented below. The safe working loads for the chalk are presented with a varying factor of safety in accordance with PR86 as shown in Table 9-2.

It should be noted that it is best practice to install piles with known ground conditions a minimum of 5m or 3 pile diameters below the base of the pile, whichever is greater. The pile capacities provided below should be considered as a guide only and it is recommended that a competent piling contractor is instructed to provide a detailed piling design, in line with their proposed piling method and plant. In particular, where the option of installing piles within the Boyn Hill Gravel, the risk of punching shear into the relatively low strength weathered chalk needs to be considered.

Table 9-2: Outline Pile Capacities

Borehole	Pile Diameter (mm)	19m Pile (Gravel)		30m Pile (Chalk)		
		Ultimate Pile Capacity (kN)	Safe Working Load (kN)	Ultimate Pile Capacity (kN)	Safe Working Load (kN)	PR86 Safe Working Load (kN)
BH2023-01	300	1426	475	1990	568	1057* 914# 1183^
	450	2754	918	3261	931	1933* 1450# 1853^
BH2023-02	300	1509	503	2441	697	1004* 1035# 1291^
	450	2916	972	4191	1197	1789* 1705# 2088^

Factor of safety of 3.0 applied to gravel and 3.5 applied to chalk.

*PR86 – factor of safety of 2.5 applied to shaft and end bearing capacity

PR86 for settlement <10mm - factor of safety of 1.5 applied to shaft friction and 3.5 to end bearing capacity

^ PR86 - factor of safety of 1.0 applied to shaft friction and 3.5 to end bearing capacity

6 CIRIA (2002). C574 Engineering in chalk Part 8 – Piling in chalk.

7 CIRIA (2003). PR86 Shaft Friction of CFA piles in chalk



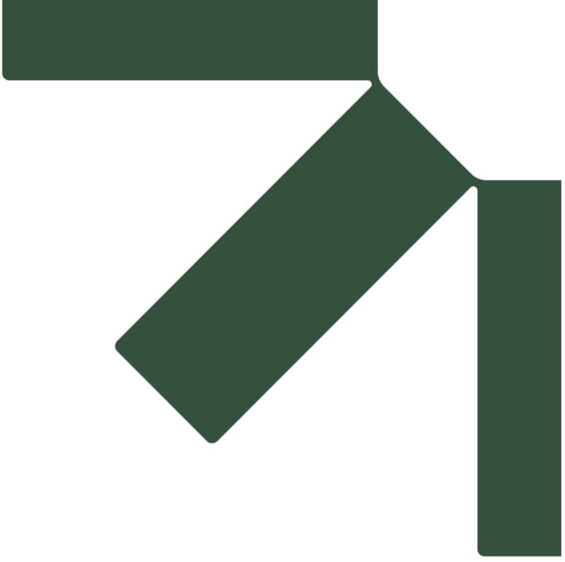
9.3 Floor Slabs

Suspended floor slabs are recommended due to the presence of Made Ground which is associated with the risk of differential settlement. The Made Ground is also underlain by highly plastic clay with a high-volume change potential which can cause excessive heave and subsidence.

9.4 General

In addition to the above it is recommended that all design and construction works be carried out on site in accordance with recognised engineering codes of practice including BS 8004 (2015: Code of Practice for Foundations) and BS 6031 (2009: Code of Practice for Earthworks).





Appendix A Borehole Location Plan

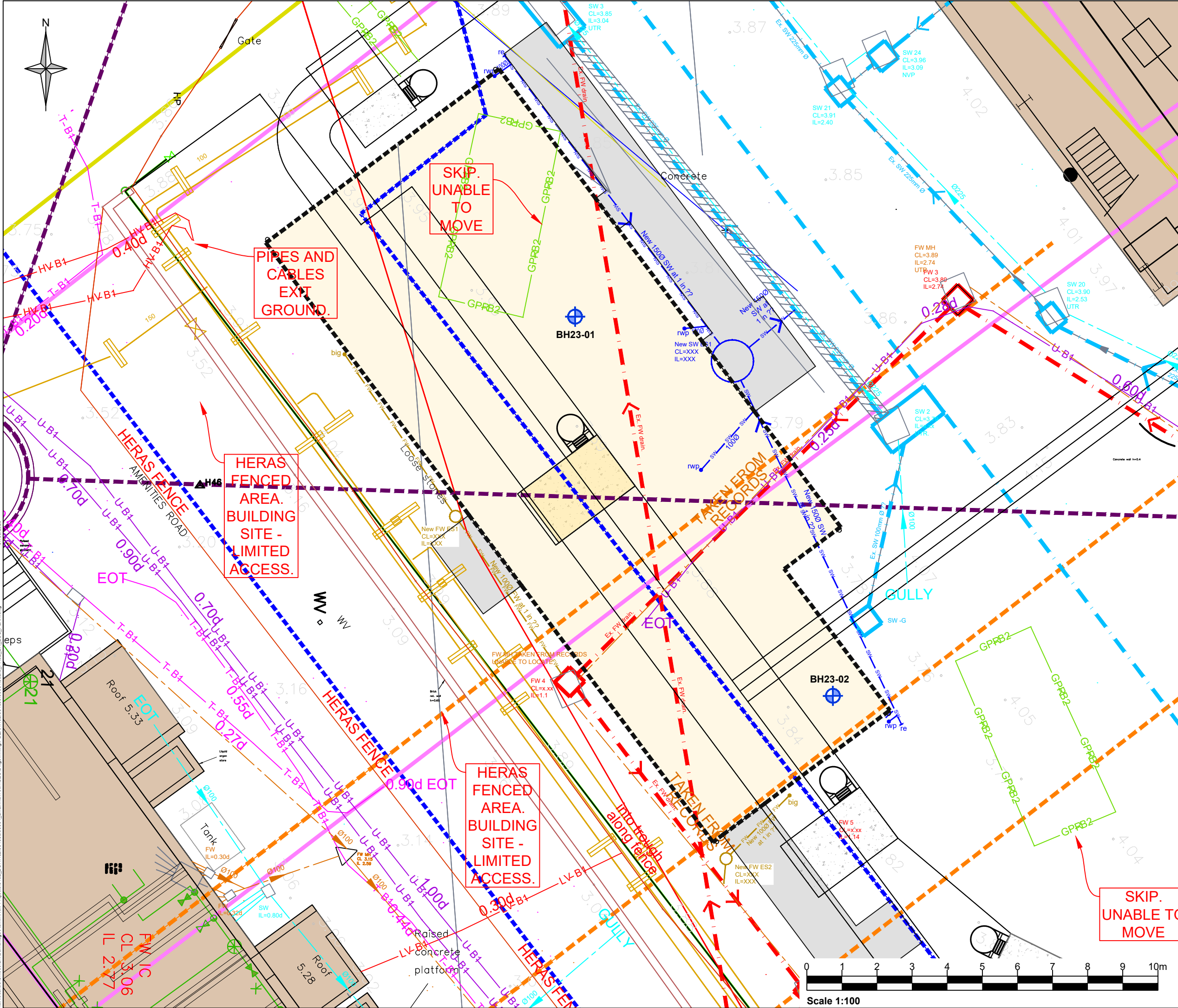
Ground Investigation Report

E-Scrap Sample Preparation Plant

Britannia Refined Metals Ltd

SLR Project No.: 402.064683.00001

19 October 2023



Notes:
1. DRAWING IS BASED ON SLR PLANS UTLS-01 P0 AND SITE LAYOUT SINGLE BUILDING OPTION SK01 P5.

Legend:

- BOREHOLE LOCATION
- LUG GPR LINEAR
- LUG UNIDENTIFIED UTILITIES
- WATER SURFACE
- WATER REDUNDANT
- SLR FW DRAINAGE EXISTING
- LUG FWS
- SLR FW DRAINAGE NEW
- SLR SW DRAINAGE NEW
- SLR SW DRAINAGE EXISTING
- LUG SWS
- DRAINAGE REPAIRS 2009
- FIRE
- ELECTRIC CABLES
- PCME CABLES
- OPTIC NEW
- GAS
- WIFI FORK TRUCK

Rev	Amendments	Date	By	Chk	Auth
-----	------------	------	----	-----	------

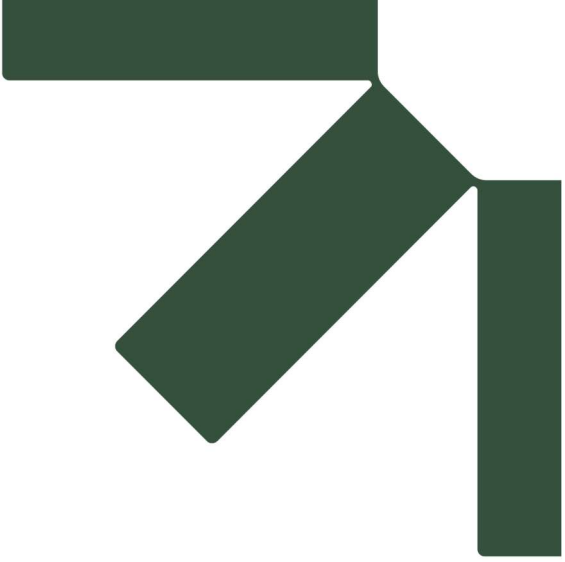
www.slrconsulting.com

Client
BRITANNIA REFINED METALS LTD

Project
SAMPLE PREPARATION BUILDING PHASE 2
GEOTECHNICAL AND ENVIRONMENTAL
ASSESSMENT

Figure Title
BOREHOLE LOCATION PLAN

Scale 1:100	@ A3	SLR Project No. 402.064683.00001	
Designed AK	Drawn TKS	Checked SK	Authorised
Date SEPT 2023	Date SEPT 2023	Date SEPT 2023	Date
Figure Number 02	Rev. 0		



Appendix B Borehole Logs

Ground Investigation Report

E-Scrap Sample Preparation Plant

Britannia Refined Metals Ltd

SLR Project No.: 402.064683.00001

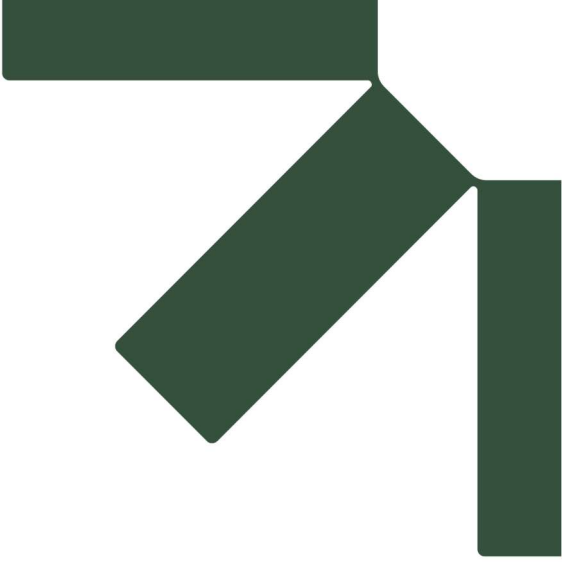
19 October 2023

All dimensions in metres Scale 1:66	Contractor: Geotechnical Engineering Ltd Plant: Commachio 305	Method: CP+RC Hole Size: 300mm	Logged By: DG-J	Approved By: AK
	SLR Consulting, Mill Barn 28 Hollingworth Court Turkey Mill, Maidstone ME14 5PP LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH BS5930:2015			

BOREHOLE LOG													BOREHOLE No BH2023-01	
Client: Britannia Refined Metals Ltd														
Project No: 402.064683.00001			Date: 14/08/2023		Ground Level: 3.90m			Co-ordinates: E561382 N175334						
Project: BRM Northfleet													Sheet 4 of 4	
SAMPLES & TESTS										STRATA				Instrument Backfill
Depth	Core Run	TCR (%)	SCR (%)	RQD (%)	Type No.	Test Type	Test Result	SPT N Value 10 20 30 40		Water Level	Legend	Depth	DESCRIPTION	
29.20 - 30.70		7%	0%	0%	D	SPT	N=50	50		-28.3 0		(3.10)	Structureless CHALK composed of white rounded, fine to coarse GRAVEL. Clasts are weak medium density white. Occasional rounded, fine to coarse flint gravels. (Grade Dc). LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION AND NEWHAVEN CHALK FORMATION (UNDIFFERENTIATED) - CHALK	
30.70 - 32.20					D			50						
32.20 - 33.00					SPTLS	SPT	N=50	50				32.20	Borehole Complete at 32.20m	
33.00 - 34.00														
34.00 - 35.00														
35.00 - 36.00														
36.00 - 37.00														
37.00 - 38.00														
38.00 - 39.00														
39.00 - 40.00														
Boring Progress and Water Observations						Flushing			General Remarks					
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Type						
									Service traced. CAT scanned. Concrete cored. Hand dug pit to 1.2m. Environmental seal at 6.70m. Dual installed with 2x50mm monitoring wells.					
All dimensions in metres Scale 1:66			Contractor: Geotechnical Engineering Ltd Plant: Commachio 305			Method: CP+RC Hole Size: 300mm			Logged By: DG-J		Approved By: AK			
SLR Consulting, Mill Barn 28 Hollingworth Court Turkey Mill, Maidstone ME14 5PP LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH BS5930:2015														

All dimensions in metres Scale 1:66	Contractor: Geotechnical Engineering Ltd Plant: Commachio 305	Method: CP+RC Hole Size: 300mm	Logged By: DG-J	Approved By: AK
	SLR Consulting, Mill Barn 28 Hollingworth Court Turkey Mill, Maidstone ME14 5PP LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH BS5930:2015			

BOREHOLE LOG												BOREHOLE No BH2023-02		
Client: Britannia Refined Metals Ltd														
Project No: 402.064683.00001		Date: 18/08/2023		Ground Level: 3.80m		Co-ordinates: E561392 N175319								
Project: BRM Northfleet												Sheet 4 of 4		
SAMPLES & TESTS										STRATA				Instrument Backfill
Depth	Core Run	TCR (%)	SCR (%)	RQD (%)	Type No.	Test Type	Test Result	SPT N Value 10 20 30 40		Water Level	Legend	Depth	DESCRIPTION	
29.20 - 30.70		100%	0%	0%	ES D	SPT	N=50	50				(2.70)	Structureless CHALK composed of rounded GRAVEL. Clasts are weak medium density white. Occasional rounded, fine to coarse flint gravels (Grade Dc). LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION AND NEWHAVEN CHALK FORMATION (UNDIFFERENTIATED) - CHALK	
30.70 - 32.20								50						32.20
32.20 - 33.00					SPTLS	SPT	N=50	50					Borehole Complete at 32.20m	
33.00 - 34.00														
34.00 - 35.00														
35.00 - 36.00														
36.00 - 37.00														
37.00 - 38.00														
38.00 - 39.00														
39.00 - 40.00														
Boring Progress and Water Observations						Flushing			General Remarks					
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Type						
									Service traced. CAT scanned. Concrete cored. Hand dug pit to 1.2m. Environmental seal at 6.70m. Dual installed with 2x50mm monitoring wells.					
All dimensions in metres Scale 1:66			Contractor: Geotechnical Engineering Ltd Plant: Commachio 305			Method: CP+RC Hole Size: 300mm			Logged By: DG-J		Approved By: AK			
SLR Consulting, Mill Barn 28 Hollingworth Court Turkey Mill, Maidstone ME14 5PP LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH BS5930:2015														



Appendix C Photographs

Ground Investigation Report

E-Scrap Sample Preparation Plant

Britannia Refined Metals Ltd

SLR Project No.: 402.064683.00001

19 October 2023

Site Photographs

Photo 1: BH2023-01 GL – 0.42m bgl



Photo 2: BH2023-01 0.42 – 1.20m bgl



Photo 3: BH2023-01 1.20m – 2.20m bgl



Photo 4: BH2023-01 2.20 – 2.70m bgl



Photo 5: BH2023-01 2.70m – 3.20m bgl



Photo 6: BH2023-01 3.20 – 4.20m bgl



Photo 7: BH2023-01 1420m – 5.20m bgl



Photo 8: BH2023-01 5.20 – 6.70m bgl



Photo 9: BH2023-01 6.70m – 8.20m bgl



Photo 10: BH2023-01 8.20 – 9.70m bgl



Photo 11: BH2023-01 9.70m – 11.20m bgl



Photo 12: BH2023-01 11.20 – 12.70m bgl



Photo 13: BH2023-01 12.70m – 14.20m bgl



Photo 14: BH2023-01 14.20 – 15.70m bgl



Photo 15: BH2023-01 17.20m – 18.70m bgl



Photo 16: BH2023-01 18.70 – 20.20m bgl



Photo 17: BH2023-01 20.20m – 21.70m bgl



Photo 18: BH2023-01 21.70 – 23.20m bgl





Photo 21: BH2023-01 26.20m – 27.70m bgl



Photo 22: BH2023-01 27.70 – 29.20m bgl

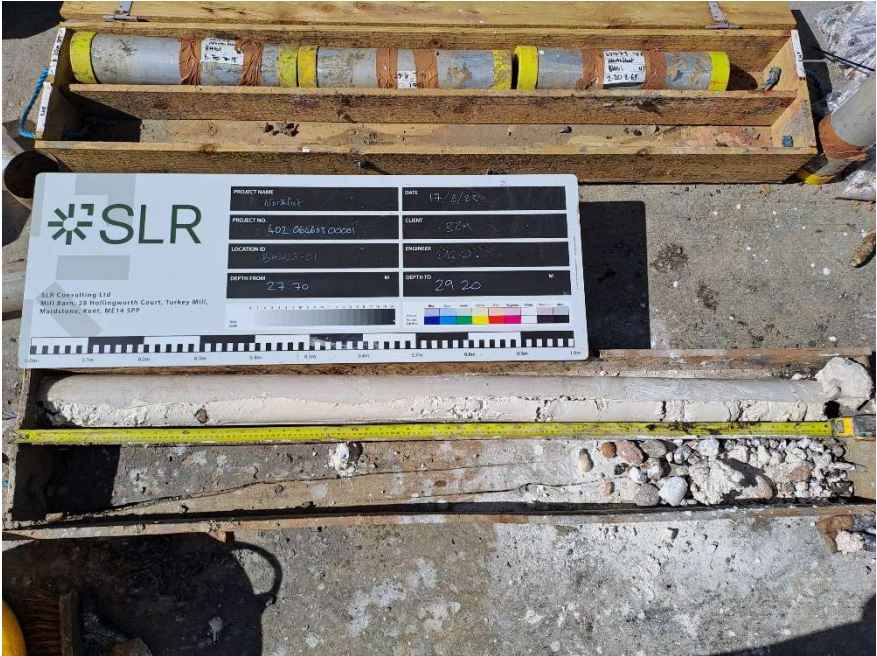


Photo 23: BH2023-01 29.20m – 30.70m bgl



Photo 24: BH2023-01 30.70 – 32.20m bgl



Photo 25: BH2023-01



Photo 26: BH2023-02 GL – 0.58m bgl



Photo 27: BH2023-02 0.58m – 1.20m bgl



Photo 28: BH2023-02 1.20 – 1.60m bgl



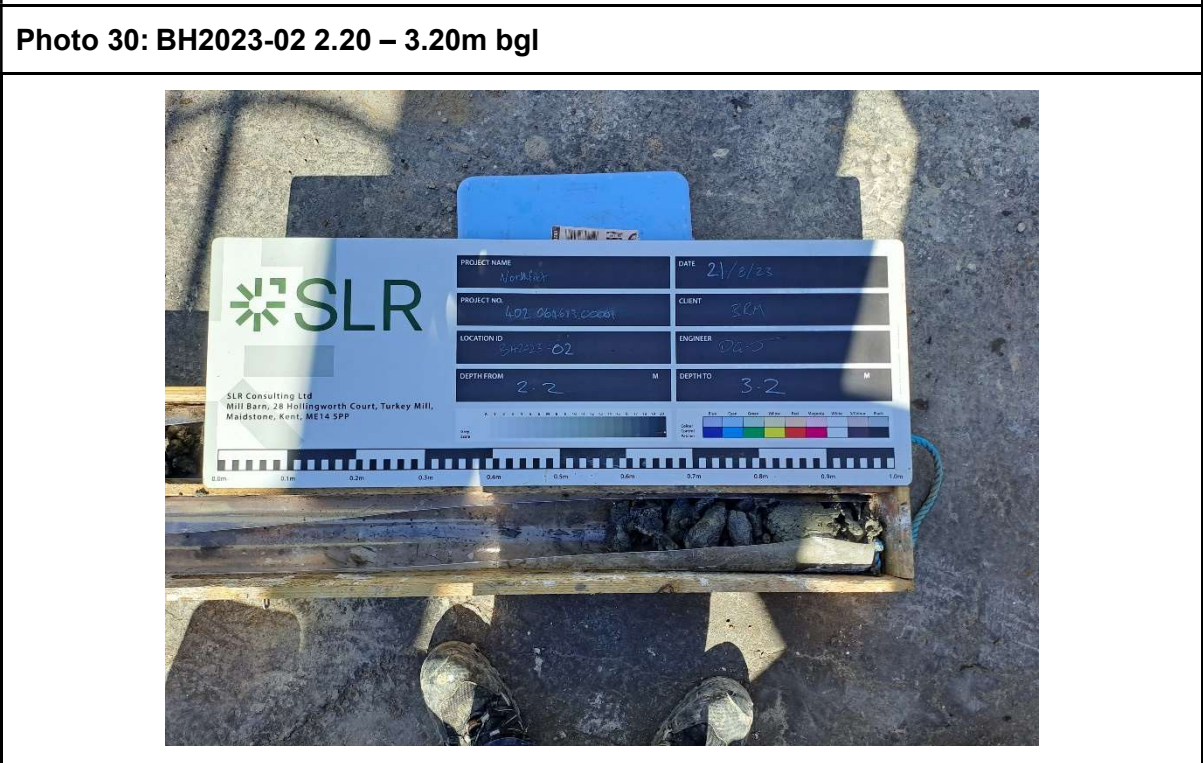
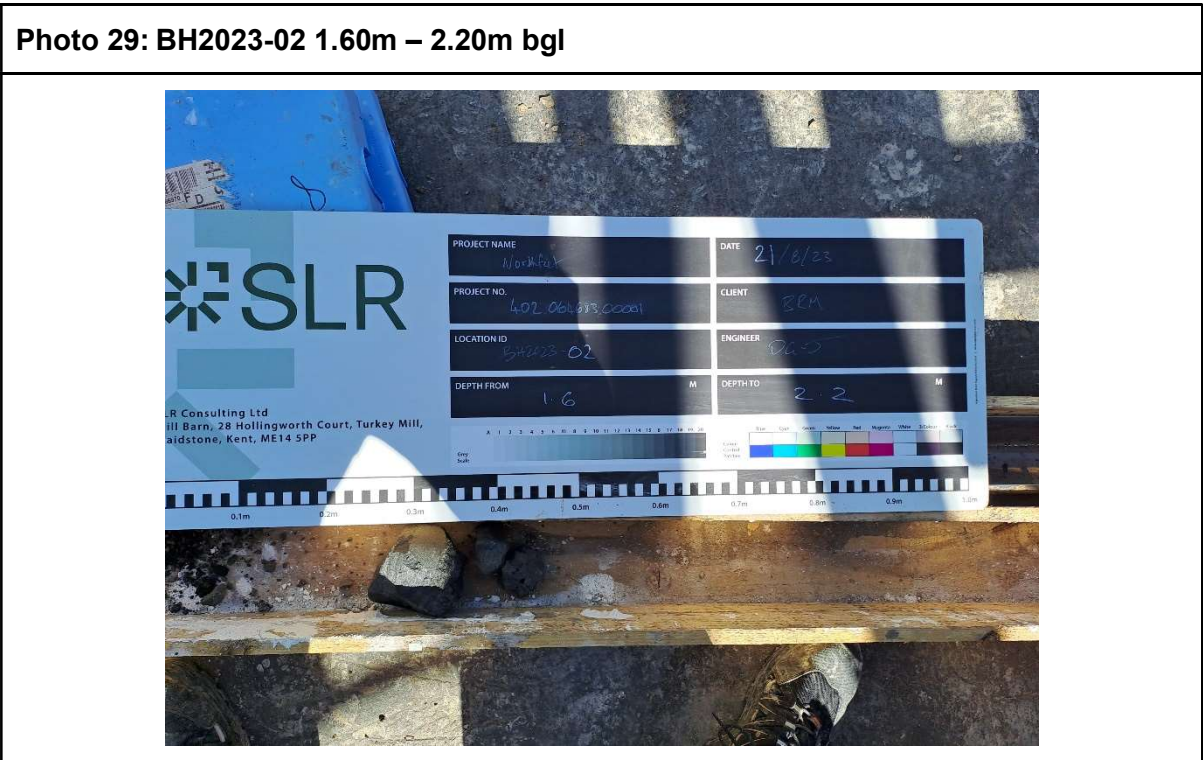


Photo 31: BH2023-02 3.20m – 4.20m bgl



Photo 32: BH2023-02 4.20 – 5.20m bgl



Photo 33: BH2023-02 5.20m – 6.70m bgl



Photo 34: BH2023-02 6.70 – 8.20m bgl



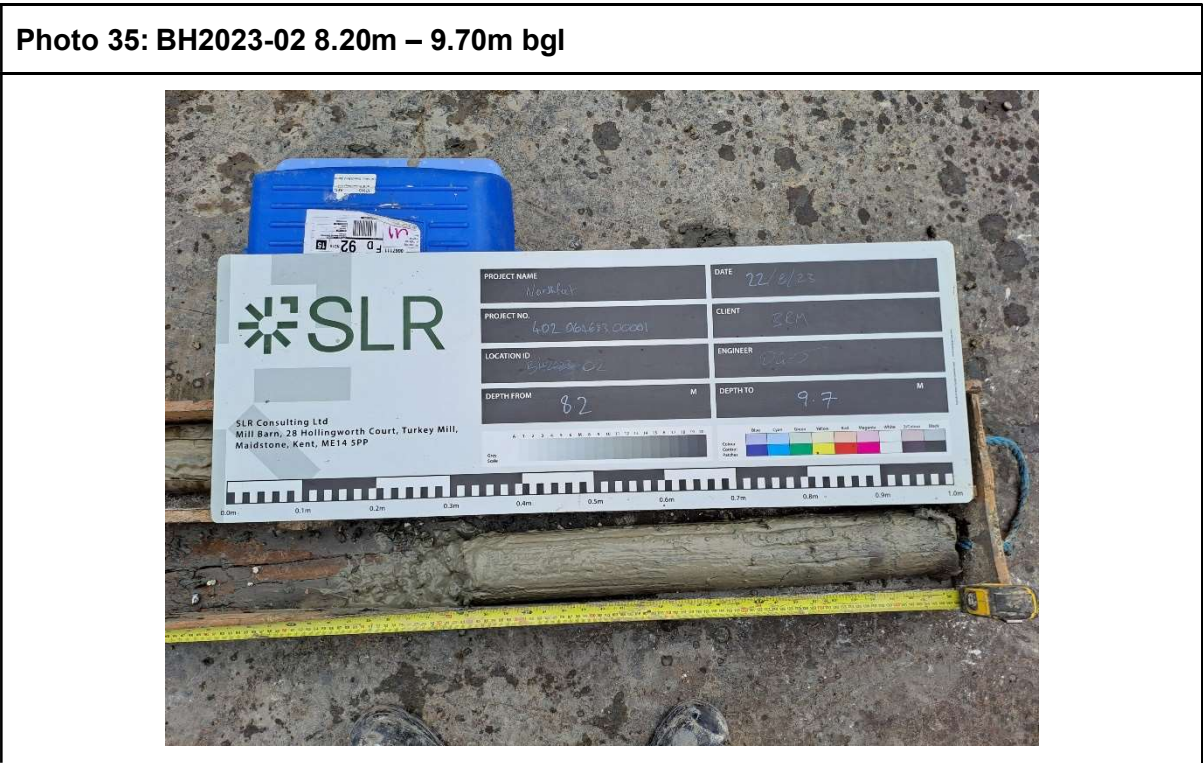


Photo 37: BH2023-02 11.20m – 12.70m bgl



Photo 38: BH2023-02 12.70 – 14.20m bgl



Photo 39: BH2023-02 14.20m – 15.70m bgl



Photo 40: BH2023-02 15.70 – 17.20m bgl



Photo 41: BH2023-02 17.20m – 18.70m bgl



Photo 42: BH2023-02 18.70 – 20.20m bgl



Photo 43: BH2023-02 20.20m – 21.70m bgl



Photo 44: BH2023-02 21.70 – 23.20m bgl



Photo 45: BH2023-02 23.20m – 24.70m bgl



Photo 46: BH2023-02 24.70 – 26.20m bgl

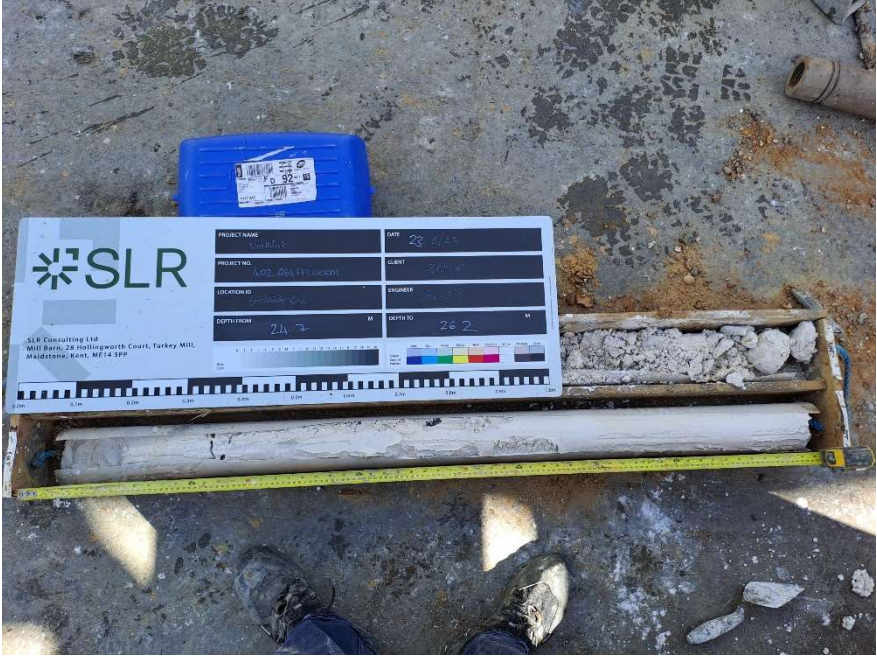
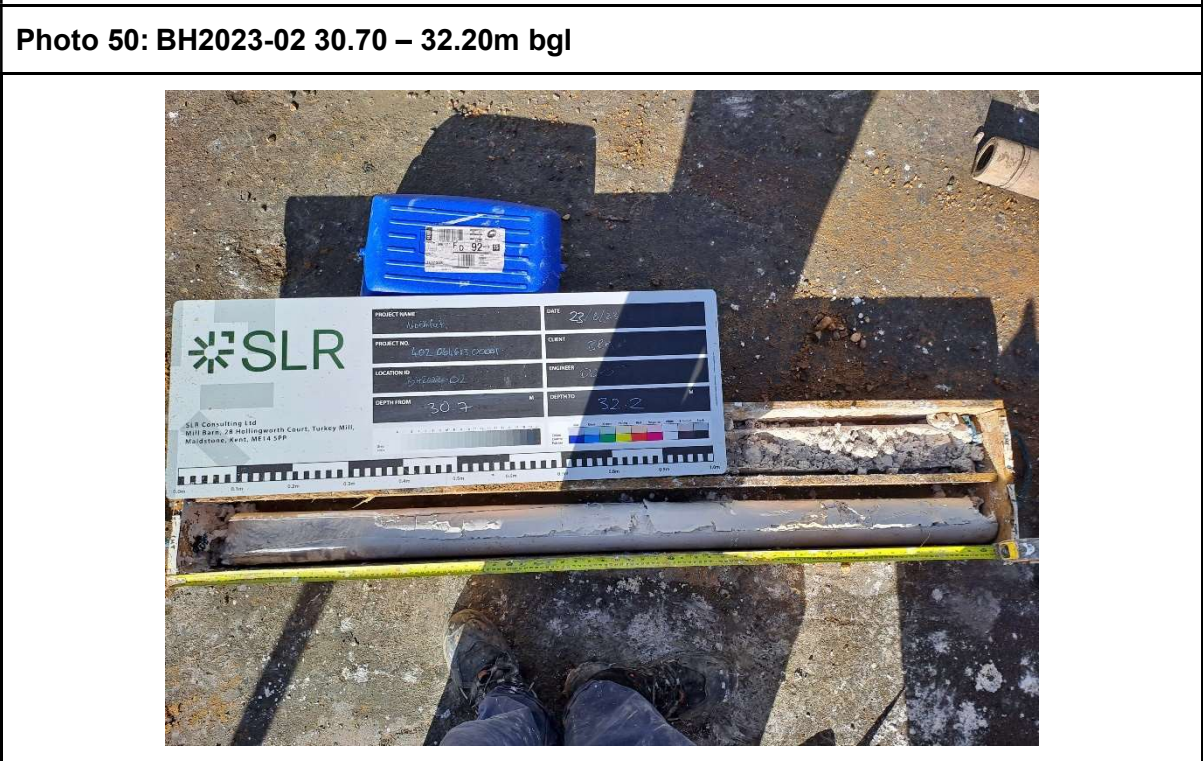
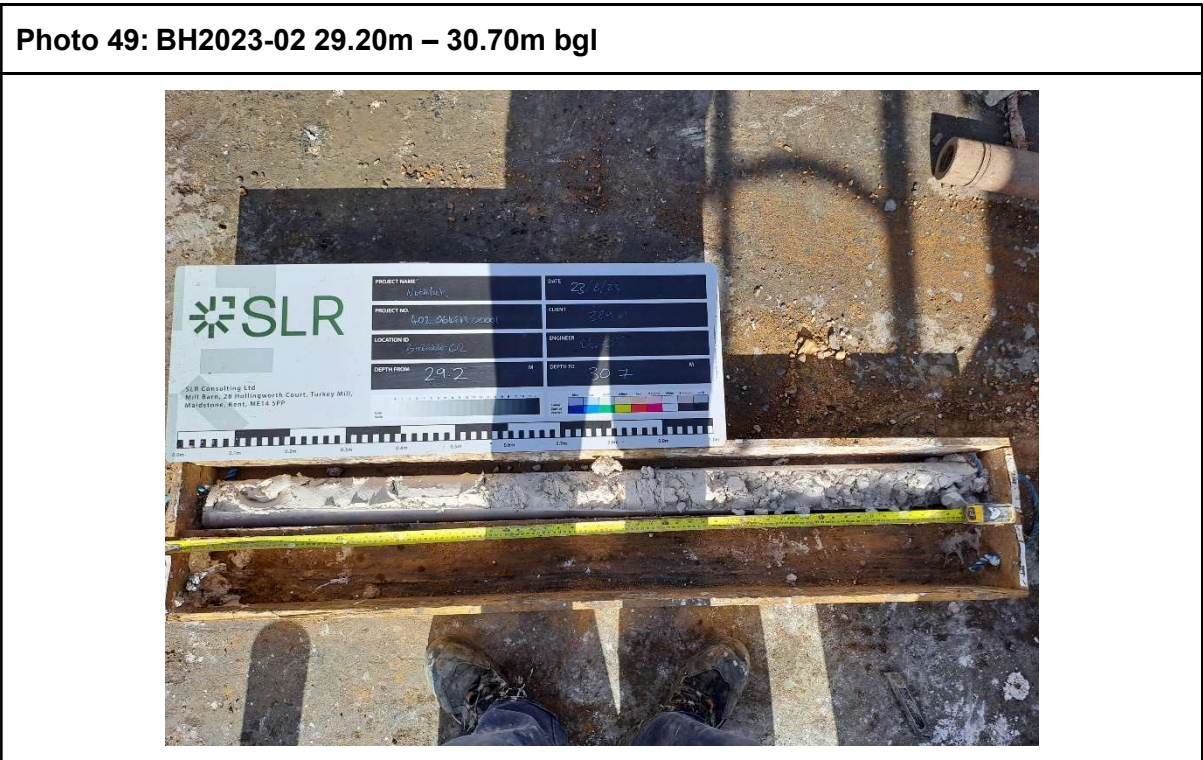


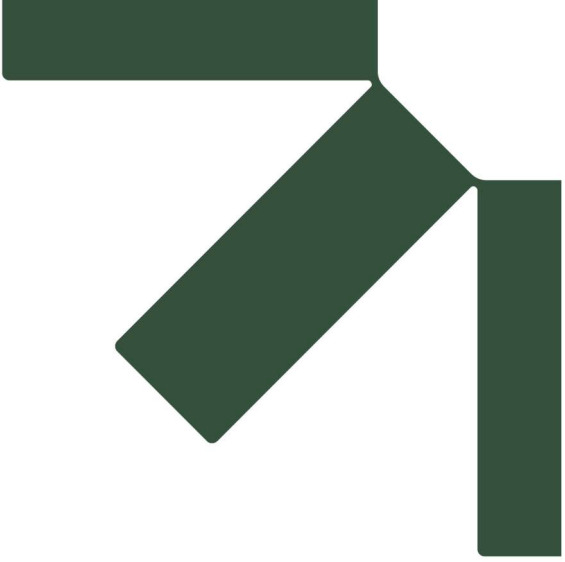
Photo 47: BH2023-02 26.20m – 27.70m bgl



Photo 48: BH2023-02 27.70 – 29.20m bgl







Appendix D Chemical Laboratory Test Certificates

Ground Investigation Report

E-Scrap Sample Preparation Plant

Britannia Refined Metals Ltd

SLR Project No.: 402.064683.00001

19 October 2023

SLR Consulting Ltd

28 Mill Barn

Turkey Mill

Maidstone

United Kingdom

ME14 5PP



4225



Attention : Dominic Goodchild-James

Date : 13th October, 2023

Your reference : 402.064683.00001

Our reference : Test Report 23/15592 Batch 1

Location : BRM, Northfleet

Date samples received : 21st September, 2023

Status : Final Report

Issue : 1

Three samples were received for analysis on 21st September, 2023 of which three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

The greenhouse gas emissions generated (in Carbon – Co2e) to obtain the results in this report are estimated as:

Scope 1&2 emissions - 5.43 kg of CO2

Scope 1&2&3 emissions - 12.833 kg of CO2

Authorised By:



Simon Gomery BSc

Senior Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: SLR Consulting Ltd
Reference: 402.064683.00001
Location: BRM, Northfleet
Contact: Dominic Goodchild-James
EMT Job No: 23/15592

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
 H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HNO₃

EMT Sample No.	1-3	4-6	7-9									
Sample ID	BH23 - 01A	BH23 - 01B	BH23 - 02A									
Depth	3.48	0.83	1.03									
COC No / misc												
Containers	V G	V G	V G									
Sample Date	20/09/2023	20/09/2023	20/09/2023									
Sample Type	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1									
Date of Receipt	21/09/2023	21/09/2023	21/09/2023									
										LOD/LOR	Units	Method No.
Dissolved Arsenic #	<0.0009	-	-							<0.0009	mg/l	TM30/PM14
Dissolved Cadmium #	<0.00003	-	-							<0.00003	mg/l	TM30/PM14
Total Dissolved Chromium #	<0.0002	-	-							<0.0002	mg/l	TM30/PM14
Dissolved Copper #	<0.003	-	-							<0.003	mg/l	TM30/PM14
Dissolved Lead #	<0.0004	-	-							<0.0004	mg/l	TM30/PM14
Dissolved Mercury #	<0.0005	-	-							<0.0005	mg/l	TM30/PM14
Dissolved Nickel #	0.0019	-	-							<0.0002	mg/l	TM30/PM14
Dissolved Selenium #	<0.0012	-	-							<0.0012	mg/l	TM30/PM14
Dissolved Zinc #	0.02	-	-							<0.0015	mg/l	TM30/PM14
PAH MS												
Naphthalene #	<0.0001	<0.0001	<0.0001							<0.0001	mg/l	TM4/PM30
Acenaphthylene #	<0.000005	<0.000005	<0.000005							<0.000005	mg/l	TM4/PM30
Acenaphthene #	<0.000005	<0.000005	0.000013							<0.000005	mg/l	TM4/PM30
Fluorene #	<0.000005	<0.000005	0.000007							<0.000005	mg/l	TM4/PM30
Phenanthrene #	0.000005	<0.000005	0.000011							<0.000005	mg/l	TM4/PM30
Anthracene #	<0.000005	<0.000005	<0.000005							<0.000005	mg/l	TM4/PM30
Fluoranthene #	0.000023	<0.000005	<0.000005							<0.000005	mg/l	TM4/PM30
Pyrene #	0.000026	0.000006	0.000007							<0.000005	mg/l	TM4/PM30
Benzo(a)anthracene #	0.000008	<0.000005	<0.000005							<0.000005	mg/l	TM4/PM30
Chrysene #	0.000017	<0.000005	<0.000005							<0.000005	mg/l	TM4/PM30
Benzo(b)fluoranthene #	0.000011	<0.000008	<0.000008							<0.000008	mg/l	TM4/PM30
Benzo(a)pyrene #	<0.000005	<0.000005	<0.000005							<0.000005	mg/l	TM4/PM30
Indeno(123cd)pyrene #	<0.000005	<0.000005	<0.000005							<0.000005	mg/l	TM4/PM30
Dibenzo(ah)anthracene #	<0.000005	<0.000005	<0.000005							<0.000005	mg/l	TM4/PM30
Benzo(ghi)perylene #	<0.000005	<0.000005	<0.000005							<0.000005	mg/l	TM4/PM30
PAH 16 Total #	<0.000173	<0.000173	<0.000173							<0.000173	mg/l	TM4/PM30
Benzo(b)fluoranthene	<0.000008	<0.000008	<0.000008							<0.000008	mg/l	TM4/PM30
Benzo(k)fluoranthene	<0.000008	<0.000008	<0.000008							<0.000008	mg/l	TM4/PM30
PAH Surrogate % Recovery	86	92	88							<0	%	TM4/PM30
Methyl Tertiary Butyl Ether #	<0.0001	<0.0001	<0.0001							<0.0001	mg/l	TM15/PM10
Benzene #	<0.0005	<0.0005	<0.0005							<0.0005	mg/l	TM15/PM10
Toluene #	<0.005	<0.005	<0.005							<0.005	mg/l	TM15/PM10
Ethylbenzene #	<0.001	<0.001	<0.001							<0.001	mg/l	TM15/PM10
m/p-Xylene #	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
o-Xylene #	<0.001	<0.001	<0.001							<0.001	mg/l	TM15/PM10
Total Xylenes #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
Surrogate Recovery Toluene D8	96	96	100							<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	120	110	110							<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: SLR Consulting Ltd
Reference: 402.064683.00001
Location: BRM, Northfleet
Contact: Dominic Goodchild-James
EMT Job No: 23/15592

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
 H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HNO₃

EMT Sample No.	1-3	4-6	7-9								Please see attached notes for all abbreviations and acronyms		
Sample ID	BH23 - 01A	BH23 - 01B	BH23 - 02A										
Depth	3.48	0.83	1.03										
COC No / misc													
Containers	V G	V G	V G										
Sample Date	20/09/2023	20/09/2023	20/09/2023										
Sample Type	Ground Water	Ground Water	Ground Water										
Batch Number	1	1	1										
Date of Receipt	21/09/2023	21/09/2023	21/09/2023								LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 #	<0.01	<0.01	<0.01								<0.01	mg/l	TM36/PM12
>C6-C8 #	<0.01	<0.01	<0.01								<0.01	mg/l	TM36/PM12
>C8-C10 #	<0.01	<0.01	<0.01								<0.01	mg/l	TM36/PM12
>C10-C12 #	<0.005	<0.005	<0.005								<0.005	mg/l	TM5/PM16/PM30
>C12-C16 #	<0.01	<0.01	<0.01								<0.01	mg/l	TM5/PM16/PM30
>C16-C21 #	<0.01	<0.01	<0.01								<0.01	mg/l	TM5/PM16/PM30
>C21-C35 #	<0.01	<0.01	<0.01								<0.01	mg/l	TM5/PM16/PM30
Total aliphatics C5-35 #	<0.01	<0.01	<0.01								<0.01	mg/l	TM5/PM16/PM30
Aromatics													
>C5-EC7 #	<0.01	<0.01	<0.01								<0.01	mg/l	TM36/PM12
>EC7-EC8 #	<0.01	<0.01	<0.01								<0.01	mg/l	TM36/PM12
>EC8-EC10 #	<0.01	<0.01	<0.01								<0.01	mg/l	TM36/PM12
>EC10-EC12 #	<0.005	<0.005	<0.005								<0.005	mg/l	TM5/PM16/PM30
>EC12-EC16 #	<0.01	<0.01	<0.01								<0.01	mg/l	TM5/PM16/PM30
>EC16-EC21 #	<0.01	<0.01	<0.01								<0.01	mg/l	TM5/PM16/PM30
>EC21-EC35 #	<0.01	<0.01	<0.01								<0.01	mg/l	TM5/PM16/PM30
Total aromatics C5-35 #	<0.01	<0.01	<0.01								<0.01	mg/l	TM5/PM16/PM30
Total aliphatics and aromatics(C5-35) #	<0.01	<0.01	<0.01								<0.01	mg/l	TM5/PM16/PM30
pH #	7.5	7.7	7.7								<0.01	pH units	TM73/PM0
Dissolved Arsenic #	NDP	0.0091	0.0083								<0.0009	mg/l	TM170/PM14
Dissolved Cadmium #	NDP	<0.00003	<0.00003								<0.00003	mg/l	TM170/PM14
Total Dissolved Chromium #	NDP	<0.0002	<0.0002								<0.0002	mg/l	TM170/PM14
Dissolved Copper #	NDP	<0.001	<0.001								<0.001	mg/l	TM170/PM14
Dissolved Lead #	NDP	0.0041	0.0019								<0.0004	mg/l	TM170/PM14
Dissolved Mercury #	NDP	<0.0005	<0.0005								<0.0005	mg/l	TM170/PM14
Dissolved Nickel #	NDP	0.01	0.0042								<0.0002	mg/l	TM170/PM14
Dissolved Selenium #	NDP	<0.0012	<0.0012								<0.0012	mg/l	TM170/PM14
Dissolved Zinc #	NDP	0.0065	0.0072								<0.0015	mg/l	TM170/PM14
Hexavalent Chromium	<0.002	<0.002	<0.002								<0.002	mg/l	TM38/PM0

Element Materials Technology

Client Name: SLR Consulting Ltd
Reference: 402.064683.00001
Location: BRM, Northfleet
Contact: Dominic Goodchild-James
EMT Job No: 23/15592

VOC Report : Liquid

EMT Sample No.	1-3	4-6	7-9									
Sample ID	BH23 - 01A	BH23 - 01B	BH23 - 02A									
Depth	3.48	0.83	1.03									
COC No / misc												
Containers	V G	V G	V G									
Sample Date	20/09/2023	20/09/2023	20/09/2023									
Sample Type	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1									
Date of Receipt	21/09/2023	21/09/2023	21/09/2023									
VOC MS										LOD/LOR	Units	Method No.
Dichlorodifluoromethane	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.0001	<0.0001	<0.0001							<0.0001	mg/l	TM15/PM10
Chloromethane #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
Vinyl Chloride #	<0.0001	<0.0001	<0.0001							<0.0001	mg/l	TM15/PM10
Bromomethane	<0.001	<0.001	<0.001							<0.001	mg/l	TM15/PM10
Chloroethane #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
Trichlorofluoromethane #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
Dichloromethane (DCM) #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
trans-1-2-Dichloroethene #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
1,1-Dichloroethane #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
cis-1-2-Dichloroethene #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
2,2-Dichloropropane	<0.001	<0.001	<0.001							<0.001	mg/l	TM15/PM10
Bromochloromethane #	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
Chloroform #	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
1,1,1-Trichloroethane #	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
1,1-Dichloropropene #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
Carbon tetrachloride #	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
1,2-Dichloroethane #	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
Benzene #	<0.0005	<0.0005	<0.0005							<0.0005	mg/l	TM15/PM10
Trichloroethene (TCE) #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
1,2-Dichloropropane #	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
Dibromomethane #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
Bromodichloromethane #	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
cis-1-3-Dichloropropene	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
Toluene #	<0.005	<0.005	<0.005							<0.005	mg/l	TM15/PM10
trans-1-3-Dichloropropene	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
1,1,2-Trichloroethane #	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
Tetrachloroethene (PCE) #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
1,3-Dichloropropane #	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
Dibromochloromethane #	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
1,2-Dibromoethane #	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
Chlorobenzene #	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
Ethylbenzene #	<0.001	<0.001	<0.001							<0.001	mg/l	TM15/PM10
m/p-Xylene #	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
o-Xylene #	<0.001	<0.001	<0.001							<0.001	mg/l	TM15/PM10
Styrene	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
Bromoform #	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
Isopropylbenzene #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<0.004	<0.004	<0.004							<0.004	mg/l	TM15/PM10
Bromobenzene #	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
1,2,3-Trichloropropane #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
Propylbenzene #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
2-Chlorotoluene #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
1,3,5-Trimethylbenzene #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
4-Chlorotoluene #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
tert-Butylbenzene #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
1,2,4-Trimethylbenzene #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
sec-Butylbenzene #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
4-Isopropyltoluene #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
1,3-Dichlorobenzene #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
1,4-Dichlorobenzene #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
n-Butylbenzene #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
1,2-Dichlorobenzene #	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
1,2,4-Trichlorobenzene	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
Hexachlorobutadiene	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
Naphthalene	<0.002	<0.002	<0.002							<0.002	mg/l	TM15/PM10
1,2,3-Trichlorobenzene	<0.003	<0.003	<0.003							<0.003	mg/l	TM15/PM10
Surrogate Recovery Toluene D8	96	96	100							<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	120	110	110							<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Matrix : Liquid

5 of 12

Element Materials Technology

Notification of Deviating Samples

Client Name:	SLR Consulting Ltd
Reference:	402.064683.00001
Location:	BRM, Northfleet
Contact:	Dominic Goodchild-James

Notification of Deviating Samples

Matrix : Liquid

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

It is a requirement under ISO 17025 that we inform clients if samples are deviating i.e. outside what is expected. A deviating sample indicates that the sample 'may' be compromised but not necessarily will be compromised. The result is still accredited and our analytical reports will still show accreditation on the relevant analytes.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 23/15592

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a requirement of our Accreditation Body for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

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

EMT Job No: 23/15592

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16/PM30	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE/Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5/TM36	please refer to TM5 and TM36 for method details	PM12/PM16/PM30	please refer to PM16/PM30 and PM12 for method details	Yes			
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.				
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM0	No preparation is required.				
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			

EMT Job No: 23/15592

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM170	Determination of Trace Metals by ICP-MS (Inductively Coupled Plasma – Mass Spectrometry): Modified USEPA Method 200.8, Rev. 5.4, 1994; Modified EPA Method 6020A, Rev.1, Feb 2007; Modified BS EN ISO 17294-2:2016	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			

SLR Consulting Ltd
28 Mill Barn
Turkey Mill
Maidstone
United Kingdom
ME14 5PP



4225



Attention : James Appleby
Date : 29th September, 2023
Your reference : 402.064683.00001
Our reference : Test Report 23/13757 Batch 1 23/13597 Batch 1 23/13952 Batch 1 23/14070 Batch 1
Location : Northfleet
Date samples received :
Status : Final report
Issue : 1

The greenhouse gas emissions generated (in Carbon – Co2e) to obtain the results in this report are estimated as:

Scope 1&2 emissions - 30.191 kg of CO2

Scope 1&2&3 emissions - 71.349 kg of CO2

Authorised By:



Simon Gomery BSc
Senior Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: SLR Consulting Ltd
Reference: 402.064683.00001
Location: Northfleet
Contact: James Appleby

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Job No.	23/13597	23/13597	23/13597	23/13757	23/13952	23/13952	23/13952	23/14070	23/14070	23/14070	Please see attached notes for all abbreviations and acronyms		
EMT Sample No.	1-4	13-16	20-22	7-9	5-8	13-16	29-31	1-3	7-9	10-13			
Sample ID	BH01	BH01	BH01	BH01	BH02	BH02	BH02	BH02	BH02	SKIP			
Depth	0.50	2.70	9.00	28.0	1.30	6.00	15.00	21.0	30.0				
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	14/08/2023	15/08/2023	15/08/2023	16/08/2023	22/08/2023	22/08/2023	22/08/2023	23/08/2023	23/08/2023	23/08/2023			
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clayey Sand	Sand	Clay	Clayey Sand			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units	Method No.
Date of Receipt	17/08/2023	17/08/2023	17/08/2023	19/08/2023	24/08/2023	24/08/2023	24/08/2023	25/08/2023	25/08/2023	25/08/2023			
Arsenic ^{#M}	780 ^{AA}	55	18	0.9	570 ^{AA}	15	9.9	8.0	1.5	8.9	<0.5	mg/kg	TM30/PM15
Barium ^{#M}	-	-	-	-	-	-	-	-	-	45	<1	mg/kg	TM30/PM15
Beryllium	-	-	-	-	-	-	-	-	-	<0.5	<0.5	mg/kg	TM30/PM15
Cadmium ^{#M}	3.3	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.3	<0.1	mg/kg	TM30/PM15
Chromium ^{#M}	79	60	64	9.3	110	64	74	100	7.7	120	<0.5	mg/kg	TM30/PM15
Copper ^{#M}	290 ^{AA}	10	9	5	970 ^{AA}	14	5	8	6	34	<1	mg/kg	TM30/PM15
Lead ^{#M}	4500 ^{AA}	18	18	7	52000 ^{AC}	29	7	14	33	190	<5	mg/kg	TM30/PM15
Mercury ^{#M}	1.2	0.2	0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Nickel ^{#M}	65	26	25	2.8	21	30	21	16	3.0	11	<0.7	mg/kg	TM30/PM15
Selenium ^{#M}	2	1	2	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM30/PM15
Total Sulphate as SO4 ^{#M}	-	-	-	-	-	-	-	-	-	310	<50	mg/kg	TM50/PM29
Vanadium	-	-	-	-	-	-	-	-	-	20	<1	mg/kg	TM30/PM15
Water Soluble Boron ^{#M}	-	-	-	-	-	-	-	-	-	1.6	<0.1	mg/kg	TM74/PM32
Zinc ^{#M}	1300	83	49	16	18000 ^{AB}	88	21	37	36	180	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene ^{#M}	0.14	<0.04	<0.04	<0.04	0.10	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Acenaphthene ^{#M}	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene ^{#M}	<0.04	<0.04	<0.04	<0.04	0.08	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene ^{#M}	0.54	<0.03	<0.03	<0.03	0.95	<0.03	<0.03	<0.03	<0.03	0.06	<0.03	mg/kg	TM4/PM8
Anthracene [#]	0.12	<0.04	<0.04	<0.04	0.23	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene ^{#M}	1.1	<0.03	<0.03	<0.03	1.3	<0.03	<0.03	<0.03	<0.03	0.08	<0.03	mg/kg	TM4/PM8
Pyrene [#]	0.99	<0.03	<0.03	<0.03	1.1	<0.03	<0.03	<0.03	<0.03	0.07	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene [#]	0.57	<0.06	<0.06	<0.06	0.59	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	mg/kg	TM4/PM8
Chrysene ^{#M}	0.64	<0.02	<0.02	<0.02	0.63	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene ^{#M}	1.1	<0.07	<0.07	<0.07	0.96	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene [#]	0.66	<0.04	<0.04	<0.04	0.61	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene ^{#M}	0.39	<0.04	<0.04	<0.04	0.30	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene [#]	0.09	<0.04	<0.04	<0.04	0.08	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene [#]	0.45	<0.04	<0.04	<0.04	0.33	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Coronene	-	-	-	-	-	-	-	-	-	<0.04	<0.04	mg/kg	TM4/PM8
PAH 16 Total	6.8	<0.6	<0.6	<0.6	7.3	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.79	<0.05	<0.05	<0.05	0.69	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.31	<0.02	<0.02	<0.02	0.27	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	97	94	94	98	98	99	98	97	95	98	<0	%	TM4/PM8
Methyl Tertiary Butyl Ether ^{#M}	-	-	-	<0.006	<0.006	-	<0.006	-	-	-	<0.006	mg/kg	TM15/PM10
Benzene ^{#M}	-	-	-	<0.005	<0.005	-	<0.005	-	-	-	<0.005	mg/kg	TM15/PM10
Toluene ^{#M}	-	-	-	<0.003	0.005	-	<0.003	-	-	-	<0.003	mg/kg	TM15/PM10
Ethylbenzene ^{#M}	-	-	-	<0.003	<0.003	-	<0.003	-	-	-	<0.003	mg/kg	TM15/PM10
m/p-Xylene ^{#M}	-	-	-	<0.004	<0.004	-	<0.004	-	-	-	<0.004	mg/kg	TM15/PM10
o-Xylene ^{#M}	-	-	-	<0.004	<0.004	-	<0.004	-	-	-	<0.004	mg/kg	TM15/PM10
Surrogate Recovery Toluene D8	-	-	-	97	80	-	100	-	-	-	<0	%	TM15/PM10

Element Materials Technology

Client Name: SLR Consulting Ltd
Reference: 402.064683.00001
Location: Northfleet
Contact: James Appleby

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Job No.	23/13597	23/13597	23/13597	23/13757	23/13952	23/13952	23/13952	23/14070	23/14070	23/14070	Please see attached notes for all abbreviations and acronyms		
EMT Sample No.	1-4	13-16	20-22	7-9	5-8	13-16	29-31	1-3	7-9	10-13			
Sample ID	BH01	BH01	BH01	BH01	BH02	BH02	BH02	BH02	BH02	SKIP			
Depth	0.50	2.70	9.00	28.0	1.30	6.00	15.00	21.0	30.0				
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	14/08/2023	15/08/2023	15/08/2023	16/08/2023	22/08/2023	22/08/2023	22/08/2023	23/08/2023	23/08/2023	23/08/2023			
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clayey Sand	Sand	Clay	Clayey Sand			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	17/08/2023	17/08/2023	17/08/2023	19/08/2023	24/08/2023	24/08/2023	24/08/2023	25/08/2023	25/08/2023	25/08/2023	LOD/LOR	Units	Method No.
Surrogate Recovery 4-Bromofluorobenzene	-	-	-	97	66	-	100	-	-	-	<0	%	TM15/PM10
MTBE #	<0.005 ^{SV}	<0.005	<0.005	-	-	<0.005	-	<0.005	<0.005	<0.005	<0.005	mg/kg	TM36/PM12
Benzene #	<0.005 ^{SV}	<0.005	<0.005	-	-	<0.005	-	<0.005	<0.005	<0.005	<0.005	mg/kg	TM36/PM12
Toluene #	<0.005 ^{SV}	<0.005	<0.005	-	-	<0.005	-	<0.005	<0.005	<0.005	<0.005	mg/kg	TM36/PM12
Ethylbenzene #	<0.005 ^{SV}	<0.005	<0.005	-	-	<0.005	-	<0.005	<0.005	<0.005	<0.005	mg/kg	TM36/PM12
m/p-Xylene #	<0.005 ^{SV}	<0.005	<0.005	-	-	<0.005	-	<0.005	<0.005	<0.005	<0.005	mg/kg	TM36/PM12
o-Xylene #	<0.005 ^{SV}	<0.005	<0.005	-	-	<0.005	-	<0.005	<0.005	<0.005	<0.005	mg/kg	TM36/PM12
Xylenes (sum of isomers) #	<0.01 ^{SV}	<0.01	<0.01	-	-	<0.01	-	<0.01	<0.01	<0.01	<0.01	mg/kg	TM36/PM12
EPH >C10-C25 (EH_1D_Total) #M	-	-	-	-	-	-	-	-	-	11	<10	mg/kg	TM5/PM8
EPH >C25-C40 (EH_1D_Total) #M	-	-	-	-	-	-	-	-	-	32	<10	mg/kg	TM5/PM8
EPH >C10-C40 (EH_1D_Total) #M	-	-	-	-	-	-	-	-	-	43	<20	mg/kg	TM5/PM8
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #M	<0.1 ^{SV}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #M	<0.1 ^{SV}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1 ^{SV}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #M	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #M	<4	<4	<4	<4	<4	<4	<4	<4	<4	-	<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #M	<7	<7	65	<7	<7	<7	<7	<7	<7	-	<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #M	30	<7	22	<7	<7	<7	<7	<7	<7	-	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35 (EH+HS_CU_1D_AL)	30	<19	87	<19	<19	<19	<19	<19	<19	-	<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Aromatics													
>C5-EC7 (HS_1D_AR) #	<0.1 ^{SV}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	<0.1 ^{SV}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #M	<0.1 ^{SV}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	<4	<4	<4	<4	<4	<4	<4	<4	<4	-	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	22	<7	43	<7	19	<7	<7	<7	<7	-	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	110	<7	<7	<7	<7	<7	<7	<7	<7	-	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH+HS_CU_1D_AR) #	132	<19	43	<19	19	<19	<19	<19	<19	-	<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Total aliphatics and aromatics (C5-35) (EH+HS_CU_1D_Total)	162	<38	130	<38	<38	<38	<38	<38	<38	-	<38	mg/kg	TM5/PM8/PM16/PM12/PM10
Total Phenols HPLC	-	-	-	-	-	-	-	-	-	<0.15	<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	24.9	61.0	170.2	28.4	8.9	61.2	10.1	21.7	25.2	9.6	<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Total Cyanide #M	-	-	-	-	-	-	-	-	-	<0.5	<0.5	mg/kg	TM89/PM45
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clayey Sand	Sand	Clay	Clayey Sand		None	PM13/PM0

Client Name: SLR Consulting Ltd
Reference: 402.064683.00001
Location: Northfleet
Contact: James Appleby

Solids: V=60g VOC jar. J=250g glass jar. T=plastic tub

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: SLR Consulting Ltd
Reference: 402.064683.00001
Location: Northfleet
Contact: James Appleby

Report : CEN 10:1 1 Batch

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

[illegible]

Client Name: SLR Consulting Ltd
Reference: 402.064683.00001
Location: Northfleet
Contact: James Appleby

SVOC Report : Solid

EMT Job No. EMT Sample No.	23/13757 7-9	23/13952 5-8	23/13952 29-31								Please see attached notes for all abbreviations and acronyms		
Sample ID	BH01	BH02	BH02										
Depth	28.0	1.30	15.00										
COC No / misc													
Containers	V J T	V J T	V J T										
Sample Date	16/08/2023	22/08/2023	22/08/2023										
Sample Type	Clay	Clay	Clayey Sand										
Batch Number	1	1	1								LOD/LOR	Units	Method No.
Date of Receipt	19/08/2023	24/08/2023	24/08/2023										
SVOC MS													
Phenols													
2-Chlorophenol ^{#M}	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
2-Methylphenol	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
2-Nitrophenol	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
2,4-Dichlorophenol ^{#M}	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
2,4-Dimethylphenol	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
2,4,5-Trichlorophenol	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
2,4,6-Trichlorophenol	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
4-Chloro-3-methylphenol	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
4-Methylphenol	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
4-Nitrophenol	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
Pentachlorophenol	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
Phenol ^{#M}	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
PAHs													
2-Chloronaphthalene ^{#M}	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
2-Methylnaphthalene ^{#M}	<0.01	0.10	<0.01								<0.01	mg/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	<0.1	<0.1	<0.1								<0.1	mg/kg	TM16/PM8
Butylbenzyl phthalate	<0.1	<0.1	<0.1								<0.1	mg/kg	TM16/PM8
Di-n-butyl phthalate	<0.1	<0.1	<0.1								<0.1	mg/kg	TM16/PM8
Di-n-Octyl phthalate	<0.1	<0.1	<0.1								<0.1	mg/kg	TM16/PM8
Diethyl phthalate	<0.1	<0.1	<0.1								<0.1	mg/kg	TM16/PM8
Dimethyl phthalate ^{#M}	<0.1	<0.1	<0.1								<0.1	mg/kg	TM16/PM8
Other SVOCs													
1,2-Dichlorobenzene	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
1,2,4-Trichlorobenzene ^{#M}	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
1,3-Dichlorobenzene	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
1,4-Dichlorobenzene	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
2-Nitroaniline	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
2,4-Dinitrotoluene	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
2,6-Dinitrotoluene	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
3-Nitroaniline	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
4-Bromophenylphenylether ^{#M}	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
4-Chloroaniline	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
4-Chlorophenylphenylether	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
4-Nitroaniline	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
Azobenzene	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
Bis(2-chloroethyl)ether	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
Carbazole	<0.01	0.12	<0.01								<0.01	mg/kg	TM16/PM8
Dibenzofuran ^{#M}	<0.01	0.08	<0.01								<0.01	mg/kg	TM16/PM8
Hexachlorobenzene	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
Hexachlorobutadiene ^{#M}	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
Hexachlorocyclopentadiene	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
Hexachloroethane	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
Isophorone ^{#M}	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
N-nitrosodi-n-propylamine ^{#M}	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
Nitrobenzene ^{#M}	<0.01	<0.01	<0.01								<0.01	mg/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	92	110	110								<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	78	110	100								<0	%	TM16/PM8

Element Materials Technology

Client Name: SLR Consulting Ltd
Reference: 402.064683.00001
Location: Northfleet
Contact: James Appleby

VOC Report : Solid

EMT Job No. EMT Sample No.	23/13757 7-9	23/13952 5-8	23/13952 29-31							Please see attached notes for all abbreviations and acronyms		
Sample ID	BH01	BH02	BH02									
Depth	28.0	1.30	15.00									
COC No / misc Containers	V J T	V J T	V J T									
Sample Date	16/08/2023	22/08/2023	22/08/2023									
Sample Type	Clay	Clay	Clayey Sand									
Batch Number	1	1	1									
Date of Receipt	19/08/2023	24/08/2023	24/08/2023							LOD/LOR	Units	Method No.
VOC MS												
Surrogate Recovery Toluene D8	97	80	100							<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	97	66	100							<0	%	TM15/PM10
Dichlorodifluoromethane	<0.002	<0.002	<0.002							<0.002	mg/kg	TM15/PM10
Methyl Tertiary Butyl Ether ^{#M}	<0.006	<0.006	<0.006							<0.006	mg/kg	TM15/PM10
Chloromethane [#]	<0.003	<0.003	<0.003							<0.003	mg/kg	TM15/PM10
Vinyl Chloride	<0.002	<0.002	<0.002							<0.002	mg/kg	TM15_A/PM10
Bromomethane	<0.001	<0.001	<0.001							<0.001	mg/kg	TM15/PM10
Chloroethane ^{#M}	<0.006	<0.006	<0.006							<0.006	mg/kg	TM15/PM10
Trichlorofluoromethane ^{#M}	<0.003	<0.003	<0.003							<0.003	mg/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) ^{#M}	<0.006	<0.006	<0.006							<0.006	mg/kg	TM15/PM10
Dichloromethane (DCM) [#]	<0.007	<0.007	<0.007							<0.007	mg/kg	TM15/PM10
trans-1-2-Dichloroethene [#]	<0.003	<0.003	<0.003							<0.003	mg/kg	TM15/PM10
1,1-Dichloroethane ^{#M}	<0.006	<0.006	<0.006							<0.006	mg/kg	TM15/PM10
cis-1-2-Dichloroethene ^{#M}	<0.007	<0.007	<0.007							<0.007	mg/kg	TM15/PM10
2,2-Dichloropropane	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
Bromochloromethane ^{#M}	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
Chloroform ^{#M}	<0.005	<0.005	<0.005							<0.005	mg/kg	TM15/PM10
1,1,1-Trichloroethane ^{#M}	<0.005	<0.005	<0.005							<0.005	mg/kg	TM15/PM10
1,1-Dichloropropene [#]	<0.003	<0.003	<0.003							<0.003	mg/kg	TM15/PM10
Carbon tetrachloride ^{#M}	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
1,2-Dichloroethane ^{#M}	<0.005	<0.005	<0.005							<0.005	mg/kg	TM15/PM10
Benzene ^{#M}	<0.005	<0.005	<0.005							<0.005	mg/kg	TM15/PM10
Trichloroethene (TCE) ^{#M}	<0.005	<0.005	<0.005							<0.005	mg/kg	TM15/PM10
1,2-Dichloropropane ^{#M}	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
Dibromomethane ^{#M}	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
Bromodichloromethane ^{#M}	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
cis-1-3-Dichloropropene	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
Toluene ^{#M}	<0.003	0.005	<0.003							<0.003	mg/kg	TM15/PM10
trans-1-3-Dichloropropene	<0.003	<0.003	<0.003							<0.003	mg/kg	TM15/PM10
1,1,2-Trichloroethane ^{#M}	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
Tetrachloroethene (PCE) [#]	<0.003	<0.003	<0.003							<0.003	mg/kg	TM15/PM10
1,3-Dichloropropane ^{#M}	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
Dibromochloromethane ^{#M}	<0.005	<0.005	<0.005							<0.005	mg/kg	TM15/PM10
1,2-Dibromoethane [#]	<0.003	<0.003	<0.003							<0.003	mg/kg	TM15/PM10
Chlorobenzene ^{#M}	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
1,1,1,2-Tetrachloroethane ^{#M}	<0.005	<0.005	<0.005							<0.005	mg/kg	TM15/PM10
Ethylbenzene ^{#M}	<0.003	<0.003	<0.003							<0.003	mg/kg	TM15/PM10
m/p-Xylene ^{#M}	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
o-Xylene ^{#M}	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
Styrene	<0.003	<0.003	<0.003							<0.003	mg/kg	TM15_A/PM10
Bromoform	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
Isopropylbenzene [#]	<0.003	<0.003	<0.003							<0.003	mg/kg	TM15/PM10
1,1,2,2-Tetrachloroethane ^{#M}	<0.003	<0.003	<0.003							<0.003	mg/kg	TM15/PM10
Bromobenzene	<0.002	<0.002	<0.002							<0.002	mg/kg	TM15/PM10
1,2,3-Trichloropropane ^{#M}	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
Propylbenzene [#]	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
2-Chlorotoluene	<0.003	<0.003	<0.003							<0.003	mg/kg	TM15/PM10
1,3,5-Trimethylbenzene [#]	<0.003	<0.003	<0.003							<0.003	mg/kg	TM15/PM10
4-Chlorotoluene	<0.003	<0.003	<0.003							<0.003	mg/kg	TM15/PM10
tert-Butylbenzene [#]	<0.005	<0.005	<0.005							<0.005	mg/kg	TM15/PM10
1,2,4-Trimethylbenzene [#]	<0.006	<0.006	<0.006							<0.006	mg/kg	TM15/PM10
sec-Butylbenzene [#]	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
4-Isopropyltoluene	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
1,3-Dichlorobenzene ^{#M}	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
1,4-Dichlorobenzene [#]	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
n-Butylbenzene	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
1,2-Dichlorobenzene ^{#M}	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
1,2-Dibromo-3-chloropropane	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
1,2,4-Trichlorobenzene	<0.007	<0.007	<0.007							<0.007	mg/kg	TM15/PM10
Hexachlorobutadiene	<0.004	<0.004	<0.004							<0.004	mg/kg	TM15/PM10
Naphthalene	<0.027	0.054	<0.027							<0.027	mg/kg	TM15/PM10
1,2,3-Trichlorobenzene	<0.007	<0.007	<0.007							<0.007	mg/kg	TM15/PM10

Mass of sample taken (kg)	0.1058	Moisture Content Ratio (%) =	17.8
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	84.9
Particle Size <4mm =	>95%		
EMT Job No	23/14070	Landfill Waste Acceptance Criteria Limits	
Sample No	12		
Client Sample No	SKIP		
Depth/Other			
Sample Date	23/08/2023		
Batch No	1		
Solid Waste Analysis		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill
Total Organic Carbon (%)	0.13	3	5
Loss on Ignition (%)	1.1	-	10
Sum of BTEX (mg/kg)	<0.025	6	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-
Mineral Oil (mg/kg) (EH_CU_1D_AL)	<30	500	-
PAH Sum of 17(mg/kg)	<0.64	100	-
pH (pH Units)	9.2	-	>6
ANC to pH 7 (mol/kg)	0.06	-	to be evaluated
ANC to pH 4 (mol/kg)	5.8	-	to be evaluated
Eluate Analysis	10:1 conc ⁿ leached		Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg
	C ₁₀ mg/l	A ₁₀ mg/kg	
Arsenic	0.033	0.33	0.5
Barium	0.079	0.79	2
Cadmium	<0.0005	<0.005	100
Chromium	0.0019	0.019	300
Copper	0.03	0.30	0.04
Mercury	<0.001	<0.01	1
Molybdenum	0.023	0.23	5
Nickel	0.004	0.04	0.5
Lead	0.014	0.14	10
Antimony	3.8	38	70
Selenium	0.005	0.05	2
Zinc	0.008	0.08	0.01
Chloride	380	3800	0.2
Fluoride	0.7	7	0.5
Sulphate as SO ₄	110	1100	10
Total Dissolved Solids	1000	10000	50
Phenol	<0.01	<0.1	0.06
Dissolved Organic Carbon	19	190	0.7
			5
			0.1
			4
			800
			15000
			25000
			10
			150
			500
			1000
			20000
			50000
			4000
			60000
			100000
			1
			-
			-
			500
			800
			1000

Client Name: SLR Consulting Ltd
Reference: 402.064683.00001
Location: Northfleet
Contact: James Appleby

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Asbestos sub-samples are retained for not less than 6 months from the date of analysis unless specifically requested.

The LOQ of the Asbestos Quantification is 0.001% dry fibre of dry mass of sample.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

Where trace asbestos is reported the amount of asbestos will be <0.1%.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
23/13597	1	BH01	0.50	3	Charlotte Taylor	07/09/2023	General Description (Bulk Analysis)	brown soil/stones
					Charlotte Taylor	07/09/2023	Asbestos Fibres	Fibre Bundles
					Charlotte Taylor	07/09/2023	Asbestos ACM	ACM Debris
					Charlotte Taylor	07/09/2023	Asbestos Type	Chrysotile
23/13952	1	BH02	1.30	7	Charlotte Taylor	07/09/2023	General Description (Bulk Analysis)	brown soil/stones
					Charlotte Taylor	07/09/2023	Asbestos Fibres	NAD
					Charlotte Taylor	07/09/2023	Asbestos ACM	NAD
					Charlotte Taylor	07/09/2023	Asbestos Type	NAD
23/14070	1	SKIP		13	Catherine Coles	11/09/2023	General Description (Bulk Analysis)	brown soil,stone
					Catherine Coles	11/09/2023	Asbestos Fibres	NAD
					Catherine Coles	11/09/2023	Asbestos ACM	NAD
					Catherine Coles	11/09/2023	Asbestos Type	NAD

Element Materials Technology

Notification of Deviating Samples

Client Name: SLR Consulting Ltd **Matrix : Solid**

Reference: 402.064683.00001

Location: Northfleet

Contact: James Appleby

Notification of Deviating Samples

Matrix : Solid

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

It is a requirement under ISO 17025 that we inform clients if samples are deviating i.e. outside what is expected. A deviating sample indicates that the sample 'may' be compromised but not necessarily will be compromised. The result is still accredited and our analytical reports will still show accreditation on the relevant analytes.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 23/13757 23/13597 23/13952 23/14070

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a requirement of our Accreditation Body for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x5 Dilution
AB	x10 Dilution
AC	x50 Dilution

HWOL ACRONYMS AND OPERATORS USED

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

EMT Job No: 23/13757 23/13597 23/13952 23/14070

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes

EMT Job No: 23/13757 23/13597 23/13952 23/14070

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	No
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes	Yes	AR	Yes
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes
TM17	Modified US EPA method 8270D v5:2014. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3:1990/USEPA 160.1/3 (TDS/TS: 1971) Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.			AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO ₂ generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Preparation of Soil and Marine Sediment Samples for Total Organic Carbon.	Yes		AD	Yes
TM22	Modified BS1377-3:1990 Gravimetric determination of Loss on Ignition by temperature controlled Muffle Furnace (35C-440C). On request modified ASTM D2974-00 LOI (105C-440C)	PM0	No preparation is required.	Yes		AD	Yes

EMT Job No: 23/13757 23/13597 23/13952 23/14070

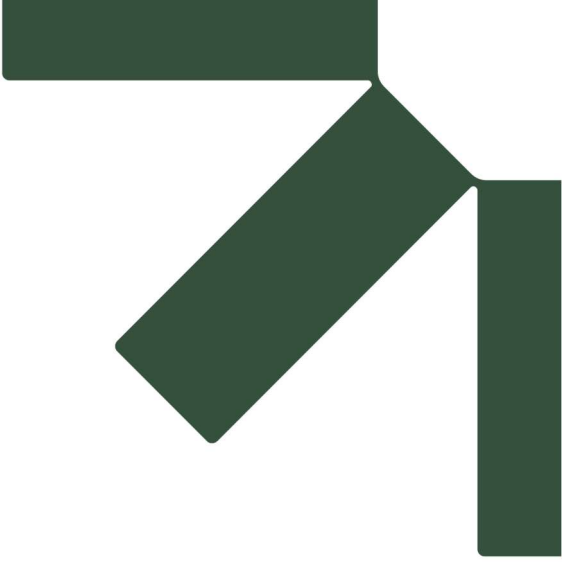
Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry); WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry); WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes	Yes	AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes	Yes	AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	A hot hydrochloric acid digest is performed on a dried and ground sample, and the resulting liquor is analysed.	Yes	Yes	AD	Yes

EMT Job No: 23/13757 23/13597 23/13952 23/14070

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060A (2002), APHA SMEWW 5310B:1999 22nd Edition, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes	Yes	AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes	Yes	AD	Yes
TM77	Modified DDCE/TS method 15364:2006. Determination of Acid Neutralization Capacity by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	No
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.	Yes	Yes	AR	Yes
TM107	Determination of Sulphide/Thiocyanate by Skalar Continuous Flow Analyser	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.			AR	Yes
TM170	Determination of Trace Metals by ICP-MS (Inductively Coupled Plasma – Mass Spectrometry): Modified USEPA Method 200.8, Rev. 5.4, 1994; Modified EPA Method 6020A, Rev.1, Feb 2007; Modified BS EN ISO 17294-2:2016	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes		AR	Yes
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 9214 - 340.2 (EPA 1998)	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes

EMT Job No: 23/13757 23/13597 23/13952 23/14070

[illegible]



Appendix E Generic Risk Assessment Summary Sheets

Ground Investigation Report

E-Scrap Sample Preparation Plant

Britannia Refined Metals Ltd

SLR Project No.: 402.064683.00001

19 October 2023

Water Quality Assessment
Lab Data Screening

	Exceeds WQS
	Exceeds LOD
BOLD	Exceeds MRV
Client Name	BRM
Site Name	Northfleet
Job Number	402.064683.00001
Date	13/10/2023
Media	Groundwater
WQS Type	Lowest Applicable WQS

Sample ID	BH23 - 01A	BH23 - 01B	BH23 - 02A
Depth	3.48	0.83	1.03
Sample Type	Ground Water	Ground Water	Ground Water
Sampled Date	20/09/2023	20/09/2023	20/09/2023
Sample Received Date	21/09/2023	21/09/2023	21/09/2023
EMT Sample No	1-3	4-6	7-9
Batch Number	1	1	1
0			

Test	Units (converted to mg/l)	LOD (mg/l)	Selected WQS Value (mg/l)	WQS Type	Lowest Applicable WQS (mg/l)	Count Exceeding WQS			
PAH MS						-			
Naphthalene	mg/l	<0.0001	0.002	EU EQS Standards (2013) - AA	0.002	0	<0.0001	<0.0001	<0.0001
Acenaphthylene	mg/l	<0.000005				0	<0.000005	<0.000005	<0.000005
Acenaphthene	mg/l	<0.000005				0	<0.000005	<0.000005	0.000013
Fluorene	mg/l	<0.000005				0	<0.000005	<0.000005	0.000007
Phenanthrene	mg/l	<0.000005				0	0.000005	<0.000005	0.000011
Anthracene	mg/l	<0.000005	0.0001	EU EQS Standards (2013) - AA	0.0001	0	<0.000005	<0.000005	<0.000005
Fluoranthene	mg/l	<0.000005	0.0000063	EU EQS Standards (2013) - AA	0.0000063	1	0.000023	<0.000005	<0.000005
Pyrene	mg/l	<0.000005				0	0.000026	0.000006	0.000007
Benzo(a)anthracene	mg/l	<0.000005				0	0.000008	<0.000005	<0.000005
Chrysene	mg/l	<0.000005				0	0.000017	<0.000005	<0.000005
Benzo(b)fluoranthene	mg/l	<0.000008	0.00003	UK EQS (WFD 2015)	0.00003	0	0.000011	<0.000008	<0.000008
Benzo(a)pyrene	mg/l	<0.000005	0.00001	UK DWS (2000)	0.00001	0	<0.000005	<0.000005	<0.000005
Indeno(123cd)pyrene	mg/l	<0.000005	0.000002	UK EQS (WFD 2015)	0.000002	0	<0.000005	<0.000005	<0.000005
Dibenzo(ah)anthracene	mg/l	<0.000005				0	<0.000005	<0.000005	<0.000005
Benzo(ghi)perylene	mg/l	<0.000005	0.000002	UK EQS (WFD 2015)	0.000002	0	<0.000005	<0.000005	<0.000005
PAH 16 Total	mg/l	<0.000173				0	<0.000173	<0.000173	<0.000173
Benzo(b)fluoranthene	mg/l	<0.000008	0.00003	UK EQS (WFD 2015)	0.00003	0	<0.000008	<0.000008	<0.000008
Benzo(k)fluoranthene	mg/l	<0.000008	0.00003	UK EQS (WFD 2015)	0.00003	0	<0.000008	<0.000008	<0.000008
PAH Surrogate % Recovery	%	<0				0	86	92	88
VOC MS						-			
Dichlorodifluoromethane	mg/l	<0.002				0	<0.002	<0.002	<0.002
Methyl Tertiary Butyl Ether	mg/l	<0.0001	0.015	Taste / odour threshold	0.015	0	<0.0001	<0.0001	<0.0001
Chloromethane	mg/l	<0.003				0	<0.003	<0.003	<0.003
Vinyl Chloride	mg/l	<0.0001	0.0005	UK DWS (2000)	0.0005	0	<0.0001	<0.0001	<0.0001
Bromomethane	mg/l	<0.001				0	<0.001	<0.001	<0.001
Chloroethane	mg/l	<0.003				0	<0.003	<0.003	<0.003
Trichlorofluoromethane	mg/l	<0.003				0	<0.003	<0.003	<0.003
1,1-Dichloroethene	mg/l	<0.003	0.03	WHO DWS (2004)	0.03	0	<0.003	<0.003	<0.003
Dichloromethane	mg/l	<0.003	0.02	WHO DWS (2011)	0.02	0	<0.003	<0.003	<0.003
Trans-1-2-Dichloroethene	mg/l	<0.003	0.05	WHO DWS (2011)	0.05	0	<0.003	<0.003	<0.003
1,1-Dichloroethane	mg/l	<0.003				0	<0.003	<0.003	<0.003
Cis-1-2-Dichloroethene	mg/l	<0.003	0.05	-	0.05	0	<0.003	<0.003	<0.003
2,2-Dichloropropane	mg/l	<0.001				0	<0.001	<0.001	<0.001
Bromochloromethane	mg/l	<0.002				0	<0.002	<0.002	<0.002
Chloroform	mg/l	<0.002	0.0025	UK EQS (WFD 2015)	0.0025	0	<0.002	<0.002	<0.002
1,1,1-Trichloroethane	mg/l	<0.002	0.1	UK EQS (WFD 2015)	0.1	0	<0.002	<0.002	<0.002
1,1-Dichloropropene	mg/l	<0.003				0	<0.003	<0.003	<0.003
Carbon Tetrachloride	mg/l	<0.002	0.003	UK DWS (2000)	0.003	0	<0.002	<0.002	<0.002
1,2-Dichloroethane	mg/l	<0.002	0.003	UK DWS (2000)	0.003	0	<0.002	<0.002	<0.002
Benzene	mg/l	<0.0005	0.001	UK DWS (2000)	0.001	0	<0.0005	<0.0005	<0.0005
Trichloroethene	mg/l	<0.003	0.01	UK DWS (2000)	0.01	0	<0.003	<0.003	<0.003
1,2-Dichloropropane	mg/l	<0.002	0.04	WHO DWS (2011)	0.04	0	<0.002	<0.002	<0.002
Dibromomethane	mg/l	<0.003				0	<0.003	<0.003	<0.003
Bromodichloromethane	mg/l	<0.002	0.06	WHO DWS (2004)	0.06	0	<0.002	<0.002	<0.002
Cis-1-3-Dichloropropene	mg/l	<0.002				0	<0.002	<0.002	<0.002
Toluene	mg/l	<0.005	0.05	UK EQS (WFD 2015)	0.05	0	<0.005	<0.005	<0.005
Trans-1-3-Dichloropropene	mg/l	<0.002				0	<0.002	<0.002	<0.002
1,1,2-Trichloroethane	mg/l	<0.002	0.005	USEPA MCL (2012)	0.005	0	<0.002	<0.002	<0.002
Tetrachloroethene	mg/l	<0.003	0.01	UK DWS (2000)	0.01	0	<0.003	<0.003	<0.003
1,3-Dichloropropane	mg/l	<0.002				0	<0.002	<0.002	<0.002
Dibromochloromethane	mg/l	<0.002	0.1	WHO DWS (2004)	0.1	0	<0.002	<0.002	<0.002
1,2-Dibromoethane	mg/l	<0.002	0.0004	EU Guideline DWS (Annex 3, 2008)	0.0004	0	<0.002	<0.002	<0.002
Chlorobenzene	mg/l	<0.002				0	<0.002	<0.002	<0.002
1,1,1,2-Tetrachloroethane	mg/l	<0.002				0	<0.002	<0.002	<0.002
Ethylbenzene	mg/l	<0.001	0.02	Proposed EQS	0.02	0	<0.001	<0.001	<0.001
m/p-Xylene	mg/l	<0.002	0.03	UK EQS (WFD 2015)	0.03	0	<0.002	<0.002	<0.002
o-Xylene	mg/l	<0.001	0.03	UK EQS (WFD 2015)	0.03	0	<0.001	<0.001	<0.001
Styrene	mg/l	<0.002	0.02	WHO DWS (2011)	0.02	0	<0.002	<0.002	<0.002
Bromoform	mg/l	<0.002	0.1	WHO DWS (2011)	0.1	0	<0.002	<0.002	<0.002
Isopropylbenzene	mg/l	<0.003				0	<0.003	<0.003	<0.003
1,1,2,2-Tetrachloroethane	mg/l	<0.004				0	<0.004	<0.004	<0.004
Bromobenzene	mg/l	<0.002				0	<0.002	<0.002	<0.002
1,2,3-Trichloropropane	mg/l	<0.003				0	<0.003	<0.003	<0.003
Propylbenzene	mg/l	<0.003				0	<0.003	<0.003	<0.003
2-Chlorotoluene	mg/l	<0.003				0	<0.003	<0.003	<0.003
1,3,5-Trimethylbenzene	mg/l	<0.003				0	<0.003	<0.003	<0.003
4-Chlorotoluene	mg/l	<0.003				0	<0.003	<0.003	<0.003
Tert-Butylbenzene	mg/l	<0.003				0	<0.003	<0.003	<0.003
1,2,4-Trimethylbenzene	mg/l	<0.003				0	<0.003	<0.003	<0.003
Sec-Butylbenzene	mg/l	<0.003				0	<0.003	<0.003	<0.003
4-Isopropyltoluene	mg/l	<0.003				0	<0.003	<0.003	<0.003
1,3-Dichlorobenzene	mg/l	<0.003				0	<0.003	<0.003	<0.003
1,4-Dichlorobenzene	mg/l	<0.003	0.3	WHO DWS (2011)	0.3	0	<0.003	<0.003	<0.003
n-Butylbenzene	mg/l	<0.003				0	<0.003	<0.003	<0.003
1,2-Dichlorobenzene	mg/l	<0.003	1	WHO DWS (2011)	1	0	<0.003	<0.003	<0.003
1,2-Dibromo-3-Chloropropane	mg/l	<0.002	0.001	EU Guideline DWS (Annex 3, 2008)	0.001	0	<0.002	<0.002	<0.002
1,2,4-Trichlorobenzene	mg/l	<0.003				0	<0.003	<0.003	<0.003
Hexachlorobutadiene	mg/l	<0.003	0.0001	UK EQS (WFD 2015)	0.0001	0	<0.003	<0.003	<0.003
Naphthalene	mg/l	<0.002	0.002	EU EQS Standards (2013) - AA	0.002	0	<0.002	<0.002	<0.002
1,2,3-Trichlorobenzene	mg/l	<0.003				0	<0.003	<0.003	<0.003
Surrogate Recovery Toluene D8	%	<0				-	96	96	100
Surrogate Recovery 4-Bromofluorobenzene	%	<0				-	120	110	110
Methyl Tertiary Butyl Ether	mg/l	<0.0001	0.015	Taste / odour threshold	0.015	0	<0.0001	<0.0001	<0.0001
Benzene	mg/l	<0.0005	0.001	UK DWS (2000)	0.001	0	<0.0005	<0.0005	<0.0005
Toluene	mg/l	<0.005	0.05	UK EQS (WFD 2015)	0.05	0	<0.005	<0.005	<0.005

Water Quality Assessment
Lab Data Screening

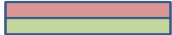
	Exceeds WQS
	Exceeds LOD
BOLD	Exceeds MRV
Client Name	BRM
Site Name	Northfleet
Job Number	402.064683.00001
Date	13/10/2023
Media	Groundwater
WQS Type	Lowest Applicable WQS

Sample ID	BH23 - 01A	BH23 - 01B	BH23 - 02A
Depth	3.48	0.83	1.03
Sample Type	Ground Water	Ground Water	Ground Water
Sampled Date	20/09/2023	20/09/2023	20/09/2023
Sample Received Date	21/09/2023	21/09/2023	21/09/2023
EMT Sample No	1-3	4-6	7-9
Batch Number	1	1	1
0			

Test	Units (converted to mg/l)	LOD (mg/l)	Selected WQS Value (mg/l)	WQS Type	Lowest Applicable WQS (mg/l)	Count Exceeding WQS			
Ethylbenzene	mg/l	<0.001	0.02	Proposed EQS	0.02	0	<0.001	<0.001	<0.001
m/p-Xylene	mg/l	<0.002	0.03	UK EQS (WFD 2015)	0.03	0	<0.002	<0.002	<0.002
o-Xylene	mg/l	<0.001	0.03	UK EQS (WFD 2015)	0.03	0	<0.001	<0.001	<0.001
Total Xylenes	mg/l	<0.003	0.03	UK EQS (WFD 2015)	0.03	0	<0.003	<0.003	<0.003
Surrogate Recovery Toluene D8	%	<0				-	96	96	100
Surrogate Recovery 4-Bromofluorobenzene	%	<0				-	120	110	110
TPH CWG						-			
Aliphatics						-			
Aliphatics >C5-C6	mg/l	<0.01	0.01	UK DWS (1991)	0.01	0	<0.01	<0.01	<0.01
Aliphatics >C6-C8	mg/l	<0.01	0.01	UK DWS (1991)	0.01	0	<0.01	<0.01	<0.01
Aliphatics >C8-C10	mg/l	<0.01	0.01	UK DWS (1991)	0.01	0	<0.01	<0.01	<0.01
Aliphatics >C10-C12	mg/l	<0.005	0.01	UK DWS (1991)	0.01	0	<0.005	<0.005	<0.005
Aliphatics >C12-C16	mg/l	<0.01	0.01	UK DWS (1991)	0.01	0	<0.01	<0.01	<0.01
Aliphatics >C16-C21	mg/l	<0.01	0.01	UK DWS (1991)	0.01	0	<0.01	<0.01	<0.01
Aliphatics >C21-C35	mg/l	<0.01	0.01	UK DWS (1991)	0.01	0	<0.01	<0.01	<0.01
Total aliphatics C5-35	mg/l	<0.01				0	<0.01	<0.01	<0.01
Aromatics						-			
Aromatics >EC5-EC7	mg/l	<0.01	0.01	UK DWS (1991)	0.01	0	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	mg/l	<0.01	0.01	UK DWS (1991)	0.01	0	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	mg/l	<0.01	0.01	UK DWS (1991)	0.01	0	<0.01	<0.01	<0.01
Aromatics >EC10-EC12	mg/l	<0.005	0.01	UK DWS (1991)	0.01	0	<0.005	<0.005	<0.005
Aromatics >EC12-EC16	mg/l	<0.01	0.01	UK DWS (1991)	0.01	0	<0.01	<0.01	<0.01
Aromatics >EC16-EC21	mg/l	<0.01	0.01	UK DWS (1991)	0.01	0	<0.01	<0.01	<0.01
Aromatics >EC21-EC35	mg/l	<0.01	0.01	UK DWS (1991)	0.01	0	<0.01	<0.01	<0.01
Total aromatics C5-35	mg/l	<0.01				0	<0.01	<0.01	<0.01
Total aliphatics and aromatics(C5-35)	mg/l	<0.01					<0.01	<0.01	<0.01
pH	pH units	<0.01				0	7.5	7.7	7.7
Dissolved Arsenic	mg/l	<0.0009	0.01	UK DWS (2000)	0.01	0	<0.0009	0.0091	0.0083
Dissolved Cadmium	mg/l	<0.00003	0.00025	UK EQS (WFD 2015) (>200mg/l CaCO3)	0.00025	0	<0.00003	<0.00003	<0.00003
Total Dissolved Chromium	mg/l	<0.0002	0.0047	UK EQS (WFD 2015)	0.0047	0	<0.0002	<0.0002	<0.0002
Dissolved Copper	mg/l	<0.001	0.028	UK EQS (WFD 2015) (>250mg/l CaCO3)	0.028	0	<0.003	<0.001	<0.001
Dissolved Lead	mg/l	<0.0004	0.0012	EU EQS Standards (2013) - AA	0.0012	2	<0.0004	0.0041	0.0019
Dissolved Mercury	mg/l	<0.0005	0.00005	UK EQS (WFD 2015)	0.00005	0	<0.0005	<0.0005	<0.0005
Dissolved Nickel	mg/l	<0.0002	0.004	EU EQS Standards (2013) - AA	0.004	2	0.0019	0.01	0.0042
Dissolved Selenium	mg/l	<0.0012	0.01	UK DWS (2000)	0.01	0	<0.0012	<0.0012	<0.0012
Dissolved Zinc	mg/l	<0.0015	0.125	UK EQS (WFD 2015) (>250mg/l CaCO3)	0.125	0	0.02	0.0065	0.0072
Hexavalent Chromium	mg/l	<0.002	0.0034	UK EQS (WFD 2015)	0.0034	0	<0.002	<0.002	<0.002

Generic Risk Assessment - Soils
Lab Data Screening

SLR



Exceeds GAC
Exceeds LOD

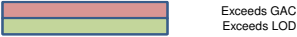
Client Name	BRM Ltd
Site Name	Northfleet
Job Number	402.06483.00001
Date	29/09/2023
Description of Data Assessment / Zoning	Zone X
Selected Screening Value and Land Use	S4UL - Commercial / Industrial

Sample ID	BH01	BH01	BH01	BH01	BH02	BH02	BH02	BH02	BH02
Depth	0.5	2.7	9.00	28	1.3	6	15	21	30
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clayey Sand	Sand	Clay
Sample Date	23/08/14	23/08/15	23/08/15	23/08/16	23/08/22	23/08/22	23/08/22	23/08/23	23/08/23
Sample Received Date	23/08/17	23/08/17	23/08/17	23/08/19	23/08/24	23/08/24	23/08/24	23/08/25	23/08/25
EMT Sample No	1-4	13-16	20-22	7-9	5-8	13-16	29-31	1-3	7-9
Batch Number	1	1	1	1	1	1	1	1	1
EMT Job No	23/13597	23/13597	23/13597	23/13757	23/13952	23/13952	23/13952	23/14070	23/14070
Strata / Zone	Zone X	Zone X	Zone X	Zone X	Zone X	Zone X	Zone X	Zone X	Zone X

Test	Units	LOD	Selected GAC	No. Above GAC	-	-	-	-	-	-	-	-	-
Arsenic	mg/kg	<0.5	640	1	780	55	18	0.9	570	15	9.9	8	1.5
Barium	mg/kg	<1	ND	0	-	-	-	-	-	-	-	-	-
beryllium	mg/kg	<0.5	12	0	-	-	-	-	-	-	-	-	-
Cadmium	mg/kg	<0.1	190	0	3.3	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.2
Chromium	mg/kg	<0.5	8600	0	79	60	64	9.3	110	64	74	100	7.7
Copper	mg/kg	<1	68000	0	290	10	9	5	970	14	5	8	6
Lead	mg/kg	<5	2330	2	4500	18	18	7	52000	29	7	14	33
Mercury	mg/kg	<0.1	1100	0	1.2	0.2	0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	<0.7	980	0	65	26	25	2.8	21	30	21	16	3
Selenium	mg/kg	<1	12000	0	2	1	2	<1	<1	<1	<1	<1	<1
Sulphate	mg/kg	<50	-	-	-	-	-	-	-	-	-	-	-
vanadium	mg/kg	<1	9000	0	-	-	-	-	-	-	-	-	-
Water Soluble Boron	mg/kg	<0.1	-	-	-	-	-	-	-	-	-	-	-
Zinc	mg/kg	<5	730000	0	1300	83	49	16	18000	88	21	37	36
PAH MS					-	-	-	-	-	-	-	-	-
Naphthalene	mg/kg	<0.04	190	0	0.14	<0.04	<0.04	<0.04	0.1	<0.04	<0.04	<0.04	<0.04
Acenaphthylene	mg/ka	<0.03	83000	0	0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Acenaphthene	mg/ka	<0.05	84000	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	mg/kg	<0.04	63000	0	<0.04	<0.04	<0.04	<0.04	0.08	<0.04	<0.04	<0.04	<0.04
Phenanthrene	mg/kg	<0.03	22000	0	0.54	<0.03	<0.03	<0.03	0.95	<0.03	<0.03	<0.03	<0.03
Anthracene	mg/kg	<0.04	520000	0	0.12	<0.04	<0.04	<0.04	0.23	<0.04	<0.04	<0.04	<0.04
Fluoranthene	mg/kg	<0.03	23000	0	1.1	<0.03	<0.03	<0.03	1.3	<0.03	<0.03	<0.03	<0.03
Pyrene	mg/kg	<0.03	54000	0	0.99	<0.03	<0.03	<0.03	1.1	<0.03	<0.03	<0.03	<0.03
Benzo(a)anthracene	mg/kg	<0.06	170	0	0.57	<0.06	<0.06	<0.06	0.59	<0.06	<0.06	<0.06	<0.06
Chrysene	mg/ka	<0.02	350	0	0.64	<0.02	<0.02	<0.02	0.63	<0.02	<0.02	<0.02	<0.02
Benzo(b)fluoranthene	mg/kg	<0.07	-	-	1.1	<0.07	<0.07	<0.07	0.96	<0.07	<0.07	<0.07	<0.07
Benzo(a)pyrene	mg/kg	<0.04	35	0	0.66	<0.04	<0.04	<0.04	0.61	<0.04	<0.04	<0.04	<0.04
Indeno(123cd)pyrene	mg/kg	<0.04	500	0	0.39	<0.04	<0.04	<0.04	0.3	<0.04	<0.04	<0.04	<0.04
Dibenzo(ah)anthracene	mg/kg	<0.04	3.5	0	0.09	<0.04	<0.04	<0.04	0.08	<0.04	<0.04	<0.04	<0.04
Benzo(ghi)perylene	mg/kg	<0.04	3900	0	0.45	<0.04	<0.04	<0.04	0.33	<0.04	<0.04	<0.04	<0.04
Coronene	mg/kg	<0.04	-	-	-	-	-	-	-	-	-	-	-
PAH 16 Total	mg/ka	<0.6	-	-	6.8	<0.6	<0.6	<0.6	7.3	<0.6	<0.6	<0.6	<0.6
Benzo(b)fluoranthene	mg/kg	<0.05	44	0	0.79	<0.05	<0.05	<0.05	0.69	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	mg/kg	<0.02	1200	0	0.31	<0.02	<0.02	<0.02	0.27	<0.02	<0.02	<0.02	<0.02
PAH Surrogate % Recovery	%	<0	-	-	97	94	94	98	98	99	98	97	95
VOC MS					-	-	-	-	-	-	-	-	-
Surrogate Recovery Toluene D8	%	<0	-	-	-	-	-	97	80	-	100	-	-
Surrogate Recovery 4-Bromofluorobenzene	%	<0	-	-	-	-	-	97	66	-	100	-	-
Methyl Tertiary Butyl Ether	mg/kg	<0.006	ND	0	-	-	-	<0.006	<0.006	-	<0.006	-	-
Benzene	mg/kg	<0.005	27	0	-	-	-	<0.005	<0.005	-	<0.005	-	-
Toluene	mg/ka	<0.003	56000	0	-	-	-	<0.003	0.005	-	<0.003	-	-
Ethylbenzene	mg/kg	<0.003	5700	0	-	-	-	<0.003	<0.003	-	<0.003	-	-
m & p Xylene	mg/ka	<0.004	5900	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
o-Xylene	mg/ka	<0.004	6600	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
Surrogate Recovery Toluene D8	%	<0	-	-	-	-	-	97	80	-	100	-	-
Surrogate Recovery 4-Bromofluorobenzene	%	<0	-	-	-	-	-	97	66	-	100	-	-
Methyl Tertiary Butyl Ether	mg/kg	<0.005	ND	0	<0.005	<0.005	<0.005	-	-	<0.005	-	<0.005	<0.005
Benzene	mg/kg	<0.005	27	0	<0.005	<0.005	<0.005	-	-	<0.005	-	<0.005	<0.005
Toluene	mg/kg	<0.005	56000	0	<0.005	<0.005	<0.005	-	-	<0.005	-	<0.005	<0.005
Ethylbenzene	mg/ka	<0.005	5700	0	<0.005	<0.005	<0.005	-	-	<0.005	-	<0.005	<0.005
m & p Xylene	mg/kg	<0.005	5900	0	<0.005	<0.005	<0.005	-	-	<0.005	-	<0.005	<0.005
o-Xylene	mg/kg	<0.005	6600	0	<0.005	<0.005	<0.005	-	-	<0.005	-	<0.005	<0.005
Total Xylenes	mg/kg	<0.01	-	-	<0.01	<0.01	<0.01	-	-	<0.01	-	<0.01	<0.01
SVOC MS					-	-	-	-	-	-	-	-	-
Phenols				0	-	-	-	-	-	-	-	-	-
2-Chlorophenol	mg/kg	<0.01	-	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
2-Methylphenol	mg/kg	<0.01	-	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
2-Nitrophenol	mg/kg	<0.01	-	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
2,4-Dichlorophenol	mg/kg	<0.01	-	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
2,4-Dimethylphenol	mg/kg	<0.01	ND	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
2,4,5-Trichlorophenol	mg/kg	<0.01	-	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
2,4,6-Trichlorophenol	mg/kg	<0.01	-	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
4-Chloro-3-methylphenol	mg/kg	<0.01	-	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
4-Methylphenol	mg/kg	<0.01	-	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
4-Nitrophenol	mg/kg	<0.01	-	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
Pentachlorophenol	mg/kg	<0.01	400	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
Phenols	mg/kg	<0.01	-	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
PAHs					-	-	-	-	-	-	-	-	-
2-Chloronaphthalene	mg/kg	<0.01	ND	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
2-Methylnaphthalene	mg/kg	<0.01	-	0	-	-	-	<0.01	0.1	-	<0.01	-	-
Phthalates				0	-	-	-	-	-	-	-	-	-
Bis(2-ethylhexyl) phthalate	mg/kg	<0.1	-	-	-	-	-	<0.1	<0.1	-	<0.1	-	-
Butylbenzyl phthalate	mg/kg	<0.1	ND	0	-	-	-	<0.1	<0.1	-	<0.1	-	-
Di-n-butyl phthalate	mg/kg	<0.1	ND	0	-	-	-	<0.1	<0.1	-	<0.1	-	-
Di-n-octyl Phthalate	mg/kg	<0.1	ND	0	-	-	-	<0.1	<0.1	-	<0.1	-	-
Diethyl Phthalate	mg/kg	<0.1	ND	0	-	-	-	<0.1	<0.1	-	<0.1	-	-
Dimethyl Phthalate	mg/kg	<0.1	-	0	-	-	-	<0.1	<0.1	-	<0.1	-	-
Other SVOCs					-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	<0.01	2000	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
1,2,4-Trichlorobenzene	mg/kg	<0.01	220	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
1,3-Dichlorobenzene	mg/kg	<0.01	30	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
1,4-Dichlorobenzene	mg/kg	<0.01	4400	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
2-Nitroaniline	mg/kg	<0.01	-	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
2,4-Dinitrotoluene	mg/kg	<0.01	ND	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
2,6-Dinitrotoluene	mg/kg	<0.01	ND	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
3-Nitroaniline	mg/kg	<0.01	-	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
4-Bromophenylphenylether	mg/kg	<0.01	-	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
4-Chloroaniline	mg/kg	<0.01	-	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
4-Chlorophenylphenylether	mg/kg	<0.01	-	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
4-Nitroaniline	mg/kg	<0.01	-	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
Azobenzene	mg/kg	<0.01	-	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
Bis(2-chloroethoxy) methane	mg/kg	<0.01	-	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
Bis(2-chloroethyl)ether	mg/kg	<0.01	-	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
Carbazole	mg/kg	<0.01	-	0	-	-	-	<0.01	0.12	-	<0.01	-	-
Dibenzofuran	mg/kg	<0.01	-	0	-	-	-	<0.01	0.08	-	<0.01	-	-
Hexachlorobenzene	mg/kg	<0.01	110	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
Hexachlorobutadiene	mg/kg	<0.01	-	0	-	-	-	<0.01	<0.01	-	<0.01	-	-
Hexachlorocyclopentadiene	mg/kg	<0.01	-										

Generic Risk Assessment - Soils
Lab Data Screening

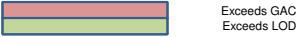
SLR



Client Name	BRM Ltd
Site Name	Northfleet
Job Number	402.06483.00001
Date	29/09/2023
Description of Data Assessment / Zoning	Zone X
Selected Screening Value and Land Use	S4UL - Commercial / Industrial

Sample ID	BH01	BH01	BH01	BH01	BH02	BH02	BH02	BH02	BH02
Depth	0.5	2.7	9.00	28	1.3	6	15	21	30
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clayey Sand	Sand	Clay
Sample Date	23/08/14	23/08/15	23/08/15	23/08/16	23/08/22	23/08/22	23/08/22	23/08/23	23/08/23
Sample Received Date	23/08/17	23/08/17	23/08/17	23/08/19	23/08/24	23/08/24	23/08/24	23/08/25	23/08/25
EMT Sample No	1-4	13-16	20-22	7-9	5-8	13-16	29-31	1-3	7-9
Batch Number	1	1	1	1	1	1	1	1	1
EMT Job No	23/13597	23/13597	23/13597	23/13757	23/13952	23/13952	23/13952	23/14070	23/14070
Strata / Zone	Zone X	Zone X	Zone X	Zone X	Zone X	Zone X	Zone X	Zone X	Zone X

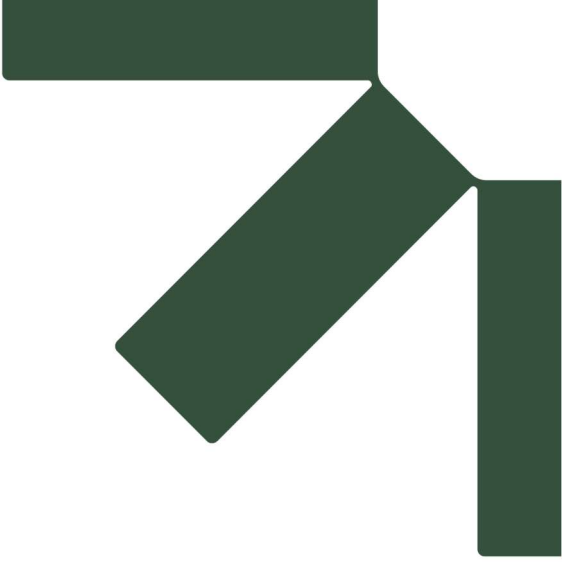
Aliphatics >C6-C7	mg/kg	<0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aliphatics >C8-C10	mg/kg	<0.1	2000	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aliphatics >C10-C12	mg/kg	<0.2	9700	0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Aliphatics >C12-C16	mg/kg	<4	59000	0	<4	<4	<4	<4	<4	<4	<4	<4	<4
Aliphatics >C16-C21	mg/kg	<7	-	0	<7	<7	65	<7	<7	<7	<7	<7	<7
Aliphatics >C21-C40	mg/kg	<7			30	<7	22	<7	<7	<7	<7	<7	<7
Total Aliphatics >C5 - C35	mg/kg	<19			30	<19	87	<19	<19	<19	<19	<19	<19
Aromatics					-	-	-	-	-	-	-	-	-
Aromatics >EC5-EC7	mg/kg	<0.1	26000	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aromatics >EC7-EC8	mg/kg	<0.1	56000	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aromatics >EC8-EC10	mg/kg	<0.1	3500	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aromatics >EC10-EC12	mg/kg	<0.2	16000	0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Aromatics >EC12-EC16	mg/kg	<4	36000	0	<4	<4	<4	<4	<4	<4	<4	<4	<4
Aromatics >EC16-EC21	mg/kg	<7	28000	0	22	<7	43	<7	19	<7	<7	<7	<7
Aromatics >EC21-EC35	mg/kg	<7	28000	0	110	<7	<7	<7	<7	<7	<7	<7	<7
Aromatics >EC5-EC35	mg/kg	<19			132	<19	43	<19	19	<19	<19	<19	<19
Total aliphatics and aromatics(C5-35)	mg/kg	<38			162	<38	130	<38	<38	<38	<38	<38	<38
Total Phenols HPLC	mg/kg	<0.15			-	-	-	-	-	-	-	-	-
Natural Moisture Content	%	<0.1			24.9	61	170.2	28.4	8.9	61.2	10.1	21.7	25.2
Moisture Content 105C (% Dry Weight)	%	<0.1			-	-	-	-	-	-	-	-	-
Dry Matter Content Ratio 105°C	%	<0.1			-	-	-	-	-	-	-	-	-
Hexavalent Chromium	mg/kg	<0.3	33	0	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total Cyanide	mg/kg	<0.5	-	0	-	-	-	-	-	-	-	-	-
Sample Type	None				Clay	Clay	Clay	Clay	Clay	Clay	Clayey Sand	Sand	Clay
Sample Colour	None				Dark Brown	Dark Brown	Dark Brown	White	Dark Brown	Dark Brown	Medium Brown	Medium Brown	White
Other Items	None				stones, sand, brik	none	none	chalk	stones	stones	stones	stones	stones, chalk
PAH MS					-	-	-	-	-	-	-	-	-
PAH 17 Total	mg/kg	<0.64			-	-	-	-	-	-	-	-	-
VOC MS					-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	mg/kg	<0.002	-	0	-	-	-	<0.002	<0.002	-	<0.002	-	-
Methyl Tertiary Butyl Ether	mg/kg	<0.006	ND	0	-	-	-	<0.006	<0.006	-	<0.006	-	-
Chloromethane	mg/kg	<0.003	ND	0	-	-	-	<0.003	<0.003	-	<0.003	-	-
Vinyl Chloride	mg/kg	<0.002	0.059	0	-	-	-	<0.002	<0.002	-	<0.002	-	-
Bromomethane	mg/kg	<0.001		0	-	-	-	<0.001	<0.001	-	<0.001	-	-
Chloroethane	mg/kg	<0.006	ND	0	-	-	-	<0.006	<0.006	-	<0.006	-	-
Trichlorofluoromethane	mg/kg	<0.003	-	0	-	-	-	<0.003	<0.003	-	<0.003	-	-
1,1-Dichloroethene	mg/kg	<0.006	ND	0	-	-	-	<0.006	<0.006	-	<0.006	-	-
Dichloromethane	mg/kg	<0.007	ND	0	-	-	-	<0.007	<0.007	-	<0.007	-	-
Trans-1,2-Dichloroethene	mg/kg	<0.003	-	0	-	-	-	<0.003	<0.003	-	<0.003	-	-
1,1-Dichloroethane	mg/kg	<0.006	ND	0	-	-	-	<0.006	<0.006	-	<0.006	-	-
cis-1,2-dichloroethene	mg/kg	<0.007	ND	0	-	-	-	<0.007	<0.007	-	<0.007	-	-
2,2-Dichloropropane	mg/kg	<0.004	-	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
Bromochloromethane	mg/kg	<0.004			-	-	-	<0.004	<0.004	-	<0.004	-	-
Chloroform	mg/kg	<0.005			-	-	-	<0.005	<0.005	-	<0.005	-	-
1,1,1-Trichloroethane	mg/kg	<0.005	660	0	-	-	-	<0.005	<0.005	-	<0.005	-	-
1,1-Dichloropropene	mg/kg	<0.003	-	0	-	-	-	<0.003	<0.003	-	<0.003	-	-
Carbon Tetrachloride	mg/kg	<0.004	2.9	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
1,2-Dichloroethane	mg/kg	<0.005	0.67	0	-	-	-	<0.005	<0.005	-	<0.005	-	-
Benzene	mg/kg	<0.005	27	0	-	-	-	<0.005	<0.005	-	<0.005	-	-
Trichloroethene	mg/kg	<0.005	1.2	0	-	-	-	<0.005	<0.005	-	<0.005	-	-
1,2-Dichloropropane	mg/kg	<0.004	ND	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
Dibromomethane	mg/kg	<0.004	-	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
Bromodichloromethane	mg/kg	<0.004	ND	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
Cis-1-3-Dichloropropene	mg/kg	<0.004		0	-	-	-	<0.004	<0.004	-	<0.004	-	-
Toluene	mg/kg	<0.003	56000	0	-	-	-	<0.003	0.005	-	<0.003	-	-



Client Name	BRM Ltd
Site Name	Northfleet
Job Number	402.06483.00001
Date	29/09/2023
Description of Data Assessment / Zoning	Zone X
Selected Screening Value and Land Use	S4UL - Commercial / Industrial

Sample ID	BH01	BH01	BH01	BH01	BH02	BH02	BH02	BH02	BH02
Depth	0.5	2.7	9.00	28	1.3	6	15	21	30
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clayey Sand	Sand	Clay
Sample Date	23/08/14	23/08/15	23/08/15	23/08/16	23/08/22	23/08/22	23/08/22	23/08/23	23/08/23
Sample Received Date	23/08/17	23/08/17	23/08/17	23/08/19	23/08/24	23/08/24	23/08/24	23/08/25	23/08/25
EMT Sample No	1-4	13-16	20-22	7-9	5-8	13-16	29-31	1-3	7-9
Batch Number	1	1	1	1	1	1	1	1	1
EMT Job No	23/13597	23/13597	23/13597	23/13757	23/13952	23/13952	23/13952	23/14070	23/14070
Strata / Zone	Zone X	Zone X	Zone X	Zone X	Zone X	Zone X	Zone X	Zone X	Zone X

Trans-1,3-Dichloropropene	mg/kg	<0.003	-	0	-	-	-	<0.003	<0.003	-	<0.003	-	-
1,1,2-Trichloroethane	mg/kg	<0.004	-	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
Tetrachloroethene	mg/kg	<0.003	19	0	-	-	-	<0.003	<0.003	-	<0.003	-	-
1,3-Dichloropropane	mg/kg	<0.004	-	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
Dibromochloromethane	mg/kg	<0.005	-	0	-	-	-	<0.005	<0.005	-	<0.005	-	-
1,2-Dibromoethane	mg/kg	<0.003	-	0	-	-	-	<0.003	<0.003	-	<0.003	-	-
Chlorobenzene	mg/kg	<0.004	56	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
1,1,1,2-Tetrachloroethane	mg/kg	<0.005	110	0	-	-	-	<0.005	<0.005	-	<0.005	-	-
Ethylbenzene	mg/kg	<0.003	5700	0	-	-	-	<0.003	<0.003	-	<0.003	-	-
m & p Xylene	mg/kg	<0.004	5900	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
o-Xylene	mg/kg	<0.004	6600	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
Styrene	mg/kg	<0.003	ND	0	-	-	-	<0.003	<0.003	-	<0.003	-	-
Bromoform	mg/kg	<0.004	ND	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
Isopropylbenzene	mg/kg	<0.003	ND	0	-	-	-	<0.003	<0.003	-	<0.003	-	-
1,1,2,2-Tetrachloroethane	mg/kg	<0.003	270	0	-	-	-	<0.003	<0.003	-	<0.003	-	-
Bromobenzene	mg/kg	<0.002	ND	0	-	-	-	<0.002	<0.002	-	<0.002	-	-
1,2,3-Trichloropropane	mg/kg	<0.004	-	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
Propylbenzene	mg/kg	<0.004	ND	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
2-Chlorotoluene	mg/kg	<0.003	-	0	-	-	-	<0.003	<0.003	-	<0.003	-	-
1,3,5-Trimethylbenzene	mg/kg	<0.003	-	0	-	-	-	<0.003	<0.003	-	<0.003	-	-
4-Chlorotoluene	mg/kg	<0.003	-	0	-	-	-	<0.003	<0.003	-	<0.003	-	-
Tert-Butylbenzene	mg/kg	<0.005	-	0	-	-	-	<0.005	<0.005	-	<0.005	-	-
1,2,4-Trimethylbenzene	mg/kg	<0.006	ND	0	-	-	-	<0.006	<0.006	-	<0.006	-	-
Sec-Butylbenzene	mg/kg	<0.004	-	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
4-Isopropyltoluene	mg/kg	<0.004	-	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
1,3-Dichlorobenzene	mg/kg	<0.004	30	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
1,4-Dichlorobenzene	mg/kg	<0.004	4400	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
n-Butylbenzene	mg/kg	<0.004	-	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
1,2-Dichlorobenzene	mg/kg	<0.004	2000	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
1,2-Dibromo-3-Chloropropane	mg/kg	<0.004	-	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
1,2,4-Trichlorobenzene	mg/kg	<0.007	220	0	-	-	-	<0.007	<0.007	-	<0.007	-	-
Hexachlorobutadiene	mg/kg	<0.004	-	0	-	-	-	<0.004	<0.004	-	<0.004	-	-
Naphthalene	mg/kg	<0.027	190	0	-	-	-	<0.027	0.054	-	<0.027	-	-
1,2,3-Trichlorobenzene	mg/kg	<0.007	102	0	-	-	-	<0.007	<0.007	-	<0.007	-	-



Appendix F Geotechnical Laboratory Test Certificates

Ground Investigation Report

E-Scrap Sample Preparation Plant

Britannia Refined Metals Ltd

SLR Project No.: 402.064683.00001

19 October 2023

GEOLABS Limited
Bucknalls Lane
Garston
Watford
Hertfordshire
WD25 9XX

Tel: +44(0) 1923 892 190
Fax: +44(0) 1923 892 191
email: admin@geolabs.co.uk
web: www.geolabs.co.uk

SLR Consulting Limited
3rd Floor
The Brew House
Jacob Street
Bristol
BS2 0EQ

27 September 2023

Report No : GEO/38780/02

Page 1 of 1

For the attention of Ms A Kenshole

Our ref **GEO / 38780**
Your Ref **409.064683.00001**

Date samples received 31/08/2023
Date written instructions received 04/09/2023
Date testing commenced 05/09/2023
Date of sample disposal 25/10/2023

Project **BRM NORTHFLEET**

Further to your instructions we have pleasure in enclosing the results of the tests you requested in the attached figures.

LABORATORY TEST REPORT

Item No	Test Quantity	Description
1	~	Geotechnical Test Summary
2	~	Liquid & Plastic Limits Summary
	7	Water Content
	6	Liquid & Plastic Limits
3	6	Saturation Water Content
4	~	Geochemical Test Summary
	12	pH Value & Water Soluble Sulphate Content as SO ₄
5	3	Particle Size Distribution
6	2	Incremental Loading Oedometer
7	4	Unconsolidated Undrained Triaxial Compression

Any opinions or interpretations expressed herein are outside the scope of UKAS accreditation. All results contained in this report are provisional unless signed by an approved signatory. The results contained in this report relate only to samples received in the laboratory and are tested 'as received' unless otherwise stated. This report should not be reproduced, except in full, without the written approval of the laboratory. The results reported are applicable only to the test items received by the laboratory.

All the necessary data required by the documented test procedures has been recorded and will be stored for a period of not less than 6 years. This data will be issued to yourselves at your request. All samples will be disposed of after the date shown above. Written confirmation will be required to retain the samples beyond this period and a storage charge may be applied.

We trust that the above meets your requirements and should you require any further information or assistance, please do not hesitate to contact us.

Yours faithfully
on behalf of **GEOLABS Limited**

J Sturges
Operations Manager

SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression				Chemical Tests			Other tests and comments
Location	Depth (m)	Sample Ref	Type	Description	WC	LL	PL	PI	<425 µm	Bulk	Dry	Condition	Cell Pressure	Deviator Stress	Shear Stress	pH	2:1 W/S SO4	W/S Mg	
					%	%	%	%	%	Mg/m³	Mg/m³		kPa	kPa	kPa		g/L	mg/L	
BH01	2.65-2.75		D	Dark grey outer case brown CLAY with some rare organic matter.	56.7	87	37	50	100										
BH01	2.75-2.80		D													8.0	0.056		
BH01	4.20-4.65		U	Very soft dark grey CLAY.	52.8					1.76	1.15	Undisturbed	84	29	14				One Dimensional Consolidation
BH01	5.20-5.65		D	Dark greyish brown organic CLAY.	49.0	70	28	42	100										
BH01	8.20-8.65		D	Grey and dark grey mottled organic silty CLAY with rare organic matter.	112	110	43	67	100										
BH01	11.20-11.65		U	Soft to firm grey organic CLAY.	157					1.53	0.59	Undisturbed	224	64	32				
BH01	11.65-11.75		D	Black slightly organic silty CLAY.	85.9											7.3	0.67		
BH01	17.20-18.70		B	Brown medium to coarse GRAVEL.															Particle Size Distribution
BH01	17.20-17.65		D													9.1	0.099		
BH01	21.70-22.15		D													9.0	0.069		

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

Checked and Approved by  J Sturges - Operations Manager 20/09/2023	Project Number:	GEO / 38780 BRM NORTHFLEET 409.064683.00001	
	Project Name:		

SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression				Chemical Tests			Other tests and comments
Location	Depth (m)	Sample Ref	Type	Description	WC	LL	PL	PI	<425 µm	Bulk	Dry	Condition	Cell Pressure	Deviator Stress	Shear Stress	pH	2:1 W/S SO4	W/S Mg	
					%	%	%	%	%	Mg/m³	Mg/m³		kPa	kPa	kPa		g/L	mg/L	
BH01	30.30-30.70		D													9.0	0.039		
BH02	1.20-1.65		D													10.6	0.21		
BH02	5.20-5.65		U	Very soft grey silty CLAY.	72.8					1.62	0.94	Undisturbed	104	13	7				
BH02	5.65-5.75		D	Dark grey slightly organic CLAY.	74.6	87	35	52	100							8.5	0.31		
BH02	8.20-8.65		U	Very soft dark grey slightly organic CLAY.	73.5					1.65	0.95	Undisturbed	164	29	15				One Dimensional Consolidation
BH02	8.65-8.75		D	Dark grey organic CLAY with rare organic matter.	93.3	134	43	91	100							7.4	1.0		
BH02	11.20-11.65		D	Dark grey organic CLAY with pockets of black organic matter and rootlets.	95.7	109	39	70	100										
BH02	14.20-14.43		D													8.6	0.29		
BH02	14.60-15.00		B	Orangish brown slightly clayey silty very sandy GRAVEL.															Particle Size Distribution
BH02	18.70-19.10		D													8.8	0.014		

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

Checked and Approved by  J Sturges - Operations Manager 20/09/2023	Project Number:	GEO / 38780 BRM NORTHFLEET 409.064683.00001	
	Project Name:		

SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression				Chemical Tests			Other tests and comments
Location	Depth (m)	Sample Ref	Type	Description	WC	LL	PL	PI	<425 µm	Bulk	Dry	Condition	Cell Pressure	Deviator Stress	Shear Stress	pH	2:1 W/S SO4	W/S Mg	
					%	%	%	%	%	Mg/m³	Mg/m³		kPa	kPa	kPa		g/L	mg/L	
BH02	19.00-20.00		B	Brown gravelly SAND. Sand is fine to medium.															Particle Size Distribution
BH02	23.20-23.65		D													8.9	< 0.010		
BH02	32.20-32.36		D													9.2	0.056		

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

Checked and Approved by



J Sturges - Operations Manager
20/09/2023

Project Number:

GEO / 38780

Project Name:

BRM NORTHFLEET
409.064683.00001



SUMMARY OF LIQUID AND PLASTIC LIMIT TESTS

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 +A1:2022 %	Liquid Limit %	Plastic Limit %	Plasticity Index %	Percentage Passing 425µm %	Atterberg Classification	Test Type	Sample Condition
BH01	2.65-2.75		D	Dark grey outer case brown CLAY with some rare organic matter.	56.7	87	37	50	100	CV	2	1
BH01	5.20-5.65		D	Dark greyish brown organic CLAY.	49.0	70	28	42	100	CH	2	1
BH01	8.20-8.65		D	Grey and dark grey mottled organic silty CLAY with rare organic matter.	112	110	43	67	100	CE	2	1
BH01	11.65-11.75		D	Black slightly organic silty CLAY.	85.9	~	~	~	~	~	~	~
BH02	5.65-5.75		D	Dark grey slightly organic CLAY.	74.6	87	35	52	100	CV	2	1
BH02	8.65-8.75		D	Dark grey organic CLAY with rare organic matter.	93.3	134	43	91	100	CE	2	1
BH02	11.20-11.65		D	Dark grey organic CLAY with pockets of black organic matter and rootlets.	95.7	109	39	70	100	CE	2	1

Test Type:

- 1 - 1 point 80g / 30° fall cone method.
 2 - 4 point 80g / 30° fall cone method.
 3 - Non plastic determination.

Sample condition:

- 1 - As Received
 2 - Air Dried
 3 - Washed & Air Dried

Checked and Approved by:



J Sturges - Operations Manager
 20/09/2023

Project Number:

GEO / 38780

Project Name:

BRM NORTHFLEET
 409.064683.00001

GEOLABS®



SATURATION WATER CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density BS EN ISO 17892-2 : 2014 : 5.2 Mg/m ³	Dry Density BS EN ISO 17892-2 : 2014 : 5.2 Mg/m ³	Saturation Water Content %	Porosity %
BH01	24.70-26.20		D	White intact CHALK.	32.8	1.95	1.47	31	46
BH01	26.20-27.70		D	White intact CHALK.	30.3	1.93	1.48	31	45
BH01	29.10-29.20		D	White intact CHALK.	26.0	2.00	1.59	26	41
BH01	30.70-32.20		D	White intact CHALK.	23.0	2.07	1.68	22	38
BH02	25.00-26.00		D	White intact CHALK.	27.0	2.04	1.61	25	40
BH02	29.00-29.20		D	White intact CHALK.	24.3	2.01	1.62	25	40
BH02	30.00-30.70		D	White intact CHALK.	25.3	2.00	1.60	25	41
BH02	31.00-31.50		D	White intact CHALK.	24.8	2.02	1.62	25	40

Notes

Tested by JS
Checked and Approved by



J Sturges - Operations Manager
20/09/2023

Project Number:

GEO / 38780

Project Name:

BRM NORTHFLEET
409.064683.00001



SUMMARY OF CHEMICAL TESTS ON SOIL

Location	Depth m	Sample Ref	Sample Type	pH Value	Total Acid Soluble Sulphate as SO ₄ %	Water Soluble Sulphate as SO ₄ 2:1 Water:Soil Extract g/l	Total Sulphur %	Water Soluble Chloride g/l	Water Soluble Nitrate g/l	Magnesium g/l	Organic Content %	Mass Loss on Ignition %	Carbonate Content %
BH01	2.75-2.80		D	8.0	-	0.056	-	-	-	-	-	-	-
BH01	11.65-11.75		D	7.3	-	0.67	-	-	-	-	-	-	-
BH01	17.20-17.65		D	9.1	-	0.099	-	-	-	-	-	-	-
BH01	21.70-22.15		D	9.0	-	0.069	-	-	-	-	-	-	-
BH01	30.30-30.70		D	9.0	-	0.039	-	-	-	-	-	-	-
BH02	1.20-1.65		D	10.6	-	0.21	-	-	-	-	-	-	-
BH02	5.65-5.75		D	8.5	-	0.31	-	-	-	-	-	-	-
BH02	8.65-8.75		D	7.4	-	1.0	-	-	-	-	-	-	-
BH02	14.20-14.43		D	8.6	-	0.29	-	-	-	-	-	-	-
BH02	18.70-19.10		D	8.8	-	0.014	-	-	-	-	-	-	-
BH02	23.20-23.65		D	8.9	-	< 0.010	-	-	-	-	-	-	-
BH02	32.20-32.36		D	9.2	-	0.056	-	-	-	-	-	-	-

Tested by Eurofins Chemtest Ltd : MCERTS / UKAS No 2183

Checked and Approved by:



J Sturges - Operations Manager
20/09/2023

Project Number:

GEO / 38780

Project Name:

**BRM NORTHFLEET
409.064683.00001**

GEOLABS®

PARTICLE SIZE DISTRIBUTION

Location BH01
 Depth (m) 17.20-18.70
 Sample Type B

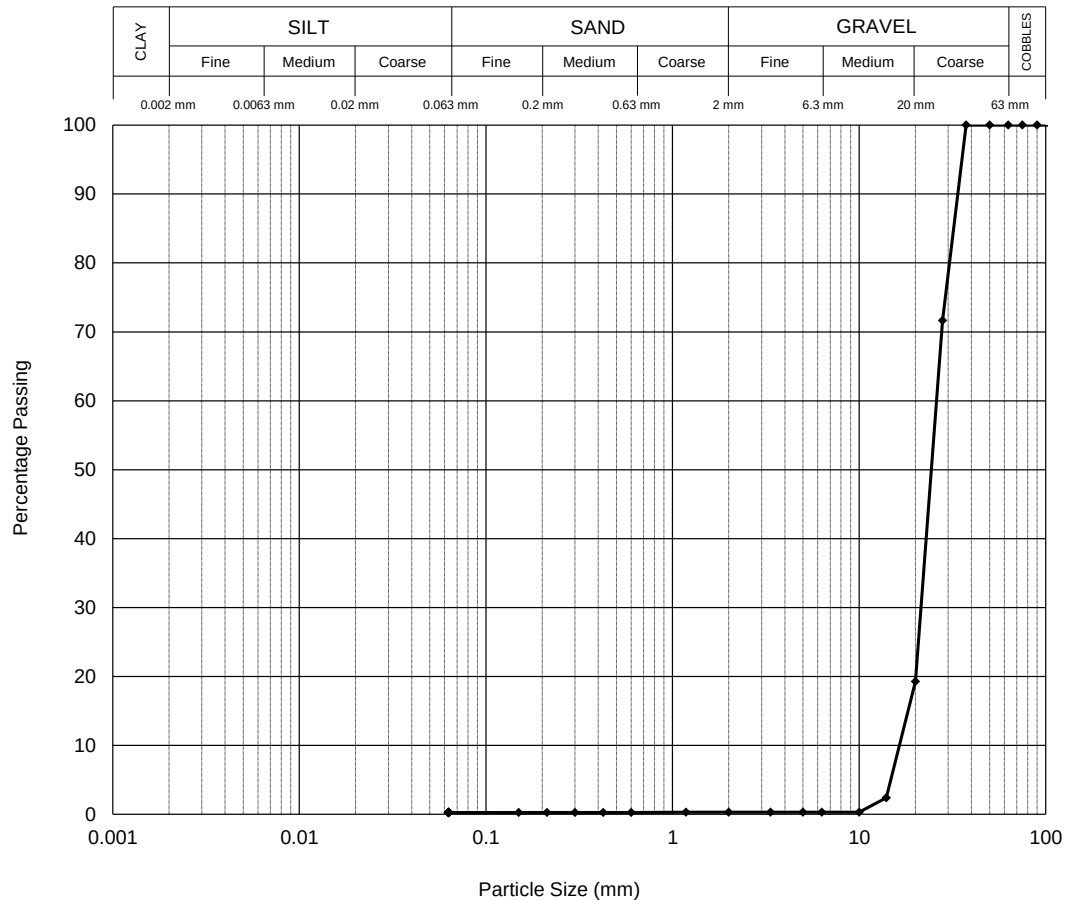
Description

Brown medium to coarse GRAVEL.

Remarks Insufficient sample supplied to comply with BS EN ISO 17892-4 : 2016 minimum mass requirements

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	100
28.0 mm	72
20.0 mm	19
14.0 mm	2
10.0 mm	0
6.30 mm	0
5.00 mm	0
3.35 mm	0
2.00 mm	0
1.18 mm	0
600 µm	0
425 µm	0
300 µm	0
212 µm	0
150 µm	0
63 µm	0



Particle Proportions	
Cobbles	0.0
Gravel	99.7
Sand	0.0
Silt & Clay	0.3

Tested by AJ
 Checked and Approved by

[Signature]

J Sturges - Operations Manager
 20/09/2023

Project Number:

GEO / 38780

Project Name:

BRM NORTHFLEET
409.064683.00001



PARTICLE SIZE DISTRIBUTION

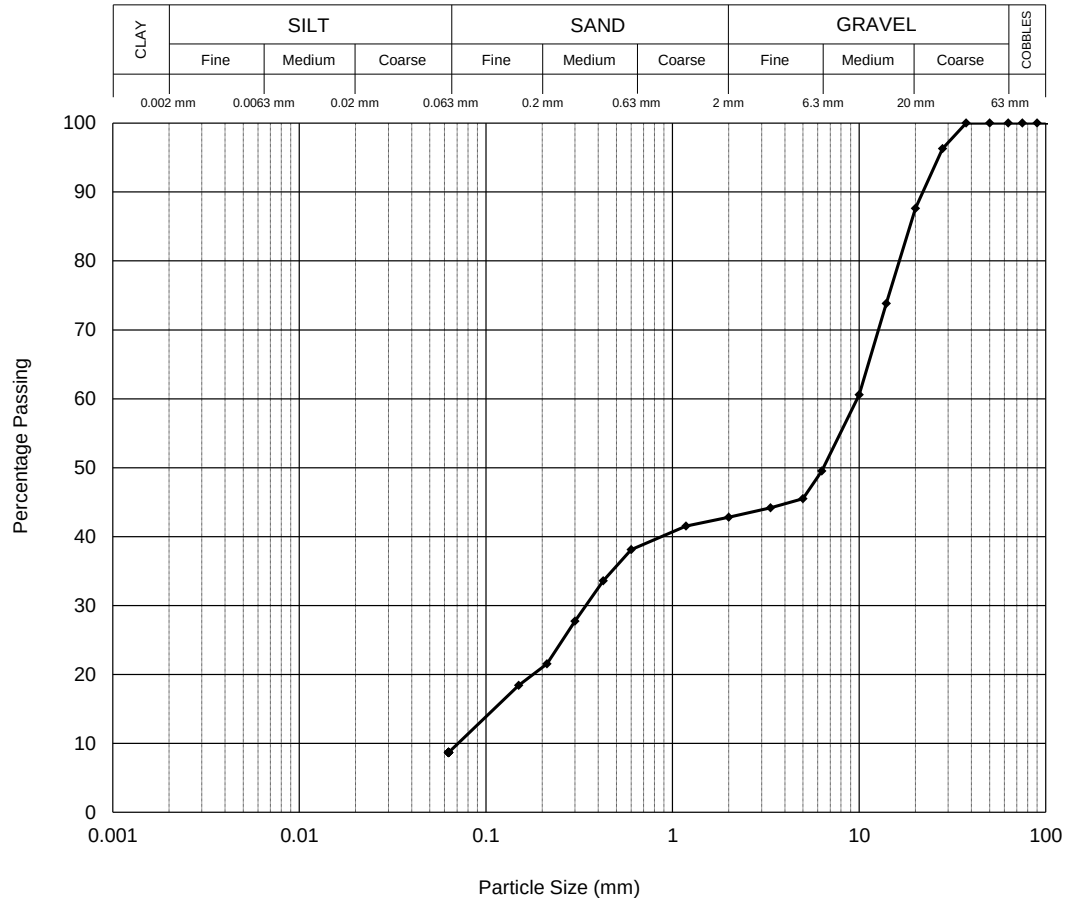
Location BH02
 Depth (m) 14.60-15.00
 Sample Type B

Description

Orangish brown slightly clayey silty very sandy GRAVEL.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	100
28.0 mm	96
20.0 mm	88
14.0 mm	74
10.0 mm	61
6.30 mm	50
5.00 mm	46
3.35 mm	44
2.00 mm	43
1.18 mm	42
600 µm	38
425 µm	34
300 µm	28
212 µm	22
150 µm	18
63 µm	9



Particle Proportions	
Cobbles	0.0
Gravel	57.2
Sand	34.1
Silt & Clay	8.7

Tested by AJ
 Checked and Approved by

[Signature]

J Sturges - Operations Manager
 20/09/2023

Project Number:

GEO / 38780

Project Name:

**BRM NORTHFLEET
 409.064683.00001**



PARTICLE SIZE DISTRIBUTION

Location BH02
Depth (m) 19.00-20.00
Sample Type B

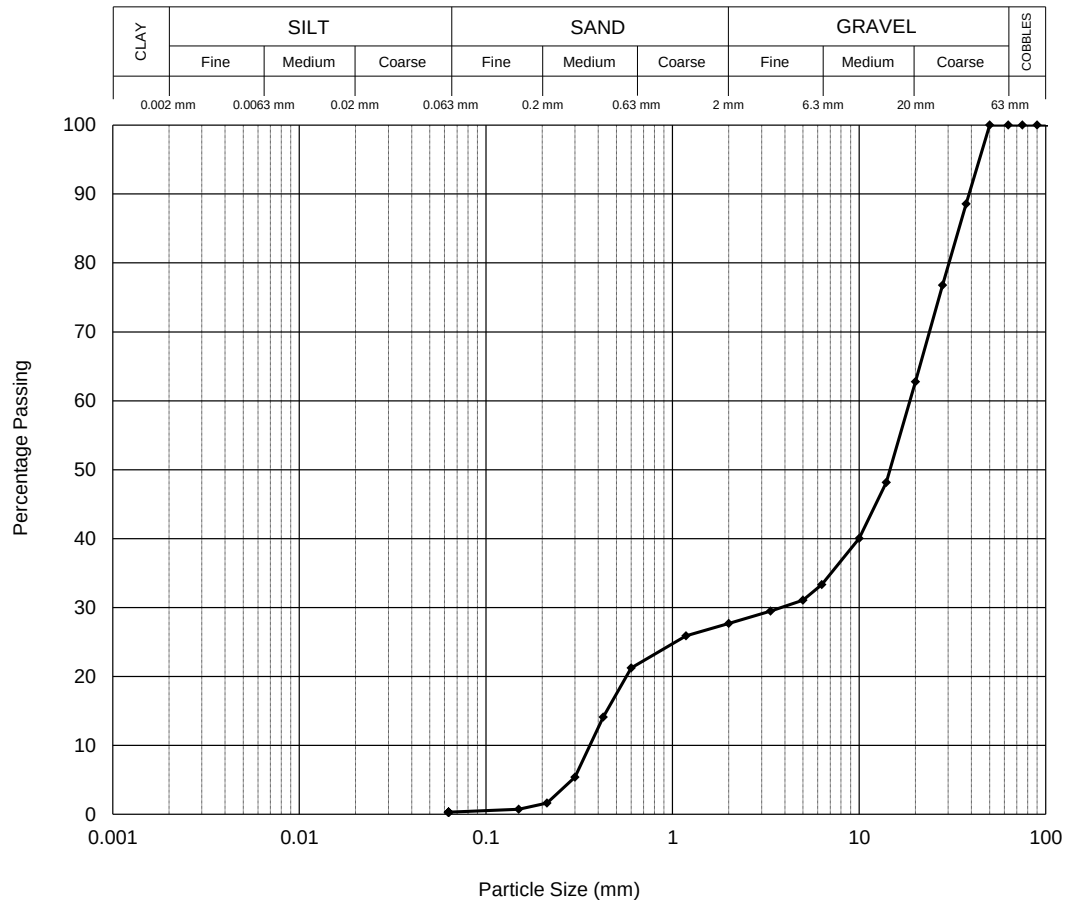
Description

Yellowish brown very sandy GRAVEL.

Remarks Insufficient sample supplied to comply with BS EN ISO 17892-4 : 2016 minimum mass requirements

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	89
28.0 mm	77
20.0 mm	63
14.0 mm	48
10.0 mm	40
6.30 mm	33
5.00 mm	31
3.35 mm	29
2.00 mm	28
1.18 mm	26
600 µm	21
425 µm	14
300 µm	5
212 µm	2
150 µm	1
63 µm	0



Particle Proportions	
Cobbles	0.0
Gravel	72.3
Sand	27.4
Silt & Clay	0.3

Tested by AJ
Checked and Approved by



J Sturges - Operations Manager
20/09/2023

Project Number:

GEO / 38780

Project Name:

**BRM NORTHFLEET
409.064683.00001**



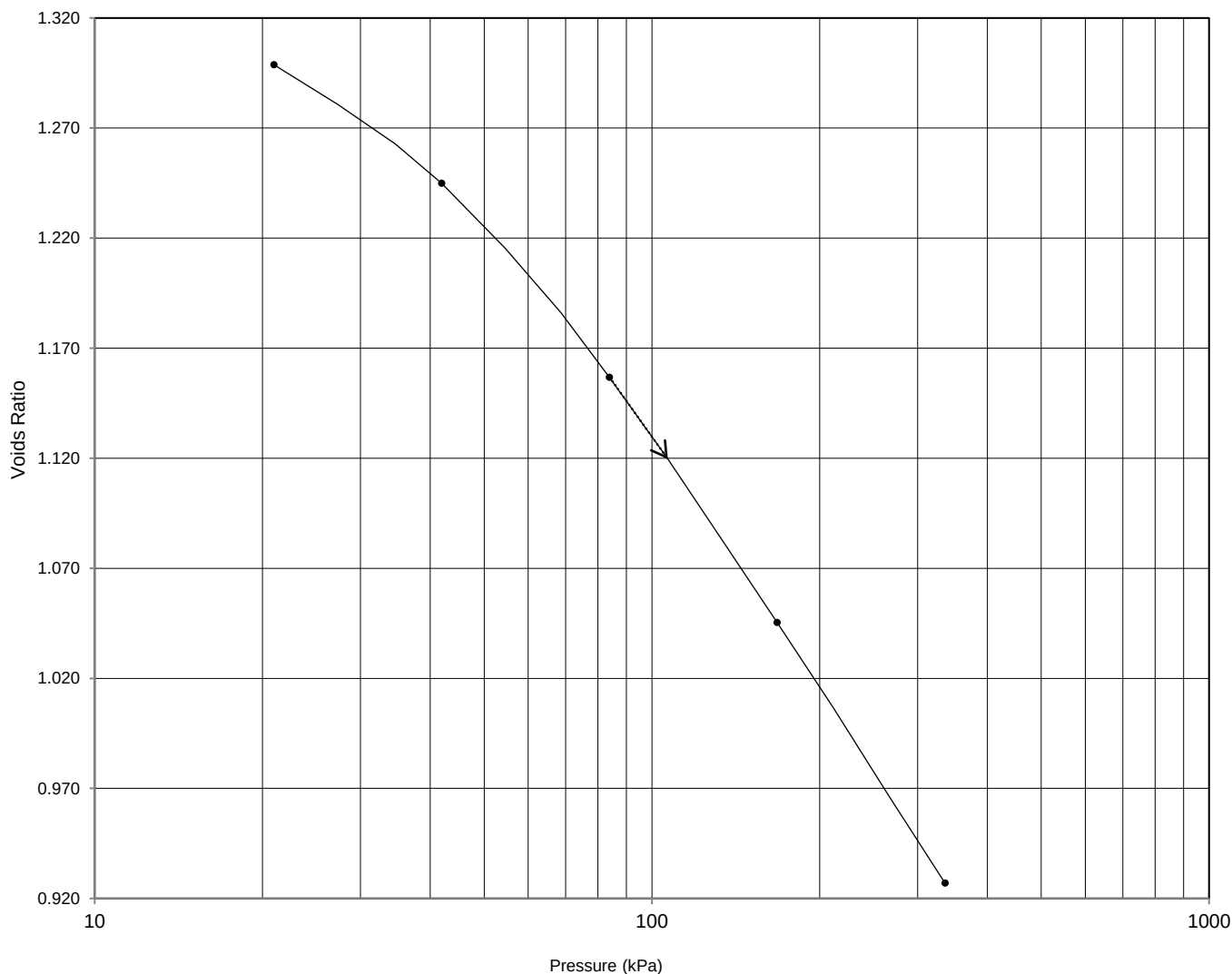
INCREMENTAL LOADING OEDOMETER TEST

Location BH01
 Depth (m) 4.20-4.65
 Sample Type U
 Depth within original (mm) 500
 Orientation within original Vertical
 Specimen preparation Undisturbed

Description:

Very soft dark grey CLAY.

Note: Pockets of very soft waterlogged areas.



Initial Conditions:

Height	(mm)	18.65	Water Content	(%)	57.6	(from trimmings)
Diameter	(mm)	74.67	Voids Ratio		1.376	
Area	(mm ²)	4379	Bulk Density	(Mg/m ³)	1.76	
Volume	(cm ³)	81.67	Dry Density	(Mg/m ³)	1.12	
Laboratory Temperature	(°C)	24.3	Particle density	(Mg/m ³)	2.65 (Assumed)	
			Degree of Saturation	(%)	100.0	

Results have been corrected for equipment deformation

Checked and Approved by

J Sturges - Operations Manager
 20/09/2023

Project Number:

GEO / 38780

Project Name:

BRM NORTHFLEET
409.064683.00001

GEOLABS®

INCREMENTAL LOADING OEDOMETER TEST

Location BH01
 Depth (m) 4.20-4.65
 Sample Type U
 Depth within original (mm) 500
 Orientation within original Vertical
 Specimen preparation Undisturbed

Description:

Very soft dark grey CLAY.

Note: Pockets of very soft waterlogged areas.

Pressure Range (kPa)	m_v (m ² /MN)	c_v (m ² /year)	Time Fitting		Voids Ratio
			Method	minutes	
0 - 21	1.6	0.31	t50	28.0	1.299
21 - 42	1.1	0.15	t50	56.1	1.245
42 - 84	0.93	0.16	t50	47.9	1.157
84 - 168	0.62	0.13	t50	55.8	1.045
168 - 336	0.34	0.13	t50	50.1	0.927

Checked and Approved by



J Sturges - Operations Manager
20/09/2023

Project Number:

GEO / 38780

Project Name:

BRM NORTHFLEET
409.064683.00001

GEOLABS®

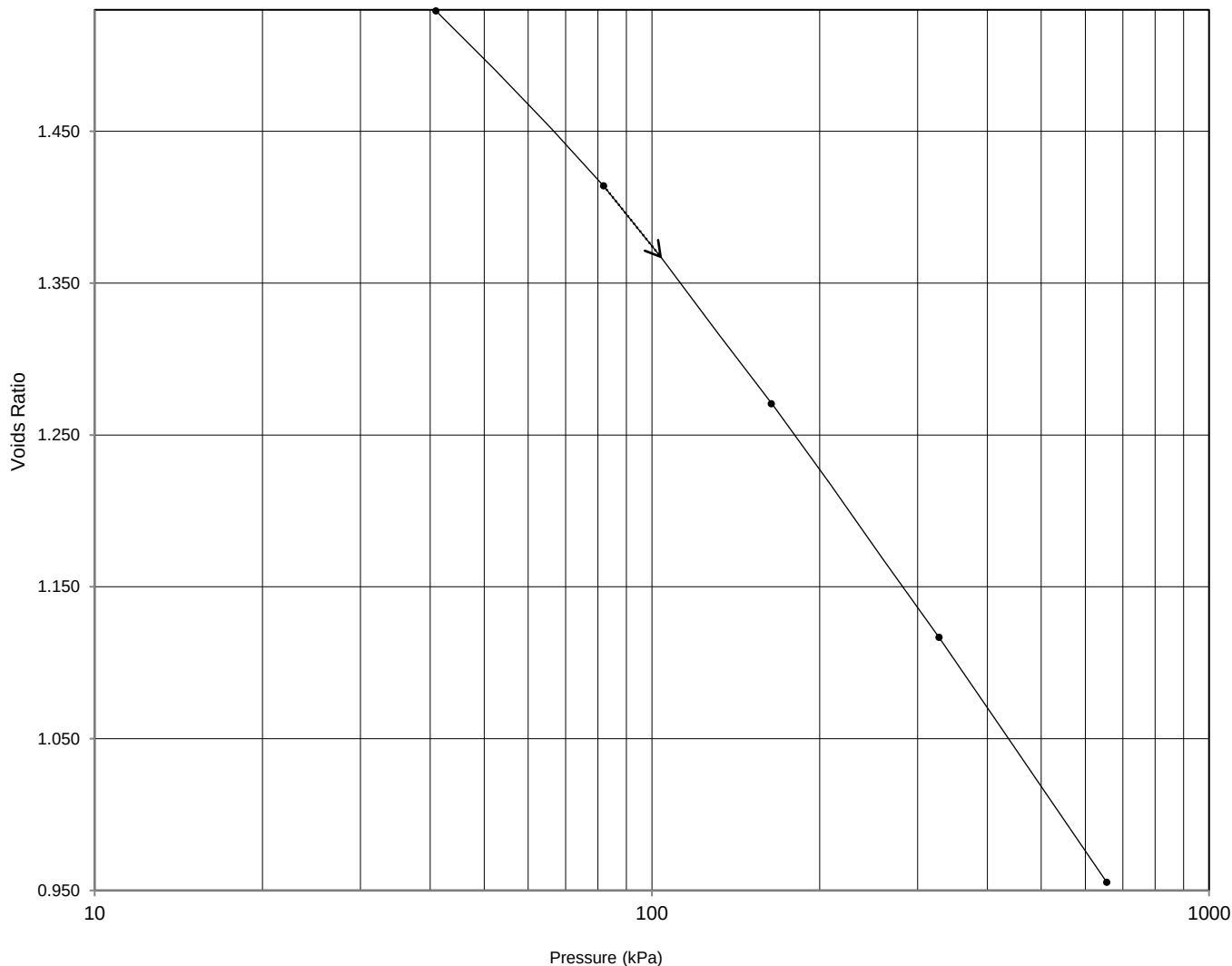


INCREMENTAL LOADING OEDOMETER TEST

Location BH02
 Depth (m) 8.20-8.65
 Sample Type U
 Depth within original (mm) 100
 Orientation within original Vertical
 Specimen preparation Undisturbed

Description:

Very soft dark grey CLAY.



Initial Conditions:

Height	(mm)	30.07	Water Content	(%)	63.1	(from trimmings)
Diameter	(mm)	63.03	Voids Ratio		1.702	
Area	(mm ²)	3120	Bulk Density	(Mg/m ³)	1.60	
Volume	(cm ³)	93.82	Dry Density	(Mg/m ³)	0.98	
Laboratory Temperature	(°C)	22.7	Particle density	(Mg/m ³)	2.65 (Assumed)	
			Degree of Saturation	(%)	98.2	

Results have been corrected for equipment deformation

Checked and Approved by

J Sturges - Operations Manager
 27/09/2023

Project Number:

GEO / 38780

Project Name:

BRM NORTHFLEET
409.064683.00001

GEOLABS®

INCREMENTAL LOADING OEDOMETER TEST

Location BH02
 Depth (m) 8.20-8.65
 Sample Type U
 Depth within original (mm) 100
 Orientation within original Vertical
 Specimen preparation Undisturbed

Description:

Very soft dark grey CLAY.

Pressure Range (kPa)	m_v (m ² /MN)	c_v (m ² /year)	Time Fitting		Voids Ratio
			Method	minutes	
0 - 41	1.6	0.52	t50	42.4	1.529
41 - 82	1.1	0.36	t50	55.4	1.414
82 - 164	0.72	0.36	t50	48.9	1.270
164 - 328	0.41	0.38	t50	40.7	1.117
328 - 656	0.23	0.38	t50	35.5	0.955

Checked and Approved by



J Sturges - Operations Manager
27/09/2023

Project Number:

GEO / 38780

Project Name:

BRM NORTHFLEET
409.064683.00001

GEOLABS®

UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION

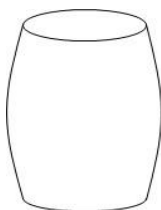
Location BH01
Depth (m) 4.20-4.65
Sample Type U

Description:

Very soft dark grey CLAY.

Specimen Details

Specimen conditions	Undisturbed
Length (mm)	201.3
Diameter (mm)	101.2
Water content (%)	52.8
Bulk density (Mg/m ³)	1.76
Dry density (Mg/m ³)	1.15
Test Details	
Latex membrane thickness (mm)	0.3
Specimen height prior to shearing (mm)	201.3
Membrane correction (kPa)	0.7
Mean rate of shear (%/min)	2.0
Cell pressure (kPa)	84
Strain at failure (%)	10.9
Maximum deviator stress (kPa)	29
Shear Stress Cu (kPa)	14

Mode of failure

Orientation of the sample

Vertical

Distance from top of tube mm

60

Tested by AJ
Checked and Approved by

J Sturges - Operations Manager
20/09/2023

Project Number:

GEO / 38780

Project Name:

**BRM NORTHFLEET
409.064683.00001****GEOLABS**

UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION

Location BH01
Depth (m) 11.20-11.65
Sample Type U

Description:

Soft to firm grey organic CLAY.

Specimen Details

Specimen conditions	Undisturbed
Length (mm)	201.3
Diameter (mm)	101.7
Water content (%)	157
Bulk density (Mg/m ³)	1.53
Dry density (Mg/m ³)	0.59
Test Details	
Latex membrane thickness (mm)	0.3
Specimen height prior to shearing (mm)	201.3
Membrane correction (kPa)	1.1
Mean rate of shear (%/min)	2.0
Cell pressure (kPa)	224
Strain at failure (%)	19.9
Maximum deviator stress (kPa)	64
Shear Stress Cu (kPa)	32

Mode of failure

Orientation of the sample

Vertical

Distance from top of tube mm

40

Tested by AJ
Checked and Approved by

J Sturges - Operations Manager
20/09/2023

Project Number:

GEO / 38780

Project Name:

**BRM NORTHFLEET
409.064683.00001****GEOLABS**

UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION

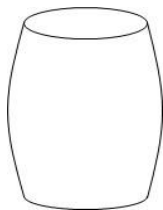
Location BH02
Depth (m) 5.20-5.65
Sample Type U

Description:

Very soft grey silty CLAY.

Specimen Details

Specimen conditions	Undisturbed
Length (mm)	201.3
Diameter (mm)	101.1
Water content (%)	72.8
Bulk density (Mg/m ³)	1.62
Dry density (Mg/m ³)	0.94
Test Details	
Latex membrane thickness (mm)	0.3
Specimen height prior to shearing (mm)	201.3
Membrane correction (kPa)	0.7
Mean rate of shear (%/min)	2.0
Cell pressure (kPa)	104
Strain at failure (%)	10.9
Maximum deviator stress (kPa)	13
Shear Stress Cu (kPa)	7

Mode of failure

Orientation of the sample

Vertical

Distance from top of tube mm

70

Tested by AJ
Checked and Approved by

J Sturges - Operations Manager
20/09/2023

Project Number:

GEO / 38780

Project Name:

**BRM NORTHFLEET
409.064683.00001****GEOLABS**

UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION

Location BH02
Depth (m) 8.20-8.65
Sample Type U

Description:

Very soft dark grey slightly organic CLAY.

Specimen Details

Specimen conditions	Undisturbed
Length (mm)	152.7
Diameter (mm)	101.2
Water content (%)	73.5
Bulk density (Mg/m ³)	1.65
Dry density (Mg/m ³)	0.95
Test Details	
Latex membrane thickness (mm)	0.3
Specimen height prior to shearing (mm)	152.6
Membrane correction (kPa)	1.1
Mean rate of shear (%/min)	2.6
Cell pressure (kPa)	164
Strain at failure (%)	19.7
Maximum deviator stress (kPa)	29
Shear Stress Cu (kPa)	15

Mode of failure

Orientation of the sample

Vertical

Distance from top of tube mm

265

Tested by AJ
Checked and Approved by

J Sturges - Operations Manager
20/09/2023

Project Number:

GEO / 38780

Project Name:

**BRM NORTHFLEET
409.064683.00001****GEOLABS**



Making Sustainability Happen