Pell Frischmann

London Institute of Healthcare Engineering

Verification Report

Land contamination risk management

This report is to be regarded as confidential to our Client and is intended for their use only and may not be assigned except in accordance with the contract. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded, except to the extent that the report has been assigned in accordance with the contract. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Report Ref.		102228-PF-ZZ-XX-RP-GG-600004_P01 LIHE Verfication Report					
File Path		\\rsbgukfs01\LONEngineering\1022\102228 - London Institute of Healthcare\6 Documents\6.15 GG Geoenv\01 Reports\102228-PF- ZZ-XX-RP-GG-600004_P01 LIHE Verfication Report.docx					
Rev	Suit	Description Date Originator Checker Approver					
P01	S2	Initial issue	20-Nov-2023	S Hyde/ A Tadayon	A Boucher	A Boucher	
Ref. reference. Rev revision. Suit suitability (S2 – suitable for information)							

Prepared for

Morgan Sindall Construction

London Euston 10th Floor 1 Eversholt Street London NW1 2DN

Prepared by

Pell Frischmann

5th Floor, 85 Strand London WC2R 0DW

Pell Frischmann



Contents

1	Intro	duction4
	1.1	Commission
	1.2	Scope of work
2	Bac	kground6
	2.1	Land contamination risk management
	2.2	LCRM reports
	2.3	Planning permission7
3	Rem	nediation requirements9
	3.1	Introduction and remediation areas9
	3.2	Composite cover system
4	Veri	fication11
	4.1	Introduction
	4.2	Geotextile type and placement
	4.3	Verification inspection
	4.4	Verification inspection results
	4.5	Cover soil sources
	4.6	Soil acceptability verification
5	Corr	ective actions
	5.1	Introduction
	5.2	Sequence of remedial actions
	5.3	Replacement soil
	5.4	Verification sampling and analysis16
	5.5	Remediation areas – corrective actions
	5.6	Terrace gardens
	5.7	Disposal of unacceptable soil
6	Con	clusions

Figures

Figure 1-1 Site location	4
Figure 3-1 Remediation areas plan	9
Figure 4-1 Geotextile photographs	11
Figure 4-2 Verification location plan	12
Figure 4-3 Verification site visit - photographs	13
Figure 4-4 Verification results summary	15
Figure 5-1 Remediation areas corrective actions	17
Figure 5-2 Delineation sample plan	18
Figure 5-3 Corrective actions	19

Tables

Table 2-1 Land contamination risk management - simplified	6
Table 2-2 Land contamination reports	6
Table 2-3 Relevant contaminant linkages that require remediation	7
Table 2-4 LCRM, planning conditions and previous reports matrix	8
Table 3-1 Composite cover system and terrace gardens	.10
Table 4-1 Key parties	.11
Table 4-2 Verification pits summary	.14

London Institute of Healthcare Engineering Verification Report

Appendices

Appendix A Geotextile technical datasheet

- Appendix B Pre-import soil information
- Appendix C Soil delivery tickets
- Appendix D Verification geochemical results
- Appendix E Correspondence
- Appendix F Verification photographs
- Appendix G Waste transfer note

1 Introduction

1.1 Commission

Pell Frischmann has been commissioned by Morgan Sindall Construction (the *client*) to prepare this land contamination remediation Verification Report for the London Institute of Healthcare Engineering (LIHE) development at St Thomas' Campus, Lambeth Palace Road, Kings College London, (the *site*). The proposed development consists of a new four-storey research and education facility for the University. Figure 1-1 includes a site location plan and development plans/illustrations.

Pell Frischmann's land contamination risk management commission for the development also included the production of the Remediation Strategy (102228-PF-ZZ-XX-RP-GG-600003) for the development in June 2023. The remediation strategy identified that a remediation cover system would be required in areas of soft landscaping to protect the development end-users from the underlying Made Ground onsite.

 Site location plan
 Aerial image during construction

 Image during construction
 Image during construction

Figure 1-1 Site location

Proposed development - view from Lambeth Place Road looking toward LIHE entrance

Proposed development - view from Albert Embankment



1.2 Scope of work

The process of remediation verification is intended to provide a record of the remediation activities as evidence that the remediation has been successful and that consequently the areas subject to remediation can be considered 'suitable for use'. This verification report is also intended to satisfy planning condition 29 (B and C), see Section 2.3.

Pell Frischmann's verification scope of work for the remediation cover system included the following:

- > Collating contractor's records relating to the geotextile and imported soils,
- Undertaking verification site inspection to confirm the presence of the underlying geotextile layer, record the thickness of placed cover soils and collect soil samples from the cover soils,
- Scheduling geochemical laboratory analysis for the soil samples and assessing the results against the remediation soil acceptability criteria, and
- > Producing a verification report following the completion of remediation works.

Pell Frischmann's scope of work was limited to the activities outlined above. Morgan Sindall and their appointed contractors were responsible for undertaking all remedial measures, including sourcing and placing the geotextile separator layer and the cover soils.

2 Background

2.1 Land contamination risk management

The Environment Agency (EA) Land Contamination Risk Management (LCRM) guidance, sets out the process that should be followed for managing risks from land contamination. This includes ensuring that the site will be 'suitable for its proposed use' in line with National Planning Policy Framework (NPPF). The process of LCRM should be used to:

- Identify and assess if there is an unacceptable risk
- Assess what remediation options are suitable to manage the risk
- > Plan and carry out remediation
- > Verify that remediation has worked

LCRM includes three risk-based stages (1) risk assessment, (2) options appraisal, and (3) remediation and verification. Table 2-1 presents Pell Frischmann's simplified summary of the LCRM process.



Table 2-1 Land contamination risk management - simplified

2.2 LCRM reports

Morgan Sindall provided Pell Frischmann with copies of pre-construction land contamination/ geoenvironmental reports that were prepared for the LIHE development between 2015 and 2020. Both, the 2015 desk study and 2020 ground contamination assessment report covered a larger land parcel, which included the subject site and land to the south. The reports were prepared prior to the release of the LCRM guidance in October 2020, however they broadly align with the LCRM process, as summarised overleaf. Pell Frischmann subsequently produced a remediation strategy for the site in 2023.

A list of available reports prepared between 2015 and 2023 are provided in Table 2-2.

Table 2-2 Land contamination reports

Report title and reference	Source	Date
Remediation strategy, (ref:102228-PF-ZZ-XX-RP-GG-600001).	Pell Frischmann	June 2023
Ground contamination assessment report. London Institute of Healthcare Engineering London SE1 (<i>ref: C15000A</i>)	Ground Engineering Limited	August 2020
Geotechnical & geoenvironmental desk study (ref: 351414/WCD/WAM/01/A)	Mott MacDonald	September 2015

Preliminary risk assessment (PRA): The desk study report (September 2015) included a review of the readily available desk-based information for the site as well as a preliminary Conceptual Site Model (CSM) and a preliminary risk assessment for the development.

Site investigation scheme (SIS) and generic quantitative risk assessment (GQRA): An intrusive site investigation was undertaken by Ground Engineering Limited in 2020, followed by a land contamination generic quantitative risk assessment (GQRA), which is presented in the *Ground Contamination Assessment Report, (Ground Engineering Limited, August 2020)*. The GQRA identified three contaminants of concern (CoC) in the shallow Made Ground onsite including lead, benzo(a)pyrene (a polycyclic aromatic hydrocarbon, PAH) and asbestos in soils, that were likely to require remediation in areas of soft landscaping only.

Remediation strategy: Pell Frischmann subsequently produced a remediation strategy for the development in June 2023. The remediation strategy was based on review of the 2020 site investigation data and risk assessment findings. A summary of the relevant contaminant linkages associated with the Made Ground and requiring remediation is provided in Table 2-3. The remediation strategy specified the use of a composite cover system in the soft landscaping areas of the development to break potential exposure pathways between the existing Made Ground and human health site users. The remediation requirements are discussed in detail in Chapter 3 of this report.

	o				
CL	Source	Pathway	Receptor		
101	Contaminants (lead and benzo(a) pyrene) within Made Ground onsite	Ingestion, inhalation and dermal contact associated with areas of soft landscaping only	Human health of end users		
201	Asbestos in soils (within the Made Ground onsite)	Inhalation of liberated respirable fibres associated with areas of soft landscaping only	Human health of end users		

Table 2-3 Relevant contaminant linkages that require remediation

2.3 Planning permission

The development was granted planning permission by Lambeth Borough Council in 2021 (planning ref 20/00884/FUL, 13 April 2021). Planning conditions relating to land contamination were included within Planning Condition 29 of the decision notice, and read as follows:

29A. No demolition or development shall commence until the following components of a scheme to deal with the risks associated with contamination of the site have been submitted to and approved in writing by the local planning authority:

- *i)* A site investigation scheme, based on previous findings to provide information for a detailed assessment of risk to all receptors that may be affected, including those off-site.
- *ii)* The site investigation results and detailed risk assessment from a).
- *iii)* An options appraisal and remediation strategy giving full details of the remediation measures required and how they are undertaken.
- *iv)* A verification plan providing details of the data that will be collected in order to demonstrate that works set out in iii) are complete and identifying any requirements for long-term monitoring of pollutant linkages, maintenance and arrangements for contingency option.

The development shall thereafter be implemented in accordance with details and measures approved.

29B Prior to occupation of any part of the development, a verification report demonstrating completion of the works set out in the approved remediation strategy and the effectiveness of the remediation shall be submitted to and approved in writing by the local planning authority. The report shall include results of sampling and monitoring carried out in accordance with the approved verification plan to demonstrate that the site remediation criteria have been met. It shall also include any plan (a "long-term monitoring and maintenance")

plan") for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action, as identified in the verification plan, and for the reporting of this to the local planning authority.

29C If, during development, contamination not previously identified is found to be present at the site then no further development shall be carried out until the developer has submitted and obtained written approval from the local planning authority for, an amendment to the remediation strategy detailing how this unsuspected contamination will be dealt with.

The requirements of Planning Condition 29-A have been satisfied by the previous reports for the development. This verification report has been prepared to satisfy the '*verification report*' requirements of Planning Condition 29-B and the unexpected contamination requirements in Condition 29-C

Table 2-4 provides a matrix summarising how planning condition 29, the LCRM process and the existing land contamination reports align with each other.

Planning condition	LCRM stage	LCRM Report	Report date
29-A	Preliminary risk assessment	Geotechnical & Geoenvironmental Desk Study	Sep-2015
and (ii)	Quantitative risk assessment	Ground Contamination Assessment Report	Aug-2020
29-A	Remediation options appraisal		
Part (iii) and (iv)	Remediation strategy	Remediation strategy	Jun-2023
	Remediation verification plan		
29-B	Remediation verification	This report	Nov-2023
29-C	Unexpected contamination		

Table 2-4 LCRM, planning conditions and previous reports matrix

2.3.1 Planning condition 29 C - unexpected contamination

The planning conditions 29 C states: *If, during development, contamination not previously identified is found to be present at the site then no further development shall be carried out until the developer has submitted and obtained written approval from the Local Planning Authority for, an amendment to the remediation strategy detailing how this unsuspected contamination will be dealt with.*

The contractors (PC Cooney) have confirmed (via email) that unexpected contamination was not encountered during construction including within the landscaped areas subject to remediation.

3 Remediation requirements

3.1 Introduction and remediation areas

The remediation strategy identified that remediation would only be required in the proposed soft landscaping areas of the development to protect the development end-users from the underlying Made Ground onsite. The proposed development has been zoned into areas that do and do not require remediation as follows:

- Remediation areas: areas of proposed softcover/landscaping underlain by Made Ground that will require remediation (green, Figure 3-1).
- Hardstanding areas: building footprints and areas of hardstanding (grey, Figure 3-1) including roads, footways, cycleways, where remediation is not required as the hard standing in these areas will break potential contamination exposure pathways.
- Terraced gardens: The development includes rooftop terrace gardens (Level 1 and Level 3 terrace gardens). The soft landscaping areas within the terrace gardens are shown in purple in Figure 3-1. Remediation will not be required in these areas (as they are underlain by the building and not Made Ground). The imported soils used in these areas will, however, need to meet the required human health soil acceptability criteria (SAC) (and cannot present a new contamination risk) and thus are included in this verification report.



Figure 3-1 Remediation areas plan

3.2 Composite cover system

The placement of 'clean' cover systems across the soft-landscaped areas was selected as the preferred remediation solution to break the contamination pathways for the linkages summarised in Table 2-3. Remediation cover systems can comprise (1) a suitable thickness of cover soils, or (2) a composite system including geotextiles and cover soils; with imported cover soils needing to meet 'suitable for use' criteria.

Due to the potential presence of residual 'asbestos in soils' (within the Made Ground), a composite cover system was selected. The composite cover system includes two key elements, in order of placement:

- > a geotextile directly laid over the existing Made Ground onsite; and
- > the placement of a suitable thickness of 'clean' cover soils above the geotextile.

Geotextile: The non-woven geotextile is predominantly intended to prevent soil mixing and to act as a physical marker to prevent future damage during routine landscape maintenance.

Cover soils - thickness: the cover soil thickness needs to suitably protect the underlying geotextile from weather damage and from damage during daily use of the landscaping areas. A minimum soil thickness of 300mm will be required to protect the underlying geotextile, while this is typically suitable for areas of grass/turf cover, landscaping design often require a greater total thickness of topsoil and subsoil; on this basis the remediation strategy assumed a likely soil thickness of circa 600mm. Where the landscape design requires a greater thickness of soils e.g. around tree pits the geotextile placement may need to be adjusted/deepened to maintain a continuous presence of the composite cover system across the remediation area. The required soil thickness of cover soils can be achieved by either raising the ground levels on site, or by excavating and removing a thickness of Made Ground, or by a combination of the two. Since the remediation strategy was produced in June 2023 Pell Frischmann have been advised by the Client that the landscaping design in some areas may only require a soil thickness of 300mm.

Cover soils – geochemistry: Soil acceptability criteria (SAC) for the imported cover soils were specified in Appendix B of the remediation strategy. The SAC represent maximum geochemical threshold concentrations that should not be exceeded within the imported cover soils. Although remediation is not required for the terraced gardens the imported soils for these areas will also need to meet human health 'soil acceptability criteria' to ensure that the soils are 'suitable for use'. Table 3-1 summarises the differences between the composite cover system and the terrace gardens landscaping that are included in this verification report.

Areas	Soft landscaping areas (ground level)		Terraced Gardens	
Cover soil thickness	300 to 600mm		As required by landscape design	
Geotextile	Yes		No	

Table 3-1 Composite cover system and terrace gardens

Visual/olfactory inspection of the imported topsoil and subsoil was also recommended to inspect for any of the following:

- Evidence of petroleum hydrocarbon contamination
- > Asbestos fibres/ asbestos containing materials
- Significant quantities of putrescible materials (including wood or paper)
- > Fragments of glass, bricks, concrete, wire or other anthropogenic matter

The remediation strategy advised that material containing any of the above components would not be suitable and should not be accepted onto site.

4 Verification

4.1 Introduction

The process of remediation verification is intended to provide a record of the remediation activities as evidence that the remediation has been successful and that consequently the areas subject to remediation can be considered 'suitable for use'. Pell Frischmann's verification scope of work for the remediation cover system included the following:

- > Collating client supplied records relating to the geotextile and imported soils,
- Undertaking verification site inspections to confirm the presence of the underlying geotextile layer, record the thickness of placed cover soils and collect soil samples from the cover soils,
- Scheduling geochemical laboratory analysis for the soil samples and assessing the results against the remediation soil acceptability criteria, and
- > Producing a verification report following the completion of the remediation works.

The Client was responsible for undertaking all remedial measures, including sourcing and placing the geotextile separator layer and the cover soils. Pell Frischmann visited the site to undertake verification inspections after the geotextile and cover soils had been placed onsite. Key parties involved in the remediation process for the site are summarised in Table 4-1.

Role	Organisation
Local planning authority	Lambeth Borough Council
The Client	Morgan Sindall
Landscape contractor	PC Cooney
Remediation verification	Pell Frischmann

Table 4-1 Key parties

4.2 Geotextile type and placement

The datasheet for the geotextile used onsite is presented in Appendix A. A non-woven geotextile was specified in the remediation strategy and a woven geotextile has been deployed onsite, however the geotextile used meets the tensile strength requirements so can be considered acceptable. Figure 4-1 includes a selection of photographs taken by the contractor during construction confirming the placement of the geotextile onsite.

Figure 4-1 Geotextile photographs





4.3 Verification inspection

A verification site visit was undertaken by a Pell Frischmann geoenvironmental consultant on 3 October 2023. The visit included overseeing the formation of a series of verification pits (hand excavated by the contractor) across the soft landscaping areas to confirm the presence of the geotextile separator layer, record the thickness of the placed cover soils and collecting soil samples for geochemical analysis. Verification soil samples were also collected from the terraced gardens (Level 1 and Level 3). The verification pits and soil sample location plan is presented in Figure 4-2. Photographs of selected soft landscaping areas are shown in Figure 4-3 overleaf.



Figure 4-2 Verification location plan

Figure 4-3 Verification site visit - photographs



Rooftop terrace garden on Level 3

Imported topsoil - rooftop terrace garden

4.4 Verification inspection results

The required geotextile base layer was encountered in all fourteen verification pits and the thickness of the cover soils ranged between 300mm and 860mm (average of 490mm), as summarised in Table 4.2. Given that the development does not include private gardens and that the cover soils are underlain by geotextile, it is considered that the cover soil thicknesses recorded onsite will provide sufficient protection to the future site users and thus are acceptable.

Verification location	Geotextile present	Measured cover soil thickness
V101	Yes	370mm
V102	Yes	300mm
V103	Yes	300mm
V104	Yes	400mm
V105	Yes	570mm
V106	Yes	720mm
V107	Yes	820mm
V108	Yes	860mm
V109	Yes	320mm
V110	Yes	450mm
V111	Yes	430mm
V112	Yes	500mm
V113	Yes	430mm
V114	Yes	400mm
		Average 490mm

Table 4-2 Verification pits – geotextile and soil thickness results

Photographs of the inspection pits showing the thickness of the cover soil and confirming the presence of the geotextile beneath the cover soils are presented in Appendix F.

4.5 Cover soil sources

The cover soils for the soft landscaping areas were sourced from H Sivyer (Transport) Limited and the terrace garden soils were sourced from by Alfa Aggregate Products Limited.

Pre-import geochemical analysis data was provided by each supplier - copies are included in Appendix B. The geochemical analysis results for the pre-import data were within the soil acceptability criteria (SAC), indicating that the soils would be geochemically suitable for use.

Copies of the soil delivery tickets provided by the client are included in Appendix C. The records include the delivery dates, source, delivery address and the type of soil delivered to site.

4.6 Soil acceptability verification

Verification soil samples were collected from each of the remediated landscaped areas and from terrace gardens during the verification site visit. The soil samples were sent to ALS Laboratories (UK) Limited (ALS) a MCERTS accredited laboratory Copies of the geochemical laboratory Certificates of Analysis are included in Appendix D.

The geochemical laboratory results for each soil sample were assessed against the soil acceptability criteria from the remediation strategy (a copy of the SAC is provided in Appendix D).

In summary, the results of the screening assessment between the recorded laboratory data and the soil acceptability criteria indicate the following:

- Remediation areas: nine soil sample were collected and analysed. Seven soil samples passed the SAC screening assessment (i.e. the recorded concentrations were lower that their respective SAC thresholds). The results for the remaining two soil samples (V103 and V108) passed the SAC except for Asbestos in Soils.
- Terrace gardens: five soil samples were collected and analysed. Four soil samples passed the SAC screening assessment. The results for the remaining soil sample (P102) passed the SAC except for Asbestos in Soils (AiS).

The SAC assessment results, including the asbestos types and concentrations, are summarised in Figure 4-4. Soil samples that passed the assessment are shown in green and samples that failed the assessment are shown in red.

Unacceptable soil results: The three soil samples that failed the SAC due to the identification of asbestos in soils were classified as 'unacceptable' and these acceptability failures were identified as 'remediation defects'. The client was notified so that appropriate corrective actions could be determined.



Figure 4-4 Verification results summary

*ACM = asbestos containing material

5 Corrective actions

5.1 Introduction

As introduced in Section 4.6, three verification soil samples failed the soil acceptability criteria. Asbestos in soils (AiS) was identified in two out of nine remediation verification soil samples and one out of five terrace garden soil samples. These soil samples were classified as 'unacceptable' and identified as 'remediation defects' that would require correction actions.

Following discussion with the client it was agreed that localised areas of cover soils would be excavated, removed and replaced. The remediation cover soils and the soils placed in the terrace gardens were from difference sources and suppliers. The asbestos in soils results for each soil type are notably different (different concentrations and notably different nature based on the laboratory comments). On this basis, the client decided to source and import replacement cover soils from a new source/supplier.

5.2 Sequence of remedial actions

The corrective actions were undertaken in the following sequence:

- 1. Source and import replacement soil,
- 2. Undertake verification soil sampling and analysis (prior to placement) to confirm acceptability,
- 3. Excavate and remove the unacceptable soils, and
- 4. Place the newly imported/replacement soil.

Items 1, 3 and 4 were undertaken and recorded by the client, item 2 (in *italics above*) was undertaken by Pell Frischmann.

5.3 Replacement soil

The replacement cover soils were sourced from Bourne Amenity Limited.

- > The pre-import geochemical analysis data for the soil are provided in Appendix B.
- > The delivery tickets are included in Appendix C.

5.4 Verification sampling and analysis

A Pell Frischmann geoenvironmental consultant attended the site on 26 October 2023 to inspect and sample the new imported replacement soils. At the time of the visit, the soils were stored in sealed bags stacked on pallets. In total, nine soil samples (V201 to V209) were collected from randomly selected bags and submitted to ALS for laboratory geochemical analysis.

The geochemical laboratory analysis results for all nine soil samples passed the soil acceptance criteria (SAC) (asbestos in soils was 'not detected' in any of the samples screened). The laboratory certificates of analysis are presented in Appendix D. The geochemical data from both rounds of verification sampling and analysis has been combined into a single spreadsheet also presented in Appendix D.

5.5 Remediation areas – corrective actions

Two soft-landscaping areas were identified for corrective actions, the area around verification sample V103 and a smaller landscaping area around verification sample V108. The client has confirmed that the following corrective actions have been undertaken for these areas:

V103 area:

- Approximately 5m³ of soil was removed (down to the geotextile), circa 400mm deep.
- Soil was removed in stages and stored in covered stockpiled within the site compound for collection and offsite disposal.
- > The newly imported replacement soils were used to reinstate the cover soils.
- ➢ Works were undertaken and completed on 10 November 2023.

V108 area:

- > Approximately 3m³ of soil was removed, circa 400mm deep.
- Soil was removed in stages and stored in covered stockpiled within the site compound for collection and offsite disposal.
- > The newly imported replacement soils were used to reinstate the cover soils.
- ➢ Works were undertaken and completed on 10 November 2023.

A selection of photographs showing the works being undertaken are presented Figure 5-1. Upon completion, the thickness of the cover soils in both areas was measured by the client and confirmed to meet the minimum required thickness of 300mm.

A plan showing the areas where soils were excavated, removed and replaced is included in the client email dated 15 November 2023 in Appendix E.

Figure 5-1 Remediation areas corrective actions



Removal of the unacceptable cover soils from the soft landscaping area (sample location V103)



Completed soft landscaping area following the placement of the new cover soils (sample location V103)

Client photographs



landscaping area (sample location V108)

Completed soft landscaping area following the placement of the new cover soils (sample location V108)

5.6 Terrace gardens

5.6.1 Delineation sampling

During the verification sampling visit (26-Oct-23), soil samples were also obtained from the terrace garden (Level 3) to delineate the potential extent of asbestos in soils in this location. Two soils samples (P201 and P202) were obtained approximately 1m either side of the sample location P102 where asbestos in soils was previously detected, see Figure 5-2.

- > The geochemical analysis results for both soil samples pass the soil acceptability criteria (SAC),
- > Asbestos in soils was not detected in the delineation samples (P201 and P202).



Figure 5-2 Delineation sample plan

5.6.2 Corrective actions

The delineation results were used to determine the corrective actions for the terrace garden.

- Due to the localised nature of the asbestos in soil, the terrace garden soil was excavated and removed from a 3.5m section centred around location P102.
- Approximately 0.3m³ of substrate and soil was removed down to the drainage board (black plastic crates).
- The soil and substrate were removed in stages and stored in a covered stockpiled within the site compound for collection and offsite disposal.
- > The newly imported replacement soil was used to restore this area.
- Works were undertaken and completed on 11 November 2023.

Photographs of showing the works being undertaken are included in Figure 5-3, overleaf and a plan showing the areas of 'corrective actions' is included in the client email dated 15 November 2023 included in Appendix E.

Figure 5-3 Corrective actions



5.7 Disposal of unacceptable soil

The unacceptable cover soils that were excavated and removed as part of the corrective actions described above were removed from site.

The waste soils, totalling circa 8m³, were collected and transported by London Rock Supplies Limited to Keltbray's waste transfer facility at Dock Road, Silvertown, London on 15 November 2023. A copy of the waste transfer note is provided in Appendix G.

Pell Frischmann

6 Conclusions

With respect to the land contamination verification process for the London Institute of Healthcare Engineering (LIHE) development:

- > A suitable geotextile has been recorded at the base of cover soils in the soft landscaped areas.
- > A suitable thickness of cover soil has been placed and recorded above the geotextile.
- The soils are geochemically 'suitable for use' based on comparison between the measured concentrations in the verification soil samples and the remediation Soil Acceptability Criteria.
- > Unexpected contamination has not encountered during construction.

Recommendations: The management and maintenance company responsible for the areas of soft landscaping should be made area aware of the following to maintain the remedial measures at the LIHE development:

- 1. To prevent future damage to the cover system layers excavation within the soft-landscaped areas must remain above the geotextile and shall be limited to shallow depths less than cover soil thickness in the soft landscaped areas.
- 2. If the geotextile is encountered, it must remain in place to prevent the clean cover soils from mixing with the underlying 'pre-development' soils/Made Ground and therefore should not be cut, damaged or removed.
- 3. If works are required at depths greater that the cover system then all layers of the cover system will need to be reinstated to ensure that the cover system is continuous in these areas.

Appendix A Geotextile technical datasheet



FasTrack 609 Orange

FasTrack 609 orange woven geotextile, 1500N, 75g/m² - 4.5m x 10

ĽK €€

DESCRIPTION

FasTrack 609 orange woven geotextile, 1500N, 75g/m² - 4.5m x 100m roll

SPECIFICATION

General information

Stock code	GTSG/FASTRACK/609/O
Range	FasTrack
Third party certified	UKCA CE
Roll sizes	4.5m x 100m
Geotextile product range	FasTrack

Geotextile properties

Material		Polypropylene
Tensile strength (MD)	EN ISO 10319	18kN/m
Tensile strength (CMD)	EN ISO 10319	10kN/m
Elongation at max load (MD)	EN ISO 10319	25%
Elongation at max load (CMD)	EN ISO 10319	25%
Dynamic perforation resistance	EN ISO 13433	19mm
CBR puncture resistance	EN ISO 12236	1500N



Tel: 01543 440 440 **wrekinproducts.com**



Dynamic cone drop	EN ISO 13433	19mm
Water permeability	EN ISO 11058	16L/m².s
Characteristic opening size	EN ISO 12956	300µm
Weight	EN ISO 9864	75g/m²

NOTES

This product is suitable for high visibility and its bright colour alerts excavators of potential dangers.

1. Wrekin Products Ltd is continually seeking to improve our products and therefore reserves the right to alter product specifications without prior notice.

- 2. It is the responsibility of all users to satisfy themselves the above data is current.
- 3. Installation details are available on request.





Tel: 01543 440 440 wrekinproducts.com

Appendix B Pre-import soil information



Mr Simon Sivyer H. Sivyer Transport Ltd 160 Sydenham Road London SE26 5JZ

17th March 2023 Our Ref: TOHA/23/7819/2/SS Your Ref: PO 181962

Dear Sirs

Topsoil Analysis: Trugrow Blends

We have completed the analysis of the soil sample recently submitted, referenced Sample 2: 65/35 Blend and have pleasure reporting our findings.

The purpose of the analysis was to determine the suitability of the sample for general landscape purposes. In addition, this sample has been assessed to determine its compliance with the requirements of the British Standard for Topsoil (BS3882:2015 – Specification for Topsoil – Table 1, Multipurpose Topsoil).

This report presents the results of analysis for the sample submitted to our office, and it should be considered 'indicative' of the topsoil source. The report and results should therefore not be used by third parties as a means of verification or validation testing or waste designation purposes, especially after the topsoil has left the H. Sivyer Transport Ltd site.

SAMPLE EXAMINATION

The sample was described as a brown (Munsell Colour 10YR 4/3), slightly moist, friable, slightly calcareous SANDY LOAM with a weakly developed, very fine to fine granular structure*. The sample was slightly stony and contained a high proportion of organic fines and occasional woody fragments. No unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed.

* This appraisal of soil structure was made from examination of a disturbed sample(s). Structure is a key soil characteristic that may only be accurately assessed by examination in an in-situ state.

Tim O'Hare Associates LLP Howbery Park Wallingford Oxfordshire OX10 8BA T:01491 822653 E:info@toha.co.uk www.toha.co.uk

Registered in England No. OC324049 Registered Office: The Innovation Centre, Howbery Park, Wallingford, Oxfordshire OX10 8BA



Plate 1: Topsoil 2: 65/35 Blend Sample

ANALYTICAL SCHEDULE

The sample was submitted to a UKAS and MCERTS accredited laboratory for a range of physical and chemical tests to confirm the composition and fertility of the soil, and the concentration of selected potential contaminants. The following parameters were determined:

- detailed particle size analysis (% 5 sands, silt, clay);
- pH and electrical conductivity values;
- exchangeable sodium percentage;
- major plant nutrients (N, P, K, Mg);
- organic matter content;
- C:N ratio;
- heavy metals (As, B, Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn);
- total cyanide and total (mono) phenols;
- speciated PAHs (US EPA16 suite);
- aromatic and aliphatic TPH (C5-C35 banding);
- benzene, toluene, ethylbenzene, xylene (BTEX).

The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below.

RESULTS OF ANALYSIS

Particle Size Analysis and Stone Content

The sample fell into the *sandy loam* texture class. However, further detailed particle size analysis revealed the sample to have a high proportion of particles in the *very fine* (0.05-0.15mm) fraction. Topsoils such as this are prone to self-compaction when initially placed in a landscape environment, which can lead to limited drainage and poor aeration, particularly if the soil does not display a well-defined structure. To reduce the risk of self-compaction, we recommend placing this soil to a maximum depth of 300mm, which is in line with *BS3882:2015*, section A.3.

The stone content of the sample was low and, as such, stones should not restrict the use of the soil for general landscape purposes.

pH and Electrical Conductivity Values

The sample was strongly alkaline in reaction (pH 8.3). This pH value would be considered suitable for general landscape purposes providing species with a wide pH tolerance or those known to prefer alkaline soils are selected for planting, turfing and seeding.

The electrical conductivity (salinity) value (water extract) was moderate, which indicates that soluble salts were not present at levels that would be harmful to plants.

The electrical conductivity value by CaSO₄ extract (*BS3882* requirement) fell below the maximum specified value (3300 μ S/cm) given in *BS3882:2015 – Table 1*.

Organic Matter and Fertility Status

The sample was well supplied with organic matter and all major plant nutrients. The sample contained a level of extractable potassium (1549 mg/l) that exceeded the maximum permissible value given in *BS3882:2015 – Table 1* (1500 mg/l).

The C:N ratio of the sample was acceptable for general landscape purposes.

Potential Contaminants

With reference to *BS3882:2015* - *Table 1*: Notes 3 and 4, there is a recommendation to confirm levels of potential contaminants in relation to the topsoil's proposed end use. This includes human health, environmental protection and metals considered toxic to plants. In the absence of site-specific assessment criteria, the concentrations that affect human health have been compared with the *residential with homegrown produce* land use in the Suitable For Use Levels (S4ULs) presented in *The LQM/CIEH S4ULs for Human Health Risk Assessment* (2015) and the DEFRA SP1010: *Development of Category 4 Screening Levels* (C4SLs) for *Assessment of Land Affected by Contamination – Policy Companion Document* (2014).

Of the potential contaminants determined, none was found at levels that exceed their guideline values.

Phytotoxic Contaminants

Of the phytotoxic (toxic to plants) contaminants determined (copper, nickel, zinc), none was found at levels that exceeded the maximum permissible levels specified in *BS3882:2015 – Table 1*.

CONCLUSION

The purpose of the analysis was to determine the suitability of the topsoil sample for general landscape purposes. The analysis has also been undertaken to determine the sample's compliance with the requirements of the British Standard for Topsoil (*BS3882:2015 – Specification for Topsoil – Table 1, Multipurpose Topsoil*).

From the soil examination and subsequent laboratory analysis, the sample was described as an alkaline, nonsaline, non-calcareous, slightly stony, fine sandy loam with a weak structure. The sample was well supplied with organic matter and all major plant nutrients. Of the potential contaminants determined, none exceeded their guideline values.

Based on our findings, the topsoil represented by this sample would be considered suitable for general landscape purposes (trees, shrubs and amenity grass), provided:

- the topsoil is placed to a maximum depth of 300mm;
- the soil's physical condition is satisfactory and compaction is avoided.

The topsoil was largely compliant with the requirements of the British Standard for Topsoil (BS3882:2015 – Specification for Topsoil – Table 1, Multipurpose Topsoil), with the exception of the high elevated potassium level. This is considered a minor non-compliance when reviewed in the context of all the other results and given the intended use of the topsoil.

Soil Handling Recommendations

It is important to maintain the physical condition of the soil and avoid structural damage during all phases of soil handling (e.g. stockpiling, respreading, cultivating, planting, seeding or turfing). As a consequence, soil handling operations should be carried out when soil is reasonably dry and non-plastic (friable) in consistency.

It is important to ensure that the soil is not unnecessarily compacted by trampling or trafficking by site machinery, and soil handling should be stopped during and after heavy rainfall and not continued until the soil is friable in consistency. If the soil is structurally damaged and compacted at any stage during the course of soiling or landscaping works, it should be cultivated appropriately to relieve the compaction and to restore the soil's structure prior to any planting, turfing or seeding.

Further details on soil handling are provided in Annex A of BS3882:2015.

We hope this report meets with your approval and provides the necessary information. Please do not hesitate to contact the undersigned if we can be of further assistance.

Yours faithfully

Zoe Duffin MBiol Graduate Soil Scientist AGost

Aaron Cross BSc MSc Soil Scientist

For and on behalf of Tim O'Hare Associates LLP



Client:	H Sivyer Transport Ltd
Project	Trugrow Blends
Job:	Topsoil Analysis - BS3882:2015
Date:	23/02/23
Job Ref No:	TOHA/23/7819/2/SS

Sample Reference	Sample 2: 65/35 Blend		
		Acreditation	
Clay (<0.002mm)	%	UKAS	14
Silt (0.002-0.05mm)	%	UKAS	11
Very Fine Sand (0.05-0.15mm)	%	UKAS	49
Fine Sand (0.15-0.25mm)	%	UKAS	9
Medium Sand (0.25-0.50mm)	%	UKAS	7
Coarse Sand (0.50-1.0mm)	%	UKAS	4
Very Coarse Sand (1.0-2.0mm)	%	UKAS	6
Texture Class (LK Classification)	20	UKAS	15
Stones (2-20mm)	% DW	GLP	4
Stones (20-50mm)	% DW	GLP	0
Stones (>50mm)	% DW	GLP	0
pH Value (1:2.5 water extract)	units	UKAS	8.3
Electrical Conductivity (1:2.5 water extract)	uS/cm	UKAS	1467
Electrical Conductivity (1:2 CaSO ₄ extract)	uS/cm	UKAS	3138
Exchangeable Sodium Percentage	%	UKAS	4.8
Organic Matter (LOI)	%	UKAS	10.0
Total Nitrogen (Dumas)	- %	UKAS	0.33
C . N Rallo Extractable Phoenhorue	ma/l	UKAS	40
Extractable Priosphorus	mayl	LIKAS	1549
Extractable Magnesium	ma/l	UKAS	200
	1 1000		
Total Arsenic (As)	mg/kg	MCERTS	9
Total Cadmium (Cd)	mg/kg	MCERTS	0.3
Total Chromium (Cr)	mg/kg	MCERTS	22
Hexavalent Chromium (Cr VI)	mg/kg	MCERTS	< 1.8
Total Copper (Cu)	mg/kg	MCERTS	29
Total Lead (Pb)	mg/kg	MCERTS	77
Total Mercury (Hg)	mg/kg	MCERTS	< 0.3
Total Solonium (So)	mg/kg	MCERTS	15
Total Zinc (Zn)	marka	MCERTS	08
Water Soluble Boron (B)	mg/kg	MCERTS	35
Total Cyanide (CN)	ma/ka	MCERTS	< 1.0
Total (mono) Phenois	mg/kg	MCERTS	< 1.0
Naphthalene	mg/kg	MCERTS	< 0.05
Acenaphthylene	mg/kg	MCERTS	0.23
Acenaphthene	mg/kg	MCERTS	0.07
Fluorene	mg/kg	MCERIS	0.2
Anibrasepe	maika	MCEDTS	0.52
Fluoranthene	ma/ka	MCERTS	4.5
Pyrene	ma/ka	MCERTS	3.9
Benzo(a)anthracene	mg/kg	MCERTS	2.6
Chrysene	mg/kg	MCERTS	2.2
Benzo(b)fluoranthene	mg/kg	MCERTS	2.6
Benzo(k)fluoranthene	mg/kg	MCERTS	1.4
Benzo(a)pyrene	mg/kg	MCERTS	2
Indeno(1,2,3-cd)pyrene	mg/kg	MCERTS	0.98
Dibenzo(a,h)anthracene	mg/kg	MCERTS	< 0.05
Total PAHs (sum LISEPA16)	marka	MCERTS	25.2
Totari Aria (adin doler Aria)	inging	MOLITO	20.2
Aliphatic TPH >C5 - C6	mg/kg	MCERTS	< 0.001
Aliphatic TPH >C6 - C8	mg/kg	MCERTS	< 0.001
Aliphatic TPH >C8 - C10	mg/kg	MCERTS	< 0.001
Aliphatic TPH >C10 - C12	mg/kg	MCERTS	< 1.0
Aliphatic TPH >C12 - C16	mg/kg	MCERTS	< 2.0
Aliphatic TPH >C16 - C21	mg/kg	MCERTS	< 8.0
Aliphatic TPH >C21 - C35	mg/kg	MCERTS	< 8.0
Aromatic TPH (C5 - C35)	mg/kg	MCERTS	< 0.001
Aromatic TPH >C7 - C8	malka	MCERTS	< 0.001
Aromatic TPH >C8 - C10	ma/ka	MCERTS	< 0.001
Aromatic TPH >C10 - C12	mg/kg	MCERTS	< 1.0
Aromatic TPH >C12 - C16	mg/kg	MCERTS	2.5
Aromatic TPH >C16 - C21	mg/kg	MCERTS	< 10
Aromatic TPH >C21 - C35	mg/kg	MCERTS	12
Aromatic TPH (C5 - C35)	mg/kg	MCERTS	19
		1000000	
Benzene	mg/kg	MCERTS	< 0.005
Toluene	mg/kg	MCERTS	< 0.005
	mg/kg	MCERTS	< 0.005
o-xvlene	ma/ka	MCERTS	< 0.005
MTBE (Methyl Tertiary Butyl Ether)	ma/ka	MCERTS	< 0.005
· · · · · · · ·			

9	
7	
4	
6	
75	5
SL	
4	
0	
0	
	Ť
8.3	
1467	
3138	
4.8	
10.0	
0.33	
17	
40	
1549	
200	
9	h
0.3	
22	
<18	
29	
77	
< 0.3	
15	1
< 1.0	
98	
3.5	
< 1.0	1
< 1.0	

Zoe Duffin MBiol Graduate Soil Scientist

Results of analysis should be read in conjunction with the report they were issued with.

SL = SANDY LOAM

The contents of this certificate shall not be reproduced without the express written permission of Tim O'Hare Associates LLP.

Visual Examination
The sample was described as a brown (Munsell Colour 10YR 4/3), slightly moist, friable, slightly calcareous SANDY LOAM with a weakly
developed, very fine to fine granular structure. The sample was slightly stony and contained a high proportion of organic fines and occasional
woody fragments. No unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed.



Drew Wetherell Bourne Amenity Ltd The Wharf Rye Road Newenden Kent TN18 5QG

> 25th July 2023 Our Ref: TOHA/23/1018/5/SS Your Ref: PO 120618

Dear Sirs

Soil Analysis Report: Lightweight Topsoil

We have completed the analysis of the soil sample recently submitted, referenced *Lightweight Topsoil*, and have pleasure reporting our findings.

The purpose of the analysis was to determine the suitability of the material for use as an intensive lightweight substrate in a rooftop or podium garden environment.

This report presents the results of analysis for the sample submitted to our office, and it should be considered 'indicative' of the topsoil source. The report and results should therefore not be used by third parties as a means of verification or validation testing, waste designation purposes or for any project-specific application, especially after the soil has left the Bourne Amenity Ltd site.

SAMPLE EXAMINATION

The sample was described as a very dark brown (Munsell Colour 10YR 2/2), slightly moist, friable, very slightly calcareous, LOAMY SAND with a single grain structure. The sample was very slightly stony, with the exception of frequent lightweight expanded clay aggregate particles (leca). The sample contained a moderate proportion of organic fines and occasional woody fragments. No deleterious materials, unusual odours, roots or rhizomes of pernicious weeds were observed.

Tim O'Hare Associates LLP Howbery Park Wallingford Oxfordshire OX10 8BA T:01491 822653 E:info@toha.co.uk www.toha.co.uk

Registered in England No. OC324049 Registered Office: The Innovation Centre, Howbery Park, Wallingford, Oxfordshire OX10 8BA



Plate 1: Lightweight Topsoil Sample

ANALYTICAL SCHEDULE

The sample was submitted to a UKAS and MCERTS accredited laboratory for a range of physical and chemical tests to confirm the composition and fertility of the soil, and the concentration of selected potential contaminants. The following parameters were determined:

- detailed particle size analysis (5 sands, silt, clay);
- stone content (2-20mm, 20-50mm, >50mm);
- bulk density (oven dry, field capacity, saturated);
- · saturated hydraulic conductivity;
- visible contaminants (>2mm);
- pH and electrical conductivity values;
- calcium carbonate;
- exchangeable sodium percentage;
- major plant nutrients (N, P, K, Mg);
- organic matter content;
- C:N ratio;
- heavy metals (Sb, As, B, Ba, Be, Cd, Cr, Cr VI, Cu, Pb, Hg, Ni, Se, V, Zn);
- soluble sulphate, elemental sulphur, acid volatile sulphide;
- · total cyanide and total (mono) phenols;
- aromatic and aliphatic TPH (C5-C35 banding);
- speciated PAHs (US EPA16 suite);
- benzene, toluene, ethylbenzene, xylene (BTEX);
- asbestos screen.

The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below.

TOHA/23/1018/5/SS/July

RESULTS OF ANALYSIS

Particle Size Analysis and Stone Content

The sample fell into the *loamy sand* texture class. Further detailed particle size analysis found the sample to have a predominance of *medium sand* (0.25-0.50mm) and smaller proportions of *coarse sand* (0.50-1.0mm). This is usually suitable for topsoil in rooftop or podium garden applications as reasonable porosity levels are generally maintained in a consolidated state and the risk of particle interpacking is reduced. The sample should therefore provide adequate drainage and aeration properties for these applications.

With the exception of 'leca' particles, the sample contained a very low proportion of 'stone' sized material (>2mm).

Bulk Density and Saturated Hydraulic Conductivity

The sample displayed a bulk density at Field Capacity of 1.47 Mg/m³, which is reasonably low compared to that of standard topsoil. The suitability of the bulk density result should be confirmed by the project engineer for the recipient site.

The saturated hydraulic conductivity of the sample (18 mm/hour) indicates that the substrate is sufficiently permeable and should demonstrate adequate drainage performance for use in rooftop or podium garden environments. Soils used in these environments need to have satisfactory drainage performance to avoid stagnation (and therefore excess weight) and to enable efficient conveyance of water into the drainage system.

The suitability of the bulk density and the drainage properties should be confirmed by the project engineer.

pH and Electrical Conductivity Values

The sample was strongly alkaline in reaction (pH 8.2). This pH value would be considered suitable for general landscape purposes providing species with a wide pH tolerance or those known to prefer alkaline soils are selected for planting, turfing and seeding.

The electrical conductivity (salinity) value (water extract) was moderately high. Although the growth of many plant species (including amenity turf) are unlikely to be affected by this level of salinity, it is possible that salt sensitive species, including emergent seedlings, could show reduced growth potential.

The electrical conductivity value by CaSO₄ extract (3408 μ S/cm) exceeded our maximum recommended value (3300 μ S/cm).

Organic Matter and Fertility Status

The sample was well supplied with organic matter and all major plant nutrients.

The C:N ratio of the sample was acceptable for general landscape purposes.

Potential Contaminants

In the absence of site-specific criteria, the concentrations that affect human health have been assessed for *residential with homegrown produce* end-use against the Suitable For Use Levels (S4ULs) presented in the LQM/CIEH S4ULs for Human Health Risk Assessment (2015) and the DEFRA SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document (2014).

Of the potential contaminants determined, none was found at levels that exceed their guideline values.

Phytotoxic Contaminants

Of the phytotoxic (toxic to plants) contaminants determined (copper, nickel, zinc), none was found at levels that exceeded their guideline values.

CONCLUSION

The purpose of the analysis was to determine the suitability of the material for use as an intensive lightweight substrate in a roof garden or podium landscape environment.

From the sample examination and laboratory analysis, the substrate was described as a strongly alkaline, saline, slightly calcareous loamy sand with a single grain structure. The sample was virtually stone-free with the exception of 'leca' particles. Moderate to high reserves of organic matter and major plant nutrients were recorded. Of the potential contaminants determined, none exceeded their respective guideline values.

The topsoil blend represented by this sample is a little rich, indicated by the elevated electrical conductivity result and borderline potassium content. The proportion of soluble salts should reduce in time once the material is wetted by rain or irrigation water. However, it is recommended that that the quantity and quality of the compost component used in the blend is reviewed in this instance.

We hope this report meets with your approval and provides the necessary information. Please do not hesitate to contact the undersigned if we can be of further assistance.

Yours faithfully

H.MacRae

Harriet MacRae BSc MSc Graduate Soil Scientist

For & on behalf of Tim O'Hare Associates LLP

Matthew Heins BSc (Hons) MISoilSci Senior Soil Scientist



Client:	Bourne Amenity Limited		
Project	Lightweight Topsoil		
Job:	Physical and Horticultural Proper	rties	
Date:	25/07/2023		
Job Ref No:	TOHA/23/1018/5/SS		
Sample Refere	nce		
0.000	200		Accreditation
Clay (<0.002mn	1) 	%	UKAS
Silt (0.002-0.06	(0.05.0.45mm)	%	UKAS
Very Fine Sand	(0.05-0.15mm)	%	UKAS
Fine Sand (0.15	-0.25mm)		UKAS
Medium Sand (C	50.1.0mm)	9/0	UKAS
Coarse Sand (U	.50-1.0mm)	% 0/	UKAS
Very Coarse Sa	Fig (1.0-2.0mm)	70	UKAS
Total Sand (0.00	JK Classification)	140	UKAS
Stopos (2.20mm			UKAS
Stones (2-20mm	1) m)	76 DW	UKAS
Stones (20-50m	(III)		UKAS
Stones (>50mm)	70 0 11	UKAS
Saturated Hydra	ulic Conductivity	mm/br	Δ2Ι Δ
Bulk Density (w	hen Oven Dried)	Ma/m ³	LIKAS
Bulk Density (at	Field Capacity)	Ma/m ³	LIKAS
Bulk Density (at	Saturation)	Ma/m ³	UKAS
built benoity (at	outerationy	ingini	01010
pH Value (1.2.5	water extract)	units	UKAS
Calcium Carbon	ate	%	UKAS
Electrical Condu	uctivity (1:2.5 water extract)	uS/cm	UKAS
Electrical Condu	uctivity (1:2 CaSO4 extract)	uS/cm	UKAS
Exchangeable S	odium Percentage	%	UKAS
Organic Matter	(LOI)	%	UKAS
Total Nitrogen (Dumas)	%	UKAS
C : N Ratio	42-03-201-202-201	ratio	UKAS
Extractable Pho	sphorus	mg/l	UKAS
Extractable Pota	assium	mg/l	UKAS
Extractable Mag	Inesium	mg/l	UKAS
Visible Contami	nants: Plastics >2.00mm	%	UKAS
Visible Contarni	nants: Sharps >2.00mm	%	UKAS

Lightweight
Topsoil
10
2
2
8
40
29
9
88
LS
1
0
0
A
18
1.15
1.47
1.46
A
8.2
2
1698
3408
12.3
9.4
0.41
13
101
1436
153
0

0

SL =SANDY LOAM

Visual Examination

The sample was described as a very dark brown (Munsell Colour 10YR 2/2), slightly moist, friable, very slightly calcareous, LOAMY SAND with a single grain structure. The sample was very slightly stony, with the exception of frequent lightweight expanded clay aggregate particles (leca). The sample contained a moderate proportion of organic fines and occasional woody fragments. No deleterious materials, unusual odours, roots or rhizomes of pernicious weeds were observed.

Results of analysis should be read in conjunction with the report they were issued with

The contents of this certificate shall not be reproduced without the express written permission of Tim O'Hare Associates LLP.

H.MacRae

Harriet MacRae BSc MSc Graduate Soil Scientist



Client:	Bourne Amenity Limited
Project	Lightweight Topsoil
Job:	Chemical Properties
Date:	25/07/2023
Job Ref No:	TOHA/23/1018/5/SS

Sample Reference		
• • •		Accreditation
Total Antimony (Sb)	mg/kg	MCERTS
Total Arsenic (As)	mg/kg	MCERTS
Total Barium (Ba)	mg/kg	MCERTS
Total Beryllium (Be)	mg/kg	MCERTS
Total Cadmium (Cd)	mg/kg	MCERTS
Total Chromium (Cr)	mg/kg	MCERTS
Hexavalent Chromium (Cr VI)	mg/kg	MCERTS
Total Copper (Cu)	mg/kg	MCERTS
Total Lead (Pb)	mg/kg	MCERTS
Total Mercury (Hg)	mg/kg	MCERTS
Total Nickel (Ni)	mg/kg	MCERTS
Total Selenium (Se)	mg/kg	MCERTS
Total Vanadium (V)	mg/kg	MCERTS
Total Zinc (Zn)	mg/kg	MCERTS
Water Soluble Boron (B)	mg/kg	MCERTS
Total Cyanide (CN)	mg/kg	MCERTS
Total (mono) Phenols	mg/kg	MCERTS
Elemental Sulphur (S)	mg/kg	MCERTS
Hand and the second horizon of the second		 unscorpetitienter: 10
Naphthalene	mg/kg	MCERTS
Acenaphthylene	mg/kg	MCERTS
Acenaphthene	mg/kg	MCERTS
Fluorene	mg/kg	MCERTS
Phenanthrene	mg/kg	MCERTS
Anthracene	mg/kg	MCERTS
Fluoranthene	ma/ka	MCERTS
Pyrene	mg/kg	MCERTS
Benzo(a)anthracene	ma/ka	MCERTS
Chrysene	ma/ka	MCERTS
Benzo(b)fluoranthene	ma/ka	MCERTS
Benzo(k)fluoranthene	ma/ka	MCERTS
Benzo(a)pyrene	ma/ka	MCERTS
Indeno(123-cd)pyrene	ma/ka	MCERTS
Dihenzo(a h)anthracene	ma/ka	MCERTS
Benzo(a h i)nervlene	ma/ka	MCERTS
Total PAHs (sum USEPA16)	ma/ka	MCERTS
	1	
Aliphatic TPH >C5 - C6	ma/ka	MCERTS
Aliphatic TPH >C6 - C8	ma/ka	MCERTS
Aliphatic TPH >C8 - C10	ma/ka	MCERTS
Aliphatic TPH >C10 - C12	ma/ka	MCERTS
Aliphatic TPH >C12 - C16	ma/ka	MCERTS
Aliphatic TPH >C16 - C21	ma/ka	MCERTS
Aliphatic TPH >C21 - C35	ma/ka	MCERTS
Aliphatic TPH (C5 - C35)	ma/ka	MCERTS
Aromatic TPH >C5 - C7	ma/ka	MCERTS
Aromatic TPH >C7 - C8	ma/ka	MCERTS
Aromatic TPH >C8 - C10	ma/ka	MCERTS
Aromatic TPH >C10 - C12	ma/ka	MCERTS
Aromatic TPH >C12 - C16	ma/ka	MCERTS
Aromatic TPH >C16 C21	malka	MCERTS
Aromatic TPH >C21 C35	malka	MCERTS
Aromatic TPH /C5_C35)	malka	MCEDTS
Aromano (FIT (00-000)	mg/kg	WIGER 15
Benzene	malka	MCEDTS
Toluene	malka	MCEDTS
Ethylbonzono	mg/kg	MCEDTO
	mg/kg	MCEDTO
p a m-xyielle	mg/kg	MCEDIO
MTRE (Mothed Tections Rubd Ether)	mg/kg	MCEDIC
write (weinyr renary bulyr Eller)	пджд	MUERIS
Asbestos Screen	ND/D	ISO 17025
	 A second sec second second sec	CONTRACTOR CONTRACTOR CONTRACTOR

Lightweight Topsoil]
.10	- 1
< 1.0	-
35	-
0.39	
< 0.2	1
17	1
< 1.8]
22	
23	4
< 0.3	4
19	1
30	
96	1
2.5	1
< 1.0	1
< 1.0	1
240]
< 0.05	
< 0.05	
< 0.05	1.2
< 0.05	1.7
0.11	1
< 0.05]
0.76	
0.57	4
0.17	4
0.2	-
0.08	1
0.11	1
0.06	1
< 0.05	1
0.09	1
2.3]
< 0.001	1
< 0.001	1
< 0.001	1
< 1.0	1
< 2.0	1
< 8.0	1
10	
10	4
< 0.001	
< 0.001	-
< 0.001	1
< 2.0	1
< 10	1
< 10	1
< 10	1
	3
< 0.005	1

< 0.005 < 0.005

< 0.005 < 0.005 < 0.005

Not-detected

H.MacRae

Harriet MacRae BSc MSc Graduate Soil Scientist

Results of analysis should be read in conjunction with the report they were issued with

The contents of this certificate shall not be reproduced without the express written permission of Tim O'Hare Associates LLP.


Bauder Ltd

Substrate testing results

Alfa Aggregates, Roof Garden Substrate

19 July 2023 STRI Research



CONTENTS

Introduction	3
Materials tested	3
Assessments	3
Specification Sheet	4





Introduction

- Company Bauder Ltd submitted a substrate for testing to give information on the physical & chemical characteristics.
- Testing was carried out by STRI's laboratory, Bingley (GPS reference 53.8474 and -1.8579).

Material tested

- One material was submitted for testing:
- Sample Reference: Alfa Aggregates Roof Garden Substrate (STRI ref: A20282-1)

Assessments

• All assessments were carried out according to BS:8616, result values refer only to the substrate sample tested. BS:8616 green roof substrate testing methods have been adapted from FLL testing procedures and therefore results are not directly comparable

Physical Assessments	Particle Size Distribution
Bulk Density when oven dried (g cm ⁻³)	Stones (>8 mm)
Bulk Density at field capacity (g cm ⁻³)	Coarse gravel (8-4 mm)
Calculated bulk density at saturation (g cm ⁻³)	Fine gravel (4-2 mm)
Particle Density (g cm ⁻³)	Very coarse sand (2-1 mm)
Field Capacity (% v/v)	Coarse sand (1.0-0.5 mm)
Total Porosity (%)	Medium sand (0.5-0.25 mm)
Porosity at Field Capacity (%)	Fine sand (0.250-0.125 mm)
Saturated Hydraulic Conductivity (mm min ⁻¹)	Very fine sand (0.125-0.050 mm)
	Silt (0.050-0.002 mm)
	Clay (<0.002 mm)
Chemical Assessments	
Organic Matter (%)	
рН	
EC (mS cm ⁻¹)	
Heavy Metals (Lead, Copper, Zinc, Cadmium & N	lickel) (mg l-1)
Plant Available Phosphate & Potassium (ml l-1)	
Total N (%)	
C:N Ratio	



Specification Sheet

Physical and selected chemical properties of Bauder Ltd, Alfa Aggregates Roof Garden substrate. Values refer only to the substrate sample tested.

	Substrate X
Substrate Density	
Bulk Density when oven dried	0.83 g cm ⁻³
Bulk Density at field capacity	1.21 g cm ⁻³
Calculated bulk density at saturation	1.21 g cm ⁻³
Particle Density	1.34 g cm⁻³
Water & Air	
Field Capacity	37.8 %
Total Porosity	38.3 %
Porosity at Field Capacity	0.5 %
Saturated Hydraulic Conductivity	12.4 mm min ⁻¹
Chemical Assessments	
Organic Matter	4.1 %
рН	6.5
EC	2.39 mS cm ⁻¹
Plant Available Phosphate	24 mg l ¹
Plant Available Potassium	152 mg l ⁻¹
Total Nitrogen	0.05 %
Lead	0.7 mg l ⁻¹
Nickel	0.8 mg l ⁻¹
Copper	2.4 mg l ⁻¹
Cadmium	0.1 mg l ¹
Zinc	1.1 mg l ⁻¹
C:N Ratio	47.16
Particle Size Distribution	% by weight
Stones (>8 mm)	0.1
Coarse gravel (8-4 mm)	12.0
Fine gravel (4-2 mm)	31.3
Very coarse sand (2-1 mm)	17.1
Coarse sand (1.0-0.5 mm)	9.3
Medium sand (0.5-0.25 mm)	6.1
Fine sand (0.250-0.125 mm)	4.9
Very fine sand (0.125-0.050 mm)	5.7
Silt (0.050-0.002 mm)	12.5
Clay (<0.002 mm)	1.0



Signed:

MichaelBand

(Laboratory Manager)

Date: 19 July 2023



STRI Group St Ives Estate, Bingley West Yorkshire BD16 1AU t +44 (0)1274 565131 e <u>enquiries@strigroup.com</u>

strigroup.com



Appendix C Soil delivery tickets

H SIVYER (TRANSPORT) LTD. 3 Herringham Road Charlton London SE7 8NJ	Tel: 0208 Fax: 0208 Email: ord Web:	778 1384 659 3185 ers@hsivyer.com		SIVYER Proof of Delivery
Ticket No: 1231 Job Date: 23/09/23 Customer: LONDON ROC Acc Code: LON017 Order Number: NEIL	. <u>552/1</u> K SUPPLIES LTD			Driver: COURTNEY MCKAY Vehicle Reg: KU68NFD
Account: V	Cheque: 🗙	Cash: 🗙	Card:	×
Remarks/Special Ir	nstructions:			
			Date: 23/0	9/2023 Arrive:06:52 Depart:08:45
			Address:	P C COONEY C/O MORGAN SINDALL SITE ST THOMASS HOSPITAL LAMBETH PALACE ROAD LONDON SE1 7EH
PRODUCTS DELIV	/ERED			
QUANTITY 1.00	UNIT LOAD	PRODUCT TRU GROW (BS3	882)	
The above job has bee standards. Customers ordering ve	Chargeable \ n completed satisfac hicles off the public	Naiting time: 93mins torily. All materials supp highway do so at their o	lied Conform to wn risk.	the required

Collection Signature:

Delivery Signature

Print: courtney

Print: cosmit

H SIVYER (TRANSPORT) LTD. 3 Herringham Road Charlton London SE7 8NJ	Tel: 0208 Fax: 0208 Email: ord Web:	778 1384 659 3185 ers@hsivyer.com			Proof of D	elivery
Ticket No: 1199 Job Date: 18/07/23 Customer: LONDON ROO Acc Code: LON017 Order Number: NEIL	9 407/1 CK SUPPLIES LTD				Driver: JIMMY SSIM Vehicle Reg: KN21E	BWA KO
Account: 🗸	Cheque: 🗙	Cash: 🗙	(Card: 🗙		
Remarks/Special I	nstructions:					
			Date:	18/07/2023	³ Arrive:11:52	Depart:12:05
			Addre	ss: LO ST WI LO SE	NDON ROCK THOMAS HOSPITA ESTMINSTER BRID NDON 1 7EH	NL E ROAD
PRODUCTS DELIV	VERED		·			
QUANTITY 1.00	UNIT LOAD	PRODUCT TRU GROW (BS3	882)			
The above job has bee	Chargeable V	Vaiting time: -mins orily. All materials supp	blied Confor	m to the rea	juired	

standards. Customers ordering vehicles off the public highway do so at their own risk.

Please note waiting time is chargeable after 20 minutes on site

Collection Signature:

Print: Jimmy

Print: Valentin

Delivery Signature

CIIVE D

H SIVYER (TRANSPORT) LTD. 3 Herringham Road Charlton London SE7 8NJ	Tel: 0208 Fax: 0208 Email: ord Web:	778 1384 659 3185 ers@hsivyer.com			SIVYER Proof of Delivery
Ticket No: 1196 Job Date: 14/07/23 Customer: LONDON ROC Acc Code: LON017 Order Number: NEIL	5 713/1 K SUPPLIES LTD				Driver: JASHANPREET SINGH Vehicle Reg: KN15MKU
Account: ¥	Cheque: 🗙	Cash: 🗙	Ca	rd: 🗙	
Remarks/Special I	nstructions:				
			Date: 1	4/07/202	²³ Arrive:08:54 Depart:09:05
			Address	s: P C, Ti S B S	C COONEY /O MORGAN SINDALL SITE HE CORE T THOMASS HOSPITAL RIDGE RD E1 7EH
PRODUCTS DELIV	/ERED				
QUANTITY 1.00	UNIT LOAD	PRODUCT TRU GROW (BS3	882)		
The shows ich has bee	Chargeable \	Waiting time: -mins	lied Conform	to the re	autrod

standards. Customers ordering vehicles off the public highway do so at their own risk.

Please note waiting time is chargeable after 20 minutes on site

Collection Signature:





Print: Steve

Print: bogdan

H SIVYER (TRANSPORT) LTD. 3 Herringham Road Charlton London SE7 8NJ	Tel: 0208 Fax: 0208 Email: or Web:	8 778 1384 8 659 3185 ders@hsivyer.com			SIVYER Proof of Delivery
Ticket No: 11990	<u>88/1</u>				Driver: JIMIELEE BROWN
Job Date: 18/07/23 Customer: LONDON ROCK S Acc Code: LON017 Order Number: NEIL	UPPLIES LTD				Vehicle Reg: KN65AAE
Account: 🖌 C	Cheque: 🗙	Cash: 🗙	Car	d: 🗙	
Remarks/Special Inst	ructions:				
			Date: 18	8/07/2023	Arrive:08:05 Depart:08:26
			Address	: P C C/O THE ST 1 BRI SE1	COONEY MORGAN SINDALL SITE CORE THOMASS HOSPITAL DGE RD 7EH
PRODUCTS DELIVER	RED				
QUANTITY 1.00	UNIT LOAD	PRODUCT TRU GROW (BS3	882)		
	Chargeable	Waiting time: 1mins			
The above job has been c standards. Customers ordering vehic Please note waiting time	ompleted satisfa cles off the public is chargeable aft	ctorily. All materials supp highway do so at their o er 20 minutes on site	blied Conform (to the requ	ired
Collection Signa	ture:				Delivery Signature

Print: now

Print: D .Ciocan

HE Pallet Network

Delivery Note

	Docket Number:	8149	2297		Total Pallets:
in them in calculated by the	Order Number:	533038	Request Depot: 0	58	1
	Despatched:	31/07/2023	Collect Depot: 0	58	Total Weight:
ACTION ROADWAYS LTD	Service:	TN	ITL		500
Collected From:		Delivery To	:	D	elivery Depot:
	Bauder Limite Fenland Flat F LIHE - Kings (Westminste London 07880186936	d Roofing College St Thomas Hos / / 01473257671 /	pital	()62
Remarks:	<u>-3E176</u>				
Pre 10.30 RIGID ONLY 0.5x2m ² offload requir Engineering .) IN GOOD ORDER AND CON		
SIGNATURE The signature for this delivery was captured digitally and NOT receiver did not sign this document, however this was the signa	signed on the original ature captured relatin	ARRIVAL TIME paperwork. The o to this delivery.		09:	50
Customer Signature		DATE		TIME	
		01/0	08/2023		10:07
× 2		COP		COP SIG	NED
Received in Good Condition Julian			Ν		Ν
PRINT NAME	CLAUSE NOTES	I		1	
Julian					
	1				
OVERNIGHT AND ECONOMY DISTRIBUTION OF PALLETISED GOOD	S THROUGH THE U.K. AND E	UROPE. ALL GOODS CARRIED SUBJECTT	OR.H.A CONDITIONS, COPIE	S AVAILABLE	UPON REQUEST

DELIVERY NOTE

DROP:	1
VEHICLE:	FJ66 UMZ
RUN:	1
DRIVER:	DAVE
SYSTEM:	Palletline
DEPOT:	027

palletline

AM DELIVERY



TIME: 08:48

01/08/2023

DATE:

45416290

The signature for this delivery was captured digitally and NOT signed on the original paperwork. This receiver did not sign this document, however this was the signature captured relating to this consignment.

All goods carried under RHA conditions of carriage, copies available upon request.

DELIVERY NOTE

DROP:	1
VEHICLE:	YJ66 VVZ
RUN:	1
DRIVER:	DAVE
SYSTEM:	Palletline
DEPOT:	027

palletline

AM DELIVERY



	PRINT:	Julian
	DATE:	03/10/2023
40010000	TIME:	11:27

The signature for this delivery was captured digitally and NOT signed on the original paperwork. This receiver did not sign this document, however this was the signature captured relating to this consignment.

All goods carried under RHA conditions of carriage, copies available upon request.

HE Pallet Network

Delivery Note

	Docket Number:	8	82284	4083		Total Pallets:
action Coolways Ind.	Order Number:	543716		Request Depot:	058	2
ACTION ROADWAYS LTD	Despatched:	02/10/202	23	Collect Depot:	058	Total Weight:
	Service:		AM	TL		1500
Collected From:		Deliver	у То:			Delivery Depot:
	Bauder Limite Fenland Flat F London Istitute Westminster E 07880186936	d Roofing e for Heathcare Bridge Road Li / / 014732576 EH	e Kings Co ondon 671 /	llege St. Tr		062
Remarks: AM RIGID ONLY 0.5x2m² offload Req .	-					
THE WORDS UNEXAMINED OR UNCHECKE SIGNATURE The signature for this delivery was captured digitally and NOT s receiver did not sign this document, however this was the signa	D WILL NOT BE ACCEPTED A signed on the original ture captured relating	AS A CONDITIONAL SIGNA AF paperwork. The g to this delivery.	RRIVAL TIME	I GOOD ORDER ANI	10 CONDITION	:50
Customer Signature		עם	o3/1	0/2023	TIME	10:51
Received in Good Condition - David	<u>.</u>	c	OP	N	COPS	IGNED N
	CLAUSE NOTES					
David						

HE Pallet Network

Delivery Note

	Docket Number:		82377	7086		Total Pallets:			
andon Dodohogo kd.	Order Number:	544881		Request Depot:	058	1			
ACTION ROADWAYS I TD	Despatched:	09/10/20	023	Collect Depot:	058	Total Weight:			
	Service:		AM	TL		250			
Collected From:		Delive	ery To:			elivery Depot:			
	Bauder Limite Fenland Flat F LIHE King Col St. Thomas's I 07880186936 SE1 7E	d Roofing Iege Westmi Hospital Lor / / 0147325	inster Bridge ndon 7671 /	Road)62			
Remarks: AM RIGID ONLY 0.5x2m ² Please email vehicle name to Dave to pass t .	e registration n	umber and h	aulier						
THE WORDS UNEXAMINED OR UNCHECKE SIGNATURE The signature for this delivery was captured digitally and NOT s	igned on the original	AS A CONDITIONAL SIC	SNATURE RECIEVED IN	I GOOD ORDER ANI	10 CONDITION	:57			
receiver did not sign this document, however this was the signa Customer Signature	ture captured relatin	g to this delivery.	TIME						
			10/10	0/2023		11:00			
×			COP		COP SIG	INED			
Received in Good Condition - David				Ν		Ν			
	CLAUSE NOTES								
David									

Foley & Miles	CF38435. Tel: 01708 869986 Fax: 01708 869987 Serial No: 38716									
Date: 02/10/2923	Delivery Address:									
Customer: BOURNE	SKIDMORES OF HERTFORD.									
Customer Ref: 123593	ST. THOMAS HOSPITAL									
Collection Address:	MORGAN SINLALL									
YARD	LAMBETH PLACE ROAD SEJ FEH									
, v										
	Delivery Instructions:									
	KYLE - 07967 144079									
Vehicle Reg.No:	N									
Drivers Signature:	Crossrail Delivery Y N									
Print Name:	if Y, ensure vehicle is correctly equipped with all necessary equipment									

Unit 3 Readmans Industrial Estate, Station Road, Tilbury, RM18 8QR

Description of Goods: 360 polybogs intensive Topsoil

Hazards

If Risk acceptable, tick each box, if uncertain contact office for further instruction

Delivery Site Access/Egress	Lone Working	
Ground Conditions	Overhead Obstruction	
Exclusion Zone	Site Assistance	
D/Bar Vehicle/Trailer dropped (Y/N)	Other	

Drawbar Trailer Drop

Trailer Required uncoupling to gain access to site (to be signed by site representative)

Signature:	Print Name:
5	

Waiting Time

Time on site:	Time off site:	Total time on site:
Signature:		Print Name:

Received in Good Condition

Customer Signature:	Print Name:	Date:

Disclaimer

Any discrepancies should be notified within 24hrs of delivery. It is hereby understood and agreed that Foley & Miles Ltd. shall not be held liable for any damage to the Customer's property or ground surface, during the delivery of goods onto the Customer's property by request, as a result of the ground surface being insufficient to withstand the weight of the delivery vehicle and/ or load'. Or any damage caused during unloading under instructions given by the customer where advice has been given by the company's agent as to the potential risk.

Customer Signature:

Date:

Foley & Miles	CF38435. Tel: 01708 869986 Fax: 01708 869987 Serial No: 38716									
Date: 02/10/2923	Delivery Address:									
Customer: BOURNE	SKIDMORES OF HERTFORD.									
Customer Ref: 123593	ST. THOMAS HOSPITAL									
Collection Address:	MORGAN SINLALL									
YARD	LAMBETH PLACE ROAD SEJ FEH									
, v										
	Delivery Instructions:									
	KYLE - 07967 144079									
Vehicle Reg.No:	N									
Drivers Signature:	Crossrail Delivery Y N									
Print Name:	if Y, ensure vehicle is correctly equipped with all necessary equipment									

Unit 3 Readmans Industrial Estate, Station Road, Tilbury, RM18 8QR

Description of Goods: 360 polybogs intensive Topsoil

Hazards

If Risk acceptable, tick each box, if uncertain contact office for further instruction

Delivery Site Access/Egress	Lone Working	
Ground Conditions	Overhead Obstruction	
Exclusion Zone	Site Assistance	
D/Bar Vehicle/Trailer dropped (Y/N)	Other	

Drawbar Trailer Drop

Trailer Required uncoupling to gain access to site (to be signed by site representative)

Signature:	Print Name:
5	

Waiting Time

Time on site:	Time off site:	Total time on site:
Signature:		Print Name:

Received in Good Condition

Customer Signature:	Print Name:	Date:

Disclaimer

Any discrepancies should be notified within 24hrs of delivery. It is hereby understood and agreed that Foley & Miles Ltd. shall not be held liable for any damage to the Customer's property or ground surface, during the delivery of goods onto the Customer's property by request, as a result of the ground surface being insufficient to withstand the weight of the delivery vehicle and/ or load'. Or any damage caused during unloading under instructions given by the customer where advice has been given by the company's agent as to the potential risk.

Customer Signature:

Date:

Appendix D Verification geochemical results

		Verificatior	n site visit #1 4	4-Oct-23											Ň	Verification s	site visit #2	27=-October-2	3													
LIHE Remediation verification	Zone	Ground level	Ground level	Ground level	Ground level G	Fround level	Ground level G	round level Gr	round level Gr	ound level	Terrace	Terrace	Terrace	Terrace T	Terrace	Terrace	Terrace	Bagged soils Ba	agged soils Ba	igged soils Ba	gged soils Ba	gged soils Ba	gged soils B	agged soils Ba	agged soils Ba	igged soils					Soil	
Soil Acceptability Criteria	Strata Location rpt	Topsoil 1 V101	Topsoil 1 V103	Topsoil 1 V105	Topsoil 1 V107	Topsoil 1 V108	Topsoil 1 V109	Topsoil 1 V110	Topsoil 1 V112	Topsoil 1 V114	Topsoil 2 P101	Topsoil 2 P102	Topsoil 2 P103	Topsoil 2 P104	Topsoil 2 P105	Topsoil 2 P201	Topsoil 2 P202	Topsoil 3 V201	Topsoil 3 V202	Topsoil 3 V203	Topsoil 3 V204	Topsoil 3 V205	Topsoil 3 V206	Topsoil 3 V207	Topsoil 3 V208	Topsoil 3 V209					Acceptability	Exceedances
Screening	Depth (mbgl)	0.2	2 0.1	0.2	0.3	0.1	0.05	0.2	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					Criteria (SAC)	
	Sampled Date	4/10/23	4/10/23	4/10/23	4/10/23	4/10/23	4/10/23	4/10/23	4/10/23	4/10/23	4/10/23	4/10/23	4/10/23	4/10/23	4/10/23	27/10/20	27/10/20	27/10/20	27/10/20	27/10/20	27/10/20	27/10/20	27/10/20	27/10/20	27/10/20	27/10/20					_	
Moisture Content Moisture Content Ratio (% of as received sample)	%	14	20	17	18	12	13	15	15	12	5.5	14	16	19	22	23	21	16	11	13	15	15	16	12	15	13	No < L 25	LOD > LOD 0 25	Min Av 5.5 15.	.ve Max .300 23		
Asbestos																																
Asbestos Quantification - Total - %	% No unite	ND	<0.001 Detected			<0.001	D ND	ND	ND	ND	NE	0.0154	N	D ND			JD.		ND	ND	ND	ND	ND) ND	ND		3	2 1	0.001 0.	.006 0.0154	Detected	3
Amosite (Brown) Asbestos	No units	ND	ND ND	ND N		Detected NI	D ND	ND	ND	ND		Detected ND	N	D ND	į.	ND N	ND ND	ND ND	ND	ND	ND	ND	ND	ND ND	ND		25	25 0				
Crocidolite (Blue) Asbestos	No units	ND	ND ND	ND N	ID NE) NI	D ND	ND	ND	ND	NE	D ND	N	D ND		ND N	ND ID	ND ND	ND	ND	ND	ND	ND	ND ND	ND		25	25 0				
Fibrous Tremolite	No units	ND	ND ND	ND N	ID NL	D NI	D ND	ND	ND ND	ND	NE	D ND	N	D ND		ND ND N	ND ND	ND ND	ND	ND	ND	ND	ND	ND ND	ND		25	25 0 25 0				
Fibrous Actinolite	No units	ND	ND N	ND N	ID NE	D NI	D ND	ND	ND	ND	NE	D ND	N	D ND	1	ND N	ND	ND ND	ND	ND	ND	ND	ND	ND	ND		25	25 0				
Non-Asbestos Fibre ACM comment	No units No units	ND	Loose fibres in so	Detected D oil	letected De	tected NI	D ND	ND	Dete	ected ND	De	etected Det CM debris in same	ected D	etected Dete	cted 1	ND N	ND	ND ND	ND	ND	ND	ND	ND	D ND	ND		25	25 0 3 0				
Carbon and Inorganics																																
Total Oranic Carbon	%	3.51	2.86	2.77	2.75	2.79	3.35	2.84	3.14	3.08	1.1	1.73	2.65	1.59	1.46	2.49	2.06	3.19	4.73	3.39	3.32	3.97	4.04	4.01	3.36	3.8	25	0 25	1.1	2.96 4.73		
Loss on Ignition	%	7.03	3 7.4	6.83	7.19	5.59	7.21	6.58	7.5	7.13	5.8	4.13	4.30	4.02	3.78	5.36	5.96	7.79	7.89	9.11	8.21	10.7	9.63	10.9	8.7	8.67	25	0 25	3.78	7.10 10.9		
pH	pH Units	8.06	8.55	8.48	8.77	8.65	8.15	8.1	8.1	7.97	7.97	8.59	8.69	8.6	8.47	8.72	8.6	7.91	8.72	7.96	8.08	8.31	8.37	8.26	8.1	8.3	25	0 25	7.91	8.34 8.77	5.5 to 8.5	9
Antimony	mg/kg	1.79	1.43	1.01	0.822	0.986	1.7	0.732	1.24	1.49	<0.6	<0.6	1.08	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	0.738	<0.6	<0.6	<0.6	<0.6	0.661	25	13 12	0.6	0.86 1.79		
Arsenic	mg/kg	8.22	8.69	7.46	7.88	9.23	7.39	7.91	9.48	9.23	5.53	10.2	12.6	9.41	8.64	8.57	9.28	20.9	22.9	23.3	23.5	20.8	22.6	26.9	23.1	23.3	25	0 25	5.53 1	3.88 26.9	168	0
Barium	mg/kg mg/kg	63.4	65.3	54.8	0.0282	60.6	77.7	57.3	62.5	64.5	117	135	168	138	134	0.218	134	30.3	28.9	32.8	66.2 0.202	27.2	28.8	54 0.21	26.3	23.7	25	0 25	23.7 7	3.97 168 0.18 0.826	880	0
Chromium, Hexavalent	mg/kg	<0.6	6 <0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	25	25 0	0.6	0.60 0.6	250	0
Chromium	mg/kg	14.4	27.2	19.2	17.3	12.4	11.8	15.4	16.1	18	10.6	18.3	28.4	22.4	19.5	23.5	18.2	7.37	7.73	9.94	8.65	9.25	9.91	9.7	8.5	10.5	25	0 25	7.37 1	4.97 28.4	33000	0
Lead	та/кġ mg/kg	22.8	30.6	21.1 55.3	23.8	29.8 44.7	25.9 109	29.9 79.3	26.8 79.9	24.7 78.8	17.6	41.7 9.71	44.2	40.6	38.7 9.3	32.9 11.5	38 10.4	14	22.3	24.2 24.5	15.2	17.8	16.6 24	16.4 26.9	13.4	13.1 19.7	25	0 25	13.1 2 8.35 3	5.68 44.2 6.01 109	44000	0
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.108	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	25	24 1	0.1	0.10 0.108	68	0
Molybdenum Nickel	mg/kg mg/kg	0.543	1.07	0.394	0.481	0.613	0.592	0.545	0.635	1.08	1.08	2.29	2.69	2.45	2.76	2.18	1.85	0.931 9.35	1.28	2.11	0.988	1.66	1.34	1.28	0.966	0.915	25	0 25	0.394 8.86 4	1.31 2.76 3.19 24.7	3400	0
Selenium	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	25	25 0	1	1.00 1	1800	0
Vanadium	mg/kg	29.1	31.2	31.4	30.8	28.2	27.3	28.9	33.7	30.7	23.9	30.1	61.8	32.8	29.4	33.5	29.9	21.9	24.4	27.4	25.4	25.1	24.6	27	24.5	23.8	25	0 25	21.9 2	9.47 61.8	5000	0
Polyaromatic Hydrocarbons (PAHs)	mg/kg	95.0	91.0	91.2	70.7	73.0	97	02.4	105	02.9	71.4	140	203	154	129	102	107	00.1	95.4	116	01.0		95.6	67.9	75.3	00.0	25	0 25	00.0 10	0.02 203	170000	0
Naphthalene	mg/kg	<0.045	i <0.045	<0.045	0.0119	<0.045	0.0348	<0.045	<0.018	<0.09	<0.009	<0.009	< 0.009	<0.009	< 0.009	< 0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	25	23 2	0.009	0.02 0.09		
Acenaphthylene Acenaphthene	mg/kg ma/ka	<0.06	6 <0.06 4 <0.04	<0.06	<0.0352	<0.06	0.0535	<0.06	<0.0374	<0.12	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.0529	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	25	21 4 24 1	0.012 0	0.03 0.12		
Fluorene	mg/kg	<0.05	i <0.05	<0.05	<0.01	<0.05	0.128	<0.05	<0.02	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.012	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	25	23 2	0.01	0.03 0.128		
Phenanthrene Anthracene	mg/kg	0.299	<0.075	0.262	0.163	0.106	1.72	0.333	0.191	0.248	<0.015	<0.015	<0.015	0.0232	0.0227	<0.015	<0.015	0.0194	0.192	0.0216	0.0211	0.0269	0.0397	0.0189	0.0239	0.0378	25	6 19 20 5	0.015	0.16 1.72		
Fluoranthene	mg/kg	0.743	0.286	0.619	0.423	0.385	2.76	1.11	0.64	0.704	0.0271	0.0492	0.0667	0.0679	0.0555	0.0363	0.041	0.0758	1.14	0.123	0.113	0.116	0.135	0.11	0.108	0.161	25	0 25	0.0271	0.40 2.76		
Pyrene	mg/kg	0.634	0.263	0.528	0.366	0.348	2.31	0.968	0.562	0.638	0.0228	0.0379	0.0495	0.0511	0.0408	0.0273	0.0342	0.059	1.32	0.0963	0.0886	0.0886	0.107	0.0859	0.0828	0.126	25	0 25	0.0228	0.36 2.31	50	0
Chrysene	mg/kg mg/kg	0.379	0.193	0.347	0.261	0.239	1.22	0.623	0.329	0.328	0.0161	0.037	0.0449	0.0419	0.0328	0.0331	0.0334	0.0397	1.07	0.0498	0.0686	0.0529	0.051	0.0617	0.0542	0.0717	25	0 25	0.0161	0.22 1.22	96	U
Benzo(b)fluoranthene	mg/kg	0.55	i 0.335	0.59	0.424	0.396	1.41	1.09	0.498	0.485	0.0256	0.0707	0.0755	0.0825	0.0566	0.0473	0.0519	0.063	1.29	0.0762	0.0996	0.0812	0.0789	0.0979	0.0985	0.118	25	0 25	0.0256	0.33 1.41	15	0
Benzo(k)fluoranthene Benzo(a)pyrene	mg/kg ma/ka	0.221	0.139	0.214	0.158	0.163	0.598	0.403	0.183	0.168	<0.014	0.022	0.0265	0.0277	<0.014	<0.014	0.018	0.0215	0.466	0.0269	0.0375	0.0293	0.0304	0.0329	0.0335	0.0417	25	3 22	0.014	0.12 0.598	21	0
Indeno(1,2,3-cd)pyrene	mg/kg	0.277	0.174	0.285	0.205	0.204	0.723	0.631	0.238	0.257	<0.018	0.0313	0.0332	0.0499	0.024	<0.018	0.024	0.0296	0.598	0.034	0.0504	0.0389	0.0368	0.0491	0.0474	0.0587	25	2 23	0.018	0.17 0.723	2.	Ū
Dibenzo(a,h)anthracene	mg/kg	<0.115	<0.115	<0.115	0.0297	<0.115	0.0971	<0.115	<0.046	<0.23	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	0.133	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	25	22 3	0.023	0.06 0.23	1.3	0
Coronene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.237	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	25	24 1	0.024	0.20 0.237		
PAH, Total Detected USEPA 16	mg/kg	4.22	2 2.04	3.96	2.91	2.57	14.9	7.35	3.68	3.84	<0.118	0.369	0.42	0.507	0.303	0.206	0.269	0.418	9.17	0.573	0.664	0.582	0.625	0.632	0.615	0.844	25	1 24	0.118	2.47 14.9	100	0
PAH, Total Detected USEPA 16 + Coronene Gasoline Range Organics (GRO)	mg/kg	4.22	2.04	3.96	2.91	2.57	14.9	7.35	3.68	3.84	<0.318	0.369	0.42	0.507	<0.318	<0.318	<0.318	0.418	9.4	0.573	0.664	0.583	0.625	0.632	0.615	0.844	25	4 21	0.318	2.50 14.9	100	0
Total Aliphatics >C5-C10	mg/kg	<0.05	i <0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	25	25 0	0.05	0.05 0.05		
Total Aromatics >EC5-EC10	mg/kg mg/kg	<0.05	6 <0.05 <0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	25	25 0	0.05	0.05 0.05		
TPH Criteria Working Group (TPH CWG)	iliging	40.02	40.02	40.02	40.02	40.02	40.02	40.02	40.02	40.02	40.02	40.02	40.02	40.02	40.02	40.02	0.02	40.02	40.02	40.02	40.02	40.02	40.02	40.02	40.02	40.02	20	20	0.02	0.02		
Aliphatics >C5-C6	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 0.01	< 0.01	< 0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 0.01	< 0.01	25	25 0	0.01	0.01 0.01		
Aliphatics >C6-C8 Aliphatics >C8-C10	mg/kg mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	25	25 U 25 O	0.01	0.01 0.01		
Aliphatics >C10-C12	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	25	25 0	1	1.00 1		
Aliphatics >C12-C16 Aliphatics >C16-C21	mg/kg mg/ka	<1	<1	<1	<1	<1	<1	2.26	<1 2.72	<1	<1	<1	<1	<1	<1	<1	<1	1.69 6.48	<1 6.82	<1 8	<1	<1	<1	<1 7.82	<1	<1 9 27	25	23 2 5 20	1	1.08 2.26 3.82 14.1		
Aliphatics >C21-C35	mg/kg	16.5	i 18.8	24	12.8	13.5	14.3	19.1	18.7	20.3	31.8	41.9	47.4	51.8	48.6	41.5	31.3	28.6	27.7	29.5	23.5	25.8	216	24.9	26.3	87.9	25	0 25	12.8 3	7.70 216		
Aliphatics >C35-C44	mg/kg	2.53	3.2	3.64	1.27	2.53	1.31	2.36	2.64	2.41	7.7	8.37	9.36	10.5	10.4	7.17	4.76	2.86	2.8	2.54	2.2	2.61	10.7	2.31	2.13	25	25	0 25	1.27	5.33 25		
Total Aliphatics & Aromatics >C10-C44	mg/kg	20.8	23.9	101	43.5	64.3	75.2	74.4	76	76.2	41.3	80.7	87.4	99.6	103	73.9	54.1	205	118	121	97.7	172	334	105	117	246	25	0 25	43.5 11	9.17 334		
Aromatics >EC5-EC7	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	25	25 0	0.01	0.01 0.01		
Aromatics >EC7-EC8 Aromatics >EC8-EC10	mg/kg ma/ka	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	25	25 0 25 0	0.01	0.01 0.01		
Aromatics > EC10-EC12	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	25	25 0	1	1.00 1		
Aromatics > EC12-EC16	mg/kg	<1	7.79	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	6.44	2.59	1.26	<1	3.23	1.67	<1	1.89	1.33	25	17 8	1 97 4	1.73 7.79		
Aromatics > EC21-EC35	mg/kg	41.5	5 147	47.2	20.6	4.44	39.1	35.5	38.9	36.8	35.5	2.0	2.01	25.3	4.49	19.6	14.7	119	59.6	56.6	47.9	92.8	66.8	50.4	58.8	97.3	25	0 25	14.7 5	0.06 147		
Aromatics >EC35-EC44	mg/kg	14.8	30.7	16.2	5.94	9.65	9.4	8.07	7.18	8.5	12.5	5.96	5.07	6.77	13.7	1.32	<1	14.8	7.27	10.2	7.48	12.9	11	9.17	7.88	7.99	25	1 24	1 9	9.82 30.7		
Aromatics > EC40-EC44 Total Aromatics > EC10-EC44	mg/kg ma/ka	3.33	9.66 252	4.89	<1 28.5	1.75	1.19	<1 48.4	<1 51.8	<1 52.1	<1 53.7	<1 29.8	<1 29.7	<1	<1 43.1	<1 24.8	<1	3.22	1.22	1.99	<1 65.4	2.36	2.79	1.48	1.27	2.5	25	12 13 0 25	1 17.6 7	1.99 9.66 1.92 252		
Total Aliphatics & Aromatics >C5-C44	mg/kg	84.3	3 275	101	43.5	64.3	75.2	74.4	76	76.2	95	80.7	87.4	99.6	103	73.9	54.1	205	118	121	97.7	172	334	105	117	246	25	0 25	43.5 11	9.17 334	1000	0
Phenols	malka	-0.01	-0.01	=0.01	-0.01	-0.01	-0.01	-0.01	=0.01	+0.01	0.0052	<0.01	<0.01	-0.01	<0.01	<0.01	<0.01	0.0228	0.0226	<0.01	0.0118	<0.01	0.0110	0.0112	<0.01	0.0115	25	10 7	0.01 0	015 0.0052		
Cresols	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0117	<0.01	0.0114	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0236	0.0226	0.0345	0.0236	0.437	0.0595	0.0565	0.0351	0.207	25	10 <i>T</i> 14 11	0.01 0.	.044 0.437		
Xylenols	mg/kg	<0.015	0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.0635	0.0702	0.0595	0.0372	0.064	0.0524	0.0635	0.0357	0.0339	<0.015	<0.015	0.0236	0.0357	0.0226	0.0234	<0.015	25	12 13	0.015 0.	.031 0.0702		
Phenols, Total Detected monohydric	mg/kg	<0.035	< 0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	0.159	0.0702	0.0595	<0.035	0.064	0.0524	0.0635	0.0952	0.113	<0.035	<0.035	0.46	0.107	0.0904	0.0585	0.219	25	12 13	0.035 0.	.081 0.46		
Methyl Tertiary Butyl Ether	mg/kg	<0.0005	i <0.01	<0.0005	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	25	25 0	0.0005 0.	.005 0.01		
Benzene	mg/kg	<0.001	<0.02	< 0.001	<0.02	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	<0.001	<0.001	<0.001	<0.001	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	< 0.02	<0.02	25	25 0	0.001 0.	.011 0.02		
Ethylbenzene	mg/kg mg/kg	<0.001	<0.02	<0.001	<0.02	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	25	24 1 25 0	0.001 0.	.011 0.02		
p/m-Xylene	mg/kg	<0.002	< 0.04	<0.002	<0.04	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.04	<0.04	<0.04	< 0.04	<0.04	<0.04	< 0.04	<0.04	<0.04	< 0.04	<0.04	25	25 0	0.002 0.	.022 0.04		
o-Xylene Sum of Detected Xylenes	mg/kg	<0.002	<0.04	<0.002	<0.04	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	25	25 0	0.002 0	.022 0.04		
Sum of BTEX	mg/kg	<0.02	<0.14	<0.02	<0.14	<0.02	<0.007	<0.007	<0.007	<0.002	<0.007	<0.007	<0.007	<0.007	<0.02	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	25	25 0	0.007 0.	.076 0.14	6	0
Corrective actions																																
Corrective actions			Yes			Yes						Yes				Delineation	samples				Repla	acement soils										
Soils excavated and removed from site.			Yes			Yes						Yes																				

	Stroto	Topcoil 1	Topcoil 1	Topcoil 1	Topcol 1	Topcoil 1	Topcoil 1	Topcoil 1	Topcoil 1	Topcoil 1	Topcoil 2	Topcoil 2	Topcoil 2	Topcoil 2	Topcoil 2	Topcol 2	Topcoil 2	Topcol 2	Topooil 2	Topcol 2	Topcoil 2	Topcol 2	Topcoil 2	Topco
On the Annual Annual States of the state	Suata	10psoli 1	Tupson T	10psoli 1	TOPSOIL L	i upsuii i	Tupson T	Tupsoli T	T UPSUILT	T UPSOIL L	10050112	10050112	10050112	1 Up5011 2	1 Up 50 il 2	10050112	T UPSUII 2	TOPSOILS	10090113	10050113	10050113	10050113	TUPSUII 3	Tupsu
Soli Acceptability Criteria	Location rpt	V101	V103	V105	V107	V108	V109	V110	V112	V114	P101	P102	P103	P104	P105	P201	P202	V201	V202	V203	V204	V205	V206	V2
Screening	Depth (mbgl)	0.2	0.1	0.2	0.3	0.1	0.05	0.2	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	
g	Sampled Date	4/10/23	4/10/23	4/10/23	4/10/23	4/10/23	4/10/23	4/10/23	4/10/23	4/10/23	4/10/23	4/10/23	4/10/23	4/10/23	4/10/23	27/10/20	27/10/20	27/10/20	27/10/20	27/10/20	27/10/20	27/10/20	27/10/20	27/10

Verification Samples

soil 3 Topsoil 3 Topsoil 3 V207 V208 V209 10/20 27/10/20 27/10/20			
V207 V208 V209 10/20 27/10/20 27/10/20	osoil 3	Topsoil 3	Topsoil 3
	V207	V208	V209
10/20 27/10/20 27/10/20	-		-
	10/20	27/10/20	27/10/20



Units 7-8 Hawarden Business Park Manor Road (off Manor Lane) Hawarden Deeside CH5 3US Tel: (01244) 528777 email: hawardencustomerservices@alsglobal.com Website: www.alsenvironmental.co.uk

Pell Frischmann Burrator House Peninsula Park Rydon Lane Exeter Devon EX2 7NT

Attention: Samara Hyde

CERTIFICATE OF ANALYSIS

Date of report Generation: Customer: Sample Delivery Group (SDG): Your Reference: Location: Report No: Order Number: 13 October 2023 Pell Frischmann 231005-37 104920 London Institute of Healthcare Engineering 707362

We received 17 samples on Thursday October 05, 2023 and 14 of these samples were scheduled for analysis which was completed on Thursday October 12, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

<u>Sonia McWhan</u> Operations Manager



ALS Laboratories (UK) Limited. ALS Life Sciences Limited registered Office: Torrington Avenue. Coventry CV4 9GU Registered in England and Wales No. 02391955. Version: 3.6 Version Issued: 13/10/2023



SDG: 231005-37 Client Ref.: 104920

CERTIFICATE OF ANALYSIS

t Number: 707362 Superseded Report: Location: London Institute of Healthcare Engineering Report Number: 707362

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28730481	P101	ES1	0.00 - 0.00	04/10/2023
28730496	P102	ES1	0.00 - 0.00	04/10/2023
28730511	P103	ES1	0.00 - 0.00	04/10/2023
28730523	P104	ES1	0.00 - 0.00	04/10/2023
28730530	P105	ES1	0.00 - 0.00	04/10/2023
28730549	V101	ES1	0.20	04/10/2023
28730541	V102	ES1	0.10	04/10/2023
28730452	V103	ES1	0.10	03/10/2023
28730564	V104	ES1	0.05	03/10/2023
28730578	V105	ES1	0.20	03/10/2023
28730600	V107	ES1	0.30	03/10/2023
28730620	V108	ES1	0.10	03/10/2023
28730638	V109	ES1	0.05	03/10/2023
28730655	V110	ES1	0.20	03/10/2023
28730671	V112	ES1	0.10	03/10/2023
28730687	V113	ES1	0.05	03/10/2023
28730465	V114	ES1	0.20	04/10/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

_

Client	SDG: 231005-3 t Ref.: 104920	37		Rep	ort	Num Loca	1ber tion	: 70 : Lor	7362 1don	2 Inst	titute	e of I	Heal	S thca	upe i re Er	r sed ngine	ed F eerir	Repo ng	rt:				
Results Legend X Test N No Determination Possible	Lab Sample	e No(s)			28730481			28730496			28730511			28730523			28730530			28730549			28730452
Sample Types -	Custon Sample Ref	ner erence			P101			P102			P103			P104			P105			V101			V103
S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate	AGS Refe	rence			ES 1			ES 1			ES 1			ES1			ES 1			ES 1			ES 1
PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage	Depth	(m)			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.20		NI	0.10
RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas	Contaiı	ner	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)
OTH - Other	Sample 7	уре	S	S	S	s	S	S	S	S	s	S	S	S	S	S	S	s	S	S	S	S	S
Asbestos ID in Solid Samples Asbestos Quantification - Full	All	NDPs: 0 Tests: 14 NDPs: 0 Tests: 3	x			x			x			x			x			x			x		
Coronene	All	NDPs: 0 Tests: 14		X		X	X			X			X			X			X		X	x	
EPH CWG GC (S)	All	NDPs: 0 Tests: 14		x			x			x			X			x			x			x	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 14			X			X			x			x			x			x			x
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 14		x			x			x			x			x			x			x	
Loss on Ignition in soils	All	NDPs: 0 Tests: 14		X			x			x			x			x			x			x	
Metals in solid samples by OES	All	NDPs: 0 Tests: 14		X			x			x			X			x			x			x	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 14		x			x			x			x			x			x			x	
PAH by GCMS	All	NDPs: 0 Tests: 14		x			x			x			x			x			x			x	
pH	All	NDPs: 0 Tests: 14		x			x			x			x			x			x			x	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 14		x			x			x			x			x			x			x	
Sample description	All	NDPs: 0 Tests: 14		x			x			x			x			x			x			x	
Total Organic Carbon	All	NDPs: 0 Tests: 14		x			x			x			x			x			x			x	
IPH LWG GE (S)	All	NDPs: 0 Tests: 14		x			x			x			x			x			x			x	

		28730578			28730600			28730620			28730638			28730655			28730671	28730465
		V105			V107			V108			V109			V110			2117	V114
		ESI			ESI			ESI			ES1			ES1			ES1	ESI
		0.20			0.30			0.10			0.05			0.20			0.10	0.20
Handle	250g Amber Jai (ALE210)	60g VOC (ALE215)	1 kg TUB with Handle	250g Amber Jai (ALE210)	60g VOC (ALE215)	1 kg TUB with Handle	250g Amber Jai (ALE210)	60g VOC (ALE215)	1 kg TUB with Handle	250g Amber Jai (ALE210)	60g VOC (ALE215)	1 kg TUB with Handle	250g Amber Jai (ALE210)	60g VOC (ALE215)	1 kg TUB with Handle	250g Amber Jai (ALE210)	60g VOC (ALE215)	1kg TUB with Handle
~	s N	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
X			X			X			X			X			X			x
	x			X		<u>^</u>	X			X			X			X		
	x			x			x			x			x			x		
	V	X		V	X		V	X		V	X		V	X		V	X	
	× X			x			x			x			×			x		
	x			X			X			x			X			X		
	X			X			X			X			X			X		
	x x			x X			x X			x X			X X			x X		
	x			X			x			X			X			X		
	x			X			X			X			X			X		
	x x			x x			x x			x x			x x			x x		

CERTIFICATE OF ANALYSIS

Clien	SDG: 231005-3 t Ref.: 104920	57		Rep	oort I	Num Loca	iber tion	: 707 : Lor	7362 1don	2 i Inst	titut	e of I	Heal	S thca	uper re Er	r sed ngine	ed F eerin	lepo Ig	rt:				
Results Legend X Test N No Determination Possible	Lab Sample	e No(s)			28730481			28730496			28730511			28730523			28730530			28730549			28730452
Sample Types -	Custon Sample Ref	ier erence			P101			P102			P103			P104			P105			V101			V103
Sample Types - 5 - Soil/Solid JNS - Unspecified Solid GW - Ground Water GW - Surface Water E - Land Leachate L - Prepared Leachate	AGS Refe	rence			ES1			ESI			ES 1			ESI			ESI			ESI			ES1
PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage	Depth (m)			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.20			0.10
RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge	Contair	ier	1 kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)
OTH - Other	Sample T	уре	s	S	S	s	s	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
VOC MS (S)	All	NDPs: 0 Tests: 14			x			x			x			x			x			x			x

		28730578			28730600			28730620			28730638			28730655			28730671	28730465
		V105			V107			V108			V109			V110			2117	V114
		ES 1			ESI			ES 1			ES1			ESI			ES1	ES 1
		0.20			0.30			0.10			0.05			0.20			0.10	0.20
1 kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle
s	S	S	S	S	s	S	S	S	S	S	S	S	S	S	S	S	S	S
		X			X			X			X			X			X	

CERTIFICATE OF ANALYSIS Report Number: 707362

t Number: 707362 Superseded Report: Location: London Institute of Healthcare Engineering

Results Legend					28
X Test		Lab Sample	e No(s)		373046
No Determin Possible	ation				ŭ
Comple Turce		Custor Sample Ref	ner erence		V114
Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate	-	AGS Refe	rence		ES I
PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage		Depth (m)		0.20
RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liqui SL - Sludge	d	Contair	ner	250g Amber Jar (ALE210)	60g VOC (ALE215)
OTH - Other		Sample T	уре	S	S
Coronene		All	NDPs: 0 Tests: 14	X	
EPH CWG GC (S)		All	NDPs: 0 Tests: 14	X	
GRO by GC-FID (S)		All	NDPs: 0 Tests: 14		x
Hexavalent Chromium	(s)	All	NDPs: 0 Tests: 14	X	
Loss on Ignition in soils	5	All	NDPs: 0 Tests: 14	x	
Metals in solid samples	by OES	All	NDPs: 0 Tests: 14	x	
PAH 16 & 17 Calc		All	NDPs: 0 Tests: 14	x	
PAH by GCMS		All	NDPs: 0 Tests: 14	X	
рН		All	NDPs: 0 Tests: 14	x	
Phenols by HPLC (S)		All	NDPs: 0 Tests: 14	X	
Sample description		All	NDPs: 0 Tests: 14	X	
Total Organic Carbon		All	NDPs: 0 Tests: 14	X	
TPH CWG GC (S)		All	NDPs: 0 Tests: 14	X	
VOC MS (S)		All	NDPs: 0 Tests: 14		x

SDG: 231005-37 Client Ref.: 104920

AL



SDG: 231005-37

Client Ref.: 104920

CERTIFICATE OF ANALYSIS Report Number: 707362

Validated

Superseded Report:

Sample Descriptions

Location: London Institute of Healthcare Engineering

irain Sizes						
very fine <0.	063mm fine	0.063mm - 0.1mm me	dium 0.1mn	n - 2mm co	arse 2mm -	10mm very coa
ab Sample No(s).	Customer Sample F	Ref. Depth (m)	Colour	Description	Inclusions	Inclusions 2
28730481	P101	0.00 - 0.00	Dark Brown	Sand	Stones	Vegetation
28730496	P102	0.00 - 0.00	Dark Brown	Sand	Stones	Vegetation
28730511	P103	0.00 - 0.00	Dark Brown	Sand	Stones	Vegetation
28730523	P104	0.00 - 0.00	Dark Brown	Sand	Stones	Vegetation
28730530	P105	0.00 - 0.00	Dark Brown	Sand	Stones	None
28730549	V101	0.20	Dark Brown	Sandy Loam	Vegetation	Stones
28730452	V103	0.10	Dark Brown	Loamy Sand	Vegetation	Tile/Insulation Board
28730578	V105	0.20	Dark Brown	Sandy Loam	Stones	None
28730600	V107	0.30	Dark Brown	Loamy Sand	Stones	Vegetation
28730620	V108	0.10	Dark Brown	Sandy Loam	Stones	None
28730638	V109	0.05	Dark Brown	Sandy Loam	Stones	Vegetation
28730655	V110	0.20	Dark Brown	Sandy Loam	Stones	Vegetation
28730671	V112	0.10	Dark Brown	Sandy Loam	Stones	Vegetation
28730465	V114	0.20	Dark Brown	Sandy Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



SDG: 231005-37 Client Ref.: 104920

CERTIFICATE OF ANALYSIS

Validated

Report Number: 707362

t Number: 707362 Superseded Report: Location: London Institute of Healthcare Engineering

Results Legend # ISO17/025 accredited. M mCERTS accredited.	Custo	omer Sample Ref.	P101	P102	P103	P104	P105	V101
a Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. Subcontracted - refer to subcontractor re accreditation status. * % recovery of the surrogate standard to efficiency of the method. The results of i compounds within samples aren't correct the recovery (F) Trigger breach confirmed 1.40-§@ Sample deviation (see appendix)	eport for check the ndividual ted for La	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref b Sample No.(s) AGS Reference	0.00 - 0.00 Soii/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730481 ES1	0.00 - 0.00 Soii/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730496 ES1	0.00 - 0.00 Soii/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730511 ES1	0.00 - 0.00 Soii/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730523 ES1	0.00 - 0.00 Soii/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730530 ES1	0.20 Soil/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730549 ES1
Component Moisture Content Ratio (% of as	LOD/Units	PM024	5.5	14	16	19	22	14
Loss on ignition	<0.7	TM018	5.8	4.13	4.28	4.02	3.78	7.03
Phenol	<0.01	TM062 (S)	0.0952	<0.01	M <0.01	<0.01	M <0.01	<0.01
Cresols	<0.01	TM062 (S)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Xylenols	<0.015	TM062 (S)	0.0635	0.0702	0.0595	0.0372	0.064	<0.015
Phenols, Total Detected monohydric	<0.035	TM062 (S)	0.159	0.0702	0.0595	<0.035	0.064	<0.035
Organic Carbon, Total	<0.2	TM132	1.1 M	1.73	2.65	1.59 M	1.46	3.51 M
рН	1 nH I Inits	TM133	7.97	8.59	8.69	8.6	8.47 M	8.06
Chromium, Hexavalent	<0.6	TM151	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Antimony	<0.6	TM181	<0.6	<0.6	1.08	<0.6	<0.6	1.79
Arsenic	<0.6 ma/ka	TM181	5.53 M	10.2 M	т 12.6 М	9.41 M	ж 8.64 М	ж 8.22 М
Barium	<0.6 ma/ka	TM181		135 #	168 #	138 #	134 #	63.4 #
Cadmium	<0.02	TM181	0.0893	0.182	0.417	0.0952	0.0613	0.105
Chromium	<0.9 ma/ka	TM181	10.6 M	18.3 M	28.4 M	22.4 M	19.5 M	14.4 M
Copper	<1.4 ma/ka	TM181	17.6 M	41.7 M	44.2 M	40.6 M	38.7 M	22.8 M
Lead	<0.7 ma/ka	TM181	8.35 M	9.71 M	17 M	11.1 M	9.3 M	69 M
Mercury	<0.1 ma/ka	TM181	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	<0.1 ma/ka	TM181	1.08	2.29	2.69	2.45	2.76	0.543
Nickel	<0.2	TM181	т 13.9 М	16.8	т 19.7 М	т 24.7 М		10 M
Selenium	<1 ma/ka	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vanadium	<0.2	TM181	23.9 #	30.1 #		32.8 #	29.4 #	29.1 #
Zinc	<1.9 ma/ka	TM181	71.4 M	148 M	263 M	154 M	129 M	95.8 M
Asbestos Quantification - Gravimetric - %	<0.001 %	TM304		0.0154	IN			IVI
Asbestos Quantification - PCOM Evaluation - %	<0.001	TM304						
Additional Asbestos Components (Using TM048)	,.	TM304		None #				
Analysts Comments		TM304		N/A				
Asbestos Quantification - Total - %	<0.001 %	TM304		0.0154 #				
PAH, Total Detected USEPA 16 + Coronene	<0.318 ma/ka	TM410	<0.318	0.369	0.42	0.507	<0.318	4.22
Coronene	<0.2 ma/ka	TM410	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2



CERTIFICATE OF ANALYSIS

Validated

SDG: 231005-37 Client Ref.: 104920

Report Number: 707362 Superseded Report: Location: London Institute of Healthcare Engineering

Results Legend		Custor	ner Sample Ref.	V103	V105	V107	V108	V109	V110
# ISO/1023 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fitt Dissolved / filtered sample. tu.nfilt Total / unfiltered sample. Subcontracted - refer to subcontractor r accreditation status. % recovery of the surrogate standard to efficiency of the method. The results of compounds within samples aren't corree the recovery (F) Trigger breach confirmed 1-44&@ Sample deviation (see appendix) Component	eport for check the individual cted for	Lab /	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Sample No.(s) IGS Reference	0.10 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37 28730452 ES1	0.20 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37 28730578 ES1	0.30 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37 28730600 ES1	0.10 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37 28730620 ES1	0.05 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37 28730638 ES1	0.20 Soii/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37 28730655 ES1
Moisture Content Ratio (% of as received sample)	%	11113	PM024	20	17	18	12	13	15
Loss on ignition	<0. %	7	TM018	7.4 M	6.83 M	7.19 M	5.59 M	7.21 M	6.58 M
Phenol	<0.0 ma/k)1 (a	TM062 (S)	<0.01	<0.01	<0.01	<0.01	<0.01 M	<0.01
Cresols	<0.0 ma/k)1 (a	TM062 (S)	<0.01 M	<0.01	<0.01	<0.01	<0.01 M	0.0117 M
Xylenols	<0.0 ma/k	15 (a	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.0 mg/k	35 (q	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Organic Carbon, Total	<0. %	2	TM132	2.86 M	2.77 M	2.75 M	2.79 M	3.35 M	2.84 M
рН	1 pH Ur	nits	TM133	8.55 M	8.48 M	8.77 M	8.65 M	8.15 M	8.1 M
Chromium, Hexavalent	<0. mg/k	6 (q	TM151	<0.6	<0.6 M	<0.6 M	<0.6	<0.6 M	<0.6
Antimony	<0. mg/k	6 (q	TM181	1.43 #	1.01 #	0.822 #	0.986	1.7 #	0.732 #
Arsenic	<0. mg/k	6 (q	TM181	8.69 M	7.46 M	7.88 M	9.23 M	7.39 M	7.91 M
Barium	<0. mg/k	6 (q	TM181	65.3 #	54.8 #	65 #	60.6 #	 77.7 #	57.3 #
Cadmium	<0.0 ma/k)2 (a	TM181	<0.02 M	0.0292 M	0.0282 M	0.826 M	0.0709 M	0.0706 M
Chromium	<0. ma/k	9 (a	TM181	27.2 M	19.2 M	17.3 M	12.4 M	11.8 M	15.4 M
Copper	<1. ma/k	4 (a	TM181	30.6 M	21.1 M	23.8 M	29.8 M	25.9 M	29.9 M
Lead	<0. ma/k	7 (a	TM181	57.2 M	55.3 M	48 M	44.7 M	109 M	79.3 M
Mercury	<0. ma/k	1 (a	TM181	<0.1 M	<0.1	<0.1	<0.1	<0.1	0.108 M
Molybdenum	<0. ma/k	1 (a	TM181	1.07	0.394	0.481	0.613	0.592 #	0.545
Nickel	<0. mg/k	2 (1)	TM181	13.8 M	10.9 M	12 M	т 12.8 М	ж 8.86 М	10.2 M
Selenium	<1 mg/k	(g	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vanadium	<0.1 mg/k	2 (1	TM181	31.2 #	31.4 #	30.8 #	28.2	27.3 #	28.9
Zinc	<1. mg/k	9 9 (1	TM181	91.6	91.2	70.7 M	73.8 M	97 M	82.4 M
Asbestos Quantification - Gravimetric - %	<0.0	vg 01	TM304	<0.001	IVI	IVI	<0.001 #	IVI	IVI
Asbestos Quantification - PCOM Evaluation - %	<0.0 %	01	TM304				<0.001 #		
Additional Asbestos Components (Using TM048)	70		TM304	None #			None #		
Analysts Comments			TM304	N/A			N/A		
Asbestos Quantification - Total - %	<0.0	01	TM304	<0.001			<0.001 #		
PAH, Total Detected USEPA 16 + Coronene	<0.3 ma/L	18 (1	TM410	2.04	3.96	2.91	2.57	14.9	7.35
Coronene	<0. ma/k	.9 2 (a	TM410	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
		ت .							



pН

Nickel

Selenium

Vanadium

Coronene

Coronene

PAH, Total Detected USEPA 16 +

Zinc

TM181

TM181

TM181

TM181

TM410

TM410

< 0.2 mg/kg

<1

mg/kg

< 0.2

mg/kg

<1.9

mg/kg

<0.318

mg/kg

<0.2

mg/kg

114

<1

33.7

105

3.68

<0.2

Μ

#

#

Μ

CERTIFICATE OF ANALYSIS SDG: 231005-37 Report Number: 707362 Superseded Report: Client Ref.: 104920 Location: London Institute of Healthcare Engineering Results Legend Customer Sample Ref. V112 V114 ISO17025 accredited. mCERTS accredited. Aqueous / settled sample. Dissolved / filtered sample. Total / unfiltered sample. Subcontracted - refer to subdaccreditation status. м Depth (m) diss filt 0.10 0.20 Sample Type Date Sampled Soil/Solid (S) 03/10/2023 Soil/Solid (S) 04/10/2023 tot.unfilt tor report for 00:00 00:00 Sampled Time ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual Date Received 231005-37 28730465 compounds within samples aren't corrected for SDG Ref 231005-37 the recovery Trigger breach confirmed Sample deviation (see appendix) Lab Sa 28730671 ple No.(s) (F) ES1 ES1 AGS Reference 4+6@ Component LOD/Units Method Moisture Content Ratio (% of as 15 12 PM024 received sample) % Loss on ignition TM018 7.5 7.13 <07 % М Μ Phenol < 0.01 TM062 (S) < 0.01 < 0.01 mg/kg Μ Μ Cresols < 0.01 TM062 (S) < 0.01 0.0114 mg/kg М Μ Xylenols < 0.015 TM062 (S) <0.015 <0.015 mg/kg М М Phenols, Total Detected monohydric < 0.035 TM062 (S) <0.035 <0.035 mg/kg М М Organic Carbon, Total < 0.2 TM132 3.14 3.08 % Μ Μ TM133 8.1 7.97 1 pH Units Μ Μ Chromium, Hexavalent <0.6 TM151 <0.6 <0.6 mg/kg Μ Μ TM181 1.24 1.49 Antimony <0.6 mg/kg # # TM181 9.23 Arsenic 9.48 <0.6 mg/kg М М Barium <0.6 TM181 62.5 64.5 mg/kg # # Cadmium < 0.02 TM181 0.0622 0.0832 mg/kg Μ М Chromium <0.9 TM181 16.1 18 mg/kg Μ Μ Copper <1.4 TM181 26.8 24.7 mg/kg М М Lead <0.7 TM181 79.9 78.8 mg/kg М М Mercury TM181 <0.1 <0.1 < 0.1 mg/kg Μ Μ TM181 Molybdenum < 0.1 0.635 1.08 mg/kg #

10.8

<1

30.7

82.9

3.84

<0.2

М

#

#

Μ

(ALS)



SDG: 231005-37 Client Ref.: 104920

t Number: 707362 Superseded Report: Location: London Institute of Healthcare Engineering Report Number: 707362

Results Legend		Customer	r Sample Ref.	P101	P102	P103	P104	P105	V101
mCERTS accredited. Aqueous / settled sample. diss.fitt Dissolved / filtered sample. tot.unfitt total / unfiltered sample. with the sample of the samp	report for o check the individual ccted for	Si Da Sai Dat Lab Sa AGS	Depth (m) iample Type ite Sampled mpled Time te Received SDG Ref imple No.(s) S Reference Method	0.00 - 0.00 Soil/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730481 ES1	0.00 - 0.00 Soil/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730496 ES1	0.00 - 0.00 Soil/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730511 ES1	0.00 - 0.00 Soil/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730523 ES1	0.00 - 0.00 Soii/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730530 ES1	0.20 Soiil/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730549 ES1
Naphthalene-d8 % recovery**	LOD/U %	11115	TM218	97.1	99.1	98	97.9	99.3	98.7
Acenaphthene-d10 % recovery**	/0		TM218	101	97.4	100	97.4	99.5	98.7
Phenanthrene-d10 % recovery**	70		TM218	109	99.3	108	101	104	105
Chrysene-d12 % recovery**	70 0/.		TM218	105	99.9	109	99.2	101	105
Perylene-d12 % recovery**	/0		TM218	104	102	108	99.1	101	104
Naphthalene	<0.00 ma/k	09 ia	TM218	<0.009	<0.009	<0.009	<0.009	<0.009	<0.045
Acenaphthylene	<0.0° ma/k	12 10	TM218	<0.012	<0.012	<0.012	<0.012	<0.012	<0.06
Acenaphthene	<0.00 mg/k	08 00	TM218	<0.008	<0.008	<0.008	<0.008	<0.008	<0.04
Fluorene	<0.0 mg/k)1 (a	TM218	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.05 M
Phenanthrene	<0.0 ⁻ ma/k	15 a	TM218	<0.015 M	<0.015	<0.015	0.0232 M	0.0227 M	0.299 M
Anthracene	<0.0 ⁻ ma/k	16 (a	TM218	<0.016	<0.016	<0.016	<0.016	<0.016	<0.08
Fluoranthene	<0.0 [°] mg/k	17 (g	TM218	0.0271 M	0.0492 M	0.0667 M	0.0679 M	0.0555 M	0.743 M
Pyrene	<0.0 ⁻ ma/k	15 (a	TM218	0.0228 M	0.0379 M	0.0495 M	0.0511 M	0.0408 M	0.634 M
Benz(a)anthracene	<0.0 ⁻ mg/k	14 (q	TM218	0.0161 M	0.037 M	0.0449 M	0.0419 M	0.0328 M	0.379 M
Chrysene	<0.0 mg/k)1 (g	TM218	0.014 M	0.0454 M	0.0443 M	0.0509 M	0.0401 M	0.414 M
Benzo(b)fluoranthene	<0.0 ⁻ mg/k	15 ig	TM218	0.0256 M	0.0707 M	0.0755 M	0.0825 M	0.0566 M	0.55 M
Benzo(k)fluoranthene	<0.0 ⁻ mg/k	14 .g	TM218	<0.014 M	0.022 M	0.0265 M	0.0277 M	<0.014 M	0.221 M
Benzo(a)pyrene	<0.0 ⁻ mg/k	15 (g	TM218	<0.015 M	0.0413 M	0.0444 M	0.0572 M	0.0306 M	0.422 M
Indeno(1,2,3-cd)pyrene	<0.0 ⁻ mg/k	18 .g	TM218	<0.018 M	0.0313 M	0.0332 M	0.0499 M	0.024 M	0.277 M
Dibenzo(a,h)anthracene	<0.02 mg/k	23 (g	TM218	<0.023 M	<0.023 M	<0.023 M	<0.023 M	<0.023 M	<0.115 M
Benzo(g,h,i)perylene	<0.02 mg/k	24 (g	TM218	<0.024 M	0.0341 M	0.0345 M	0.0543 M	<0.024 M	0.279 M
PAH, Total Detected USEPA 16	<0.1 mg/k	18 xg	TM218	<0.118	0.369	0.42	0.507	0.303	4.22

(ALS)

t Number: 707362 Superseded Report: Location: London Institute of Healthcare Engineering

PAH by GCMS								
Results Legend		Customer Sample Ref	V103	V105	V107	V108	V109	V110
M mCERTS accredited. Aqueous / settled sample. diss.fitt Discoved / filtered sample. totunfit Total / unfiltered sample. subcontracted - refer to subcontractor report for accreditation status. * % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1.44§@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.10 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37 28730452 ES1	0.20 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37 28730578 ES1	0.30 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37 28730600 ES1	0.10 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37 28730620 ES1	0.05 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37 28730638 ES1	0.20 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37 28730655 ES1
Component	LOD/U	nits Method	101	101	08.5	100	104	105
Naphinalene-00 % recovery	%	111/12/10	101	101	90.0	100	104	105
Acenaphthene-d10 % recovery**	%	TM218	98.5	101	98.7	100	102	101
Phenanthrene-d10 % recovery**	%	TM218	100	106	104	104	107	102
Chrysene-d12 % recovery**	%	TM218	104	109	102	103	108	99.6
Perylene-d12 % recovery**	%	TM218	104	110	101	102	107	95
Naphthalene	<0.00 mg/k	09 TM218 g	<0.045 M	<0.045 M	0.0119 M	<0.045 M	0.0348 M	<0.045 M
Acenaphthylene	<0.01 mg/k	12 TM218 g	<0.06 M	<0.06 M	0.0352 M	<0.06 M	0.0535 M	<0.06 M
Acenaphthene	<0.00	08 TM218	<0.04	<0.04	<0.008	<0.04	0.167	<0.04
Fluorene	<0.0 mg/k	9 1 TM218 a	<0.05	<0.05	<0.01	<0.05	0.128	<0.05
Phenanthrene	<0.01 ma/k	15 TM218 a	<0.075	0.262 M	0.163 M	0.106 M	1.72 M	0.333 M
Anthracene	<0.01 mg/k	16 TM218 g	<0.08 M	<0.08 M	0.0369 M	<0.08 M	0.504 M	0.0994 M
Fluoranthene	<0.01 mg/k	17 TM218 g	0.286 M	0.619 M	0.423 M	0.385 M	2.76 M	1.11 M
Pyrene	<0.01 mg/k	15 TM218 g	0.263 M	0.528 M	0.366 M	0.348 M	2.31 M	0.968 M
Benz(a)anthracene	<0.01 mg/k	14 TM218 g	0.193 M	0.347 M	0.261 M	0.239 M	1.22 M	0.557 M
Chrysene	<0.0 mg/k	1 TM218 g	0.231 M	0.387 M	0.289 M	0.236 M	1.17 M	0.623 M
Benzo(b)fluoranthene	<0.01 mg/k	15 TM218 g	0.335 M	0.59 M	0.424 M	0.396 M	1.41 M	1.09 M
Benzo(k)fluoranthene	<0.01 mg/k	14 TM218 g	0.139 M	0.214 M	0.158 M	0.163 M	0.598 M	0.403 M
Benzo(a)pyrene	<0.01 mg/k	15 TM218 g	0.228 M	0.42 M	0.299 M	0.275 M	1.23 M	0.871 M
Indeno(1,2,3-cd)pyrene	<0.01 mg/k	18 TM218 g	0.174 M	0.285 M	0.205 M	0.204 M	0.723 M	0.631 M
Dibenzo(a,h)anthracene	<0.02 mg/k	23 TM218 g	<0.115 M	<0.115 M	0.0297 M	<0.115 M	0.0971 M	<0.115 M
Benzo(g,h,i)perylene	<0.02 mg/k	24 TM218 g	0.189 M	0.311 M	0.207 M	0.221 M	0.762 M	0.666 M
PAH, Total Detected USEPA 16	<0.11 mg/k	18 TM218 g	2.04	3.96	2.91	2.57	14.9	7.35
		_						

Report Number: 707362

(ALS)

CERTIFICATE OF ANALYSIS

SDG: 231005-37 Report Number: 707362 Superseded Report: Client Ref.: 104920 Location: London Institute of Healthcare Engineering PAH by GCMS Results Le Customer Sample Ref. V112 V114 mCT7025 accredited. mCERTS accredited. Aqueous / settled sample. Dissolved / filtered sample. Total / unfiltered sample. Subcontracted - refer to subd M aq diss.filt Depth (m) 0.10 0.20 Sample Type Date Sampled Soil/Solid (S) 03/10/2023 Soil/Solid (S) 04/10/2023 tot.unfilt tor report for accreditation status. 00:00 00:00 Sampled Time ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual Date Received 231005-37 28730465 compounds within samples aren't corrected for SDG Ref 231005-37 the recovery Trigger breach confirmed Sample deviation (see appendix) Lab Sa 28730671 ple No.(s) (F) ES1 ES1 AGS Reference 4+6@ Component LOD/Units Method Naphthalene-d8 % recovery 101 99.9 TM218 % Acenaphthene-d10 % recovery** TM218 100 101 % Phenanthrene-d10 % recovery** TM218 107 109 % Chrysene-d12 % recovery** TM218 108 106 % Perylene-d12 % recovery** TM218 108 104 % Naphthalene < 0.009 TM218 <0.018 <0.09 mg/kg Μ Μ Acenaphthylene < 0.012 TM218 0.0374 <0.12 mg/kg Μ Μ Acenaphthene TM218 <0.016 <0.008 <0.08 mg/kg Μ Μ Fluorene TM218 < 0.02 < 0.1 < 0.01 mg/kg Μ Μ TM218 0.191 0.248 Phenanthrene <0.015 mg/kg Μ М TM218 <0.16 0.0532 Anthracene < 0.016 mg/kg М М Fluoranthene < 0.017 TM218 0.64 0.704 mg/kg Μ Μ Pyrene < 0.015 TM218 0.562 0.638 mg/kg Μ М Benz(a)anthracene < 0.014 TM218 0.329 0.328 mg/kg Μ Μ Chrysene < 0.01 TM218 0.351 0.37 mg/kg М М Benzo(b)fluoranthene < 0.015 TM218 0.498 0.485 mg/kg Μ Μ Benzo(k)fluoranthene TM218 0.183 0.168 < 0.014 mg/kg Μ Μ TM218 0.354 0.362 Benzo(a)pyrene < 0.015 mg/kg Μ Μ Indeno(1,2,3-cd)pyrene TM218 0.238 0.257 < 0.018 mg/kg Μ Μ TM218 <0.23 Dibenzo(a,h)anthracene < 0.046 < 0.023 mg/kg М М TM218 0.242 0.276 Benzo(g,h,i)perylene < 0.024 mg/kg Μ Μ PAH, Total Detected USEPA 16 <0.118 TM218 3.68 3.84 mg/kg

(ALS)

TPH CWG (S)								
Results Legend # ISO17025 accredited.	C	Customer Sample Ref.	P101	P102	P103	P104	P105	V101
M mCERTS accredited. aq Aqueous / settled sample. diss.fitt Dissolved / filtered sample. tot.unfit Total / unfiltered sample. subcontracted - refer to subcontractor accreditation status. * Subcontracted - refer to subcontractor accreditation status. * Ye covery of the surrogate standard to efficiency of the method. The results of compounds within samples aren't corret the recovery	report for o check the individual acted for	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref	0.00 - 0.00 Soil/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730481	0.00 - 0.00 Soil/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730496	0.00 - 0.00 Soil/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730511	0.00 - 0.00 Soil/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730523	0.00 - 0.00 Soii/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730530	0.20 Soil/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730540
(F) Trigger breach confirmed 1-4ቀ§@ Sample deviation (see appendix)		AGS Reference	ES1	ES1	ES1	ES1	ES1	ES1
Component	LOD/Ur	nits Method						
GRO Surrogate % recovery**	%	TM089	91.3	95.2	90.3	90.5	92.4	88.5
Aliphatics >C5-C6 (HS_1D_AL)	<0.01 mg/kg	1 TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8 (HS_1D_AL)	<0.01 mg/kg	1 TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10 (HS_1D_AL)	<0.01 mg/kc	1 TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1 ma/ka	TM414	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Aliphatics >C12-C16 (EH 2D AL #1)	<1 mg/kg	TM414	" <1	<1 #		<1 #	<1 #	" <1
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1 mg/kg	TM414	1.8 #	<1 #	# <1 #	1.34 #	1.09 #	1.38
Aliphatics >C21-C35 (EH_2D_AL_#1)	<pre>////////////////////////////////////</pre>	TM414	31.8 [#]	41.9 #	47.4 #	# 51.8	48.6 #	16.5 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1 <1	TM414	7.7	8.37	# 9.36	10.5	# 10.4	2.53
Total Aliphatics >C10-C44	<5	TM414	41.3	50.9	57.7	63.6	60.1	20.8
Total Aliphatics & Aromatics >C10-C44	//////////////////////////////////////	TM414	95	80.7	87.4	99.6	103	84.3
Aromatics >EC5-EC7	mg/kg <0.01	1 TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	mg/kg <0.01	1 TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	mg/kg <0.01	9 1 TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics > EC10-EC12	mg/kg <1	TM414	<1	<1	<1	<1	<1	<1
Aromatics > EC12-EC16	mg/kg <1	TM414	# <1	# <1	# <1	# <1	# <1	# <1
Aromatics > EC16-EC21	mg/kg <1	TM414	# 5.69	# 2.8	# 2.61	# 3.52	# 4.49	# 6.91
Aromatics > EC21-EC35	mg/kg <1	TM414	# 35.5	# 21	# 22	# 25.3	# 24.5	# 41.5
(EH_2D_AR_#1) Aromatics >EC35-EC44	mg/kg <1	TM414	# 12.5	# 5.96	# 5.07	# 6.77	# 13.7	# 14.8
(EH_2D_AR_#1) Aromatics > EC40-EC44	mg/kg <1) TM414	<1	<1	<1	<1	<1	3.33
(EH_2D_AR_#1) Total Aromatics > EC10-EC44	mg/kg <5) TM414	53.7	29.8	29.7	36	43.1	63.5
(EH_2D_AR_#1) Total Aliphatics & Aromatics >C5-C44	mg/kg <10) TM414	95	80.7	87.4	99.6	103	84.3
(EH_2D_Total_#1+HS_1D_Total) Total Aliphatics >C5-C10	mg/kg <0.05	9 5 TM089	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
(HS_1D_AL_TOTAL) Total Aromatics >EC5-EC10	mg/kg <0.05	9 5 TM089	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
(HS_1D_AR_TOTAL) GRO >C5-C10	mg/kg <0.02	2 TM089	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
(HS_1D_TOTAL)	mg/kg]						
(ALS)								

Cli	SD ient Re	G: 231005-37	Rep	oort Number: 70 Location: Lor	7362 ndon Institute of	Superse Healthcare Engir	ded Report: neering	
TPH CWG (S)							5	
Results Legend		Customer Sample Ref.	V103	V105	V107	V108	V109	V110
mCERTS accredited. Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. Subcontracted - refer to subcontractor i accreditation status. % recovery of the surrogate standard to efficiency of the method. The results of compounds within samples aren't corre	report for check the individual cted for	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref	0.10 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37	0.20 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37	0.30 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37	0.10 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37	0.05 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37	0.20 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37
(F) Trigger breach confirmed		Lab Sample No.(s) AGS Reference	28730452 ES1	28730578 ES1	28730600 ES1	28730620 ES1	28730638 ES1	28730655 ES1
1-4+§@ Sample deviation (see appendix) Component	LOD/U	Inits Method						
GRO Surrogate % recovery**	%	TM089	82.2	91.9	81	90.6	89.4	91.9
Aliphatics >C5-C6 (HS_1D_AL)	<0.0 mg/k)1 TM089 (g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8 (HS_1D_AL)	<0.0 mg/k)1 TM089 (g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10 (HS_1D_AL)	<0.0 mg/k)1 TM089 (g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1 mg/k	TM414 (g	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1 mg/k	TM414 kg	<1 #	<1 #	<1 #	<1 #	<1 #	2.26 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1 mg/k	TM414 (g	1.5 #	3.06 #	<1 #	1.09 #	1.24 #	2.21 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1 mg/k	TM414 kg	18.8 #	24 #	12.8 #	13.5 #	14.3 #	19.1 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1 mg/k	TM414 kg	3.2	3.64	1.27	2.53	1.31	2.36
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5 mg/k	5 TM414 Kg	23.9	31.6	15	17.2	17.1	26
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<1(mg/k	0 TM414 <g< td=""><td>275</td><td>101</td><td>43.5</td><td>64.3</td><td>75.2</td><td>74.4</td></g<>	275	101	43.5	64.3	75.2	74.4
Aromatics >EC5-EC7 (HS_1D_AR)	<0.0 mg/k)1 TM089 <g< td=""><td><0.01</td><td><0.01</td><td><0.01</td><td><0.01</td><td><0.01</td><td><0.01</td></g<>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8 (HS_1D_AR)	<0.0 mg/k)1 TM089 (g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10 (HS_1D_AR)	<0.0 mg/k)1 TM089 <g< td=""><td><0.01</td><td><0.01</td><td><0.01</td><td><0.01</td><td><0.01</td><td><0.01</td></g<>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1 mg/k	TM414 kg	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1 mg/k	TM414 kg	7.79 #	<1 #	<1 #	<1 #	<1 #	<1 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1 mg/k	TM414 <g< td=""><td>65.9 #</td><td>5.77 #</td><td>2 #</td><td>4.44 #</td><td>9.07 #</td><td>4.55 #</td></g<>	65.9 #	5.77 #	2 #	4.44 #	9.07 #	4.55 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1 mg/k	TM414 kg	147 #	47.2 #	20.6 #	33 #	39.1 #	35.5 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1 mg/k	TM414 kg	30.7	16.2	5.94	9.65	9.4	8.07
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1 mg/k	TM414 (g	9.66	4.89	<1	1.75	1.19	<1
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5 mg/k	5 TM414 kg	252	69.4	28.5	47.1	58.1	48.4
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<1(mg/k	0 TM414 (g	275	101	43.5	64.3	75.2	74.4
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<0.0 mg/k)5 TM089 (g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<0.0 mg/k)5 TM089 (g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
GRO >C5-C10 (HS_1D_TOTAL)	<0.0 mg/k)2 TM089 (g	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

(ALS)

Superseded Report:

CERTIFICATE OF ANALYSIS SDG: 231005-37 Report Number: 707362 Client Ref.: 104920 Location: London Institute of Healthcare Engineering TPH CWG (S) Customer Sample Ref. Results L V112 V114 SUTIV23 accredited. mCERTS accredited. Aqueous / settled sample. Dissolved / filtered sample. Total / unfiltered sample. Subcontracted - refer to subcontractor report for accreditation status. M Depth (m) aq diss.filt 0.10 0.20 Sample Type Date Sampled Soil/Solid (S) 03/10/2023 Soil/Solid (S) 04/10/2023 tot.unfilt accreatation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1_46§@ Sample deviation (see appendix) Sampled Time 00:00 00:00 Component GRO Surrogate % recove Aliphatics >C5-C6 (HS_1D_AL) Aliphatics >C6-C8 (HS_1D_AL) Aliphatics >C8-C10 (HS_1D_AL) Aliphatics >C10-C12 (EH_2D_AL_#1) Aliphatics >C12-C16 (EH_2D_AL_#1) Aliphatics >C16-C21 (EH_2D_AL_#1) Aliphatics >C21-C35 (EH_2D_AL_#1) Aliphatics >C35-C44 (EH_2D_AL_#1) Total Aliphatics >C10-C44 (EH_2D_AR_#1) Total Aliphatics & Aromati (EH_2D_Total_#1) Aromatics >EC5-EC7 (HS_1D_AR) Aromatics >EC7-EC8 (HS_1D_AR) Aromatics >EC8-EC10 (HS_1D_AR) Aromatics > EC10-EC12

efficiency of the method. The results of compounds within samples aren't corre	individual cted for	Date Received	05/10/2023	05/10/2023		
the recovery	Lieu Ior	SDG Ref h Sample No (s)	28730671	28730465		
(F) Trigger breach confirmed 1-445@ Sample deviation (see appendix)		AGS Reference	ES1	ES1		
Component	LOD/Units	Method				
GRO Surrogate % recovery**	%	TM089	91.4	84.1		
Aliphatics >C5-C6 (HS_1D_AL)	<0.01 ma/ka	TM089	<0.01	<0.01		
Aliphatics >C6-C8 (HS_1D_AL)	<0.01	TM089	<0.01	<0.01		
Aliphatics >C8-C10 (HS_1D_AL)	<0.01	TM089	<0.01	<0.01		
Aliphatics >C10-C12	<1 ~1	TM414	<1 "	<1		
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1 <1	TM414	# <1	# <1		
Aliphatics >C16-C21	//////////////////////////////////////	TM414	# 2.72	1.32		
Aliphatics >C21-C35	тд/кд <1	TM414	# 18.7	20.3		
(EH_2D_AL_#1) Aliphatics >C35-C44	mg/kg <1	TM414	# 2.64	2.41		
(EH_2D_AL_#1) Total Aliphatics >C10-C44	mg/kg <5	TM414	24.2	24		
(EH_2D_AR_#1) Total Aliphatics & Aromatics >C10-C44	mg/kg <10	TM414	76	76.2		
(EH_2D_Total_#1) Aromatics >EC5-EC7	mg/kg <0.01	TM089	<0.01	<0.01		
(HS_1D_AR) Aromatics >EC7-EC8	mg/kg <0.01	TM089	<0.01	<0.01		
(HS_1D_AR) Aromatics >EC8-EC10	mg/kg <0.01	TM089	<0.01	<0.01		
(HS_1D_AR)	mg/kg	TM414	<1	<1		
(EH_2D_AR_#1)	mg/kg	T 1014 14	×1 #	#		
(EH_2D_AR_#1)	<1 mg/kg	11014114	<1 #	<1 #		
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1 mg/kg	TM414	5.28 #	6.49 #		
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1 mg/kg	TM414	38.9 #	36.8 #		
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	7.18	8.5		
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	<1		
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5 mg/kg	TM414	51.8	52.1		
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10 ma/ka	TM414	76	76.2		
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<0.05 ma/ka	TM089	<0.05	<0.05		
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<0.05 ma/ka	TM089	<0.05	<0.05		
GRO >C5-C10 (HS_1D_TOTAL)	<0.02	TM089	<0.02	<0.02		
(ilig/kg					
19-26-27 12/10/2022						

(ALS)

t Number: 707362 Superseded Report: Location: London Institute of Healthcare Engineering

VOC MS (S)								
Results Legend # ISUT/023 accredited. M mCERTS accredited. Aqueous / settled sample.	Ci	ustomer Sample Ref.	P101	P102	P103	P104	P105	V101
adj diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontractor refer to subcontractor accreditation status. * % recovery of the surgate standard t efficiency of the method. The results of compounds within samples aren't corn the recovery (F) Trigger breach confirmed * * and education (see anometrix)	report for o check the f individual ected for	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Soil/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730481 ES1	0.00 - 0.00 Soil/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730496 ES1	0.00 - 0.00 Soil/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730511 ES1	0.00 - 0.00 Soil/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730523 ES1	0.00 - 0.00 Soil/Solid (S) 04/10/2023 00:00 05/10/2023 231005-37 28730530 ES1	0.20 Soil/Sold (S) 04/10/2023 00:00 05/10/2023 231005-37 28730549 ES1
Component	LOD/Un	its Method						
Dibromofluoromethane**	%	TM116	104	104	102	102	103	102
Toluene-d8**	%	TM116	95.2	96.3	100	100	96.4	95.3
4-Bromofluorobenzene**	%	TM116	94.5	93.8	98.9	98.7	99.2	96.7
Methyl Tertiary Butyl Ether	<0.000 mg/kg	5 TM116	<0.0005 M	<0.0005 M	<0.0005 M	<0.0005 M	<0.0005 M	<0.0005 M
Benzene	<0.001 mg/kg	1 TM116	<0.001 M	<0.001 M	<0.001 M	<0.001 M	<0.001 M	<0.001 M
Toluene	<0.001 mg/kg	1 TM116	<0.001 M	<0.001 M	<0.001 M	<0.001 M	<0.001 M	<0.001 M
Ethylbenzene	<0.001 mg/kg	1 TM116	<0.001 M	<0.001 M	<0.001 M	<0.001 M	<0.001 M	<0.001 M
p/m-Xylene	<0.002 mg/kg	2 TM116	<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #
o-Xylene	<0.002 mg/kg	2 TM116	<0.002 M	<0.002 M	<0.002 M	<0.002 M	<0.002 M	<0.002 M
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of BTEX	<0.007 mg/kg	7 TM116	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007

	1
ALS	



 CERTIFICATE OF ANALYSIS

 Report Number: 707362
 S

 Drt Number:
 707362
 Superseded Report:

 Location:
 London Institute of Healthcare Engineering

Results Legend Customer Sample Ref		ner Sample Ref.	V103	V105	V107	V108	V109	V110	
mCERTS accredited. Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. subcontracted - refer to subcontractor r accreditation status. % frecovery of the surrogate standard to efficiency of the method. The results of compounds within samples aren't corre the recovery (F) Trigger breach confirmed 1.44\$@ Sample deviation (see appendix)	report for check the individual cted for	Lab A	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Sample No.(s) IGS Reference Method	0.10 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37 28730452 ES1	0.20 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37 28730578 ES1	0.30 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37 28730600 ES1	0.10 Soii/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37 28730620 ES1	0.05 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 231005-37 28730638 ES1	0.20 Soil/Solid (S) 03/10/2023 00:00 05/10/2023 221005-37 28730655 ES1
Dibromofluoromethane**	%		TM116	116	104	118	104	104	102
Toluene-d8**	%		TM116	95.4	99.1	93.3	99.9	97.4	101
4-Bromofluorobenzene**	%		TM116	103	92.8	101	96.4	94.7	95.6
Methyl Tertiary Butyl Ether	<0.00 mg/k)05 (g	TM116	<0.01 M	<0.0005 M	<0.01 M	<0.0005 M	<0.0005 M	<0.0005 M
Benzene	<0.0 ma/k	01 (a	TM116	<0.02	<0.001	<0.02	<0.001	<0.001 M	<0.001 M
Toluene	<0.0 ma/k	01 (a	TM116	<0.02	<0.001	<0.02	<0.001	<0.001	<0.001
Ethylbenzene	<0.0 ma/k	01 (a	TM116	<0.02	<0.001 M	<0.02	<0.001	<0.001 M	<0.001 M
p/m-Xylene	<0.0 ma/k	02 (a	TM116	<0.04 #	<0.002 #	<0.04 #	<0.002 #	<0.002 #	<0.002 #
o-Xylene	<0.0 ma/k	02 (a	TM116	<0.04	<0.002 M	<0.04 M	<0.002	<0.002	<0.002 M
Sum of Detected Xylenes	<0.0 mg/k)2 (a	TM116	<0.4	<0.02	<0.4	<0.02	<0.02	<0.02
Sum of BTEX	<0.0 mg/k	9 07 07	TM116	<0.14	<0.007	<0.14	<0.007	<0.007	<0.007
	iiig/i	'9							

(ALS)

C	SDG: 2 lient Ref.:	231005-37 104920	31005-37Report Number: 707362Superseded Report:04920Location: London Institute of Healthcare Engineering						
/OC MS (S)									
Results Legend ISO 1723 accreates M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.urfit Total / unfiltered sample. s Subcontracted - refer to subcontracto accreditation status. ** % recovery of the surrogate standard efficiency of the method. The results	r report for to check the of individual	Depth (m) Depth (m) Sample Type Date Sampled Sampled Time Date Received	V112 0.10 Soil/Solid (S) 03/10/2023 00:00 05/10/2023	V114 0.20 Soii/Solid (S) 04/10/2023 00:00 05/10/2023					
compounds within samples aren't cor the recovery (F) Trigger breach confirmed 1-4+§@ Sample deviation (see appendix) Component	LOD/Units	SDG Ref b Sample No.(s) AGS Reference Method	231005-37 28730671 ES1	231005-37 28730465 ES1					
Dibromofluoromethane**	%	TM116	104	105					
Foluene-d8**	%	TM116	101	100					
I-Bromofluorobenzene**	%	TM116	94.8	94.9					
Methyl Tertiary Butyl Ether	<0.0005 mg/kg	TM116	<0.0005 M	<0.0005 M					
Benzene	<0.001 mg/kg	TM116	<0.001 M	<0.001 M					
Foluene	<0.001 mg/kg	TM116	0.00121 M	<0.001 M					
Ethylbenzene	<0.001 mg/kg	TM116	<0.001 M	<0.001 M					
o/m-Xylene	<0.002 mg/kg	TM116	<0.002 #	<0.002 #					
o-Xylene	<0.002 mg/kg	TM116	<0.002 M	<0.002 M					
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02					
Sum of BTEX	<0.007 mg/kg	TM116	<0.007	<0.007					



Results Legend

t Number: 707362 Superseded Report: Location: London Institute of Healthcare Engineering Report Number: 707362

Asbestos Identification - Solid Samples

# ISO1702	5 accredited.	-									
* Subcont	accredited.	Date of Analysis	Analysed By	Comments	Amosite (Brown)	Asbestos	Asbestos	Asbestos	Chrysotile	Crocidolite	Non-Asbestos
(F) Trigger	preach confirmed	,			Asbestos	Actinolite	Anthophyllite	Tremolite	(White)	(Blue) Asbestos	Fibre
1-5&+§@ Sample	deviation (see appendix)								Asbestos		
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	P101ES1 0.00 - 0.00 SOLID 04/10/2023 00:00:00 05/10/2023 05:00:00 231005-37 28730481 TM048	10/10/2023	Alex Horner	-	Not Detected (#)	Not Detected					
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	P102ES1 0.00 - 0.00 SOLID 04/10/2023 00:00:00 05/10/2023 05:00:00 231005-37 28730496 TM048	10/10/2023	Alex Horner	ACM debris in sample	Detected (#)	Not Detected (#)	Detected				
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	P103ES1 0.00 - 0.00 SOLID 04/10/2023 00:00:00 05/10/2023 05:00:00 231005-37 28730511 TM048	10/10/2023	Alex Horner	-	Not Detected (#)	Detected					
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	P104ES1 0.00 - 0.00 SOLID 04/10/2023 00:00:00 05/10/2023 05:00:00 231005-37 28730523 TM048	10/10/2023	Alex Horner	-	Not Detected (#)	Detected					
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	P105ES1 0.00 - 0.00 SOLID 04/10/2023 00:00:00 05/10/2023 05:00:00 231005-37 28730530 TM048	10/10/2023	Alex Horner	-	Not Detected (#)	Detected					
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	V101ES1 0.20 SOLID 04/10/2023 00:00:00 05/10/2023 05:00:00 231005-37 28730549 TM048	11/10/2023	Odhran McLernon	-	Not Detected (#)	Not Detected					
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	V103ES1 0.10 SOLID 03/10/2023 00:00:00 05/10/2023 05:00:00 231005-37 28730452 TM048	11/10/2023	Alex Horner	Loose fibres in soil	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected (#)	Not Detected (#)	Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	V105ES1 0.20 SOLID 03/10/2023 00:00:00 05/10/2023 05:00:00 231005-37 28730578 TM048	11/10/2023	Alex Horner	-	Not Detected (#)	Detected					



Validated

ALS	Clien	SDG: 231 it Ref.: 104	005-37 920	Re	Report Number: 707362Superseded Report:Location: London Institute of Healthcare Engineering						
		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	V107ES1 0.30 SOLID 03/10/2023 00:00:00 05/10/2023 05:00:00 231005-37 28730600 TM048	11/10/2023	Alex Horner	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	V108ES1 0.10 SOLID 03/10/2023 00:00:00 05/10/2023 05:00:00 231005-37 28730620 TM048	11/10/2023	Alex Horner	Loose fibres in soil	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	V109ES1 0.05 SOLID 03/10/2023 00:00:00 05/10/2023 05:00:00 231005-37 28730638 TM048	12/10/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	V110ES1 0.20 SOLID 03/10/2023 00:00:00 05/10/2023 05:00:00 231005-37 28730655 TM048	11/10/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	V112ES1 0.10 SOLID 03/10/2023 00:00:00 05/10/2023 05:00:00 231005-37 28730671 TM048	11/10/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	V114ES1 0.20 SOLID 04/10/2023 00:00:00 05/10/2023 05:00:00 231005-37 28730465 TM048	10/10/2023	Alex Horner	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected



t Number: 707362 Superseded Report: Location: London Institute of Healthcare Engineering Report Number: 707362

Results Legend

Asbestos Quantification - Full

# ISO1702	5 accredited.					
M mCERTS	S accredited.					
* Subcontracted test.		Additional	Analysts	Asbestos	Asbestos	Asbestos
(F) Trigger breach confirmed		Asbestos	Comments	Quantification -	Quantification -	Quantification -
1-5&+§@ Sample deviation (see appendix)		Components		Gravimetric - %	PCOM	Total - %
Cust. Sample	P102ES1	None (#)	N/A	0.0154 (#)	<0.001 (#)	0.0154 (#)
Ref.	0.00 - 0.00	. ,				
Depth (m)	SOLID					
Sample Type	04/10/2023 00:00:00					
Date Sampled	05/10/2023 05:00:00					
Date Receieved	231005-37					
SDG	28730496					
Original Sample	TM304					
Method Number						
Cust. Sample	V103ES1	None (#)	N/A	<0.001 (#)	<0.001 (#)	<0.001 (#)
Ref.	0.10					
Depth (m)	SOLID					
Sample Type	03/10/2023 00:00:00					
Date Sampled	05/10/2023 05:00:00					
Date Receieved	231005-37					
SDG	28/30452					
Original Sample	IM304					
Method Number						
Cust. Sample	V108ES1	None (#)	N/A	<0.001 (#)	<0.001 (#)	<0.001 (#)
Ref.	0.10		11/1	0.001 (#)	0.001 (#)	0.001 (#)
Depth (m)	SOLID					
Sample Type	03/10/2023 00:00:00					
Date Sampled	05/10/2023 05:00:00					
Date Receieved	231005-37					
SDG	28730620					
Original Sample	TM304					
Method Number						



t Number: 707362 Superseded Report: Location: London Institute of Healthcare Engineering

Table of Results - Appendix

	••
Method No	Description
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM018	Determination of Loss on Ignition
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM410	Determination of Coronene in soils by GCMS
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM151	Determination of Hexavalent Chromium using Kone analyser
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM304	Asbestos Quantification in Soil: Fibres identified by morphology only
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM218	The determination of PAH in soil samples by GC-MS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



SDG: 231005-37 Client Ref.: 104920



CERTIFICATE OF ANALYSIS

Report Number: 707362

t Number: 707362 Superseded Report: Location: London Institute of Healthcare Engineering

Test Completion Dates

Lab Sample No(s)	28730481	28730496	28730511	28730523	28730530	28730549	28730452	28730578	28730600	28730620
Customer Sample Ref.	P101	P102	P103	P104	P105	V101	V103	V105	V107	V108
AGS Ref.	ES1									
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.20	0.10	0.20	0.30	0.10
Туре	Soil/Solid (S)									
Asbestos ID in Solid Samples	11-Oct-2023	11-Oct-2023	11-Oct-2023	10-Oct-2023	11-Oct-2023	11-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023	12-Oct-2023
Asbestos Quantification - Full		12-Oct-2023					12-Oct-2023			12-Oct-2023
Coronene	10-Oct-2023									
EPH CWG GC (S)	10-Oct-2023	09-Oct-2023	10-Oct-2023	10-Oct-2023						
GRO by GC-FID (S)	09-Oct-2023									
Hexavalent Chromium (s)	11-Oct-2023									
Loss on Ignition in soils	10-Oct-2023	11-Oct-2023	10-Oct-2023	11-Oct-2023	11-Oct-2023	10-Oct-2023	10-Oct-2023	11-Oct-2023	10-Oct-2023	10-Oct-2023
Metals in solid samples by OES	10-Oct-2023	10-Oct-2023	11-Oct-2023	10-Oct-2023	10-Oct-2023	11-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023
PAH 16 & 17 Calc	10-Oct-2023									
PAH by GCMS	10-Oct-2023									
pH	09-Oct-2023									
Phenols by HPLC (S)	10-Oct-2023									
Sample description	06-Oct-2023									
Total Organic Carbon	11-Oct-2023	11-Oct-2023	12-Oct-2023							
TPH CWG GC (S)	10-Oct-2023	09-Oct-2023	10-Oct-2023	10-Oct-2023						
VOC MS (S)	09-Oct-2023									
Lab Sample No(s)	28730638	28730655	28730671	28730465	1					
Customer Sample Ref.	V109	V110	V112	V114]					

Customer Sample Ref.	V109	V110	VIIZ	V114	
AGS Ref.	ES1	ES1	ES1	ES1	
Depth	0.05	0.20	0.10	0.20	
Туре	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
Asbestos ID in Solid Samples	12-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	
Coronene	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	
EPH CWG GC (S)	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	
GRO by GC-FID (S)	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	
Hexavalent Chromium (s)	11-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	
Loss on Ignition in soils	11-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	
Metals in solid samples by OES	10-Oct-2023	11-Oct-2023	11-Oct-2023	10-Oct-2023	
PAH 16 & 17 Calc	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	
PAH by GCMS	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	
pН	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	
Phenols by HPLC (S)	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	
Sample description	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	
Total Organic Carbon	12-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	
TPH CWG GC (S)	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	
VOC MS (S)	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	































CERTIFICATE OF ANALYSIS

Validated

Report Number: 707362 Location: London Institute of Healthcare Engineering

Superseded Report:

Analysis: GRO by GC-FID (S)

Chromatogram Sample No : Sample ID :

Depth : 0.30

28740968_GRO_S.DATA - Chem 67 FID

28740968

V107





CERTIFICATE OF ANALYSIS

Validated

Report Number: 707362 Superseded Report: Location: London Institute of Healthcare Engineering Chromatogram

Analysis: GRO by GC-FID (S)

 Sample No :
 28741018

 Sample ID :
 V103

Depth : 0.10







CERTIFICATE OF ANALYSIS

Validated

Report Number: 707362 Location: London Institute of Healthcare Engineering

Superseded Report:

Analysis: GRO by GC-FID (S)

Chromatogram Sample No: 28748455 Sample ID: P102

Depth: 0.00 - 0.00

28748455_GRO_S.DATA - Chem 67 FID

P102





CERTIFICATE OF ANALYSIS

Validated

Report Number: 707362 Location: London Institute of Healthcare Engineering

Superseded Report:

Analysis: GRO by GC-FID (S)

Chromatogram

Sample No : Sample ID : 28748471 V109

Depth : 0.05





Validated

SDG: 231005-37 Client Ref.: 104920 Report Number: 707362 Superseded Report: Location: London Institute of Healthcare Engineering Chromatogram Sample No : Sample ID : Analysis: GRO by GC-FID (S) 28748487 Depth : 0.10 V112 28748487_GRO_S.DATA - Chem 67 FID Reference



Validated

SDG: 231005-37 Client Ref.: 104920 Report Number: 707362 Superseded Report: Location: London Institute of Healthcare Engineering Chromatogram Sample No : Sample ID : Analysis: GRO by GC-FID (S) 28748615 Depth : 0.20 V110 28748615_GRO_S.DATA - Chem 67 FID Reference



Validated

SDG: 231005-37 Client Ref.: 104920 Report Number: 707362 Superseded Report: Location: London Institute of Healthcare Engineering Chromatogram Sample No : Sample ID : Analysis: GRO by GC-FID (S) 28748676 Depth : 0.10 V108 28748676_GRO_S.DATA - Chem 67 FID Reference



CERTIFICATE OF ANALYSIS

Validated

Report Number: 707362 Location: London Institute of Healthcare Engineering

Superseded Report:

Analysis: GRO by GC-FID (S)

Chromatogram Sample No : Sample ID :

Depth: 0.00 - 0.00

28748691_GRO_S.DATA - Chem 67 FID

28748691

P101





Validated

CERTIFICATE OF ANALYSIS SDG: 231005-37 Client Ref.: 104920 Report Number: 707362 Superseded Report: Location: London Institute of Healthcare Engineering Chromatogram Sample No : Sample ID : Analysis: GRO by GC-FID (S) 28748725 Depth : 0.20 V101 28748725_GRO_S.DATA - Chem 67 FID Reference



CERTIFICATE OF ANALYSIS

Validated

Report Number: 707362 Location: London Institute of Healthcare Engineering

Superseded Report:

Analysis: GRO by GC-FID (S)

Chromatogram Sample No : Sample ID : 28749855 V114

Depth : 0.20





CERTIFICATE OF ANALYSIS

Validated

Report Number: 707362 Location: London Institute of Healthcare Engineering

Superseded Report:

Analysis: GRO by GC-FID (S)

Chromatogram

Sample No : Sample ID : 28749891 P105

Depth: 0.00 - 0.00




SDG: 231005-37 Client Ref.: 104920

CERTIFICATE OF ANALYSIS

Validated

Report Number: 707362 Location: London Institute of Healthcare Engineering

Superseded Report:

Analysis: GRO by GC-FID (S)

Chromatogram Sample No : Sample ID :

Depth: 0.00 - 0.00

28749925_GRO_S.DATA - Chem 67 FID

28749925

P104





SDG: 231005-37 Client Ref.: 104920

CERTIFICATE OF ANALYSIS

Validated

Report Number: 707362 Location: London Institute of Healthcare Engineering

Superseded Report:

Analysis: GRO by GC-FID (S)

Chromatogram Sample No : 28749979 Sample ID : P103

Depth: 0.00 - 0.00

28749979_GRO_S.DATA - Chem 67 FID

P103





231005-37 104920

Report Number: 707362 Location: London Institute of Healthcare Engineering

Superseded Report:

opendix

General

sults are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. Surrogate recoveries - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. Tentatively Identified Compounds (TICs) are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
•	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining

Asbe stos Type	Common Name
Chrysof le	WhiteAsbestos
Amosite	Brow n Asbestos
Cio d dolite	Blue Asbe stos
Fibrous Act nolite	-
Fibious Anthophyllite	-
Fibrous Tremol ite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Units 7-8 Hawarden Business Park Manor Road (off Manor Lane) Hawarden Deeside CH5 3US Tel: (01244) 528777 email: hawardencustomerservices@alsglobal.com Website: www.alsenvironmental.co.uk

Pell Frischmann Burrator House Peninsula Park Rydon Lane Exeter Devon EX2 7NT

Attention: Samara Hyde

CERTIFICATE OF ANALYSIS

Date of report Generation: Customer: Sample Delivery Group (SDG): Your Reference: Location: Report No: Order Number: 03 November 2023 Pell Frischmann 231027-90 104920 London Institute of Healthcare Engineering 709785 30013278

We received 11 samples on Friday October 27, 2023 and 11 of these samples were scheduled for analysis which was completed on Friday November 03, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

<u>Sonia McWhan</u> Operations Manager



ALS Laboratories (UK) Limited. ALS Life Sciences Limited registered Office: Torrington Avenue. Coventry CV4 9GU Registered in England and Wales No. 02391955. Version: 3.6 Version Issued: 03/11/2023



CERTIFICATE OF ANALYSIS

t Number: 709785 Superseded Report: Location: London Institute of Healthcare Engineering Report Number: 709785

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28853503	P201	ES1	0.00 - 0.00	27/10/2023
28853524	P202	ES1	0.00 - 0.00	27/10/2023
28853531	V201	ES1	0.00 - 0.00	27/10/2023
28853539	V202	ES1	0.00 - 0.00	27/10/2023
28853547	V203	ES1	0.00 - 0.00	27/10/2023
28853553	V204	ES1	0.00 - 0.00	27/10/2023
28853563	V205	ES1	0.00 - 0.00	27/10/2023
28853570	V206	ES1	0.00 - 0.00	27/10/2023
28853577	V207	ES1	0.00 - 0.00	27/10/2023
28853512	V208	ES1	0.00 - 0.00	27/10/2023
28853518	V209	ES1	0.00 - 0.00	27/10/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Clien	SDG: 231027-9 t Ref.: 104920	90		Rep	oort I	Num _oca	ıber tion	: 70 : Loi	9785 1don	i Inst	titute	e of	Heal	S thca	upe ı re Er	r sed ngine	ed F eerir	lepo Ig	rt:				
Results Legend X Test N No Determination Possible	Lab Sample	e No(s)			28853503			28853524			28853531			28853539			28853547			28853553			28853563
Sample Types	Custon Sample Ref	Customer Sample Reference			P201			P202			V201			V202			V203			V204			V205
S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate	AGS Refe	Reference			ES 1			ES1			ES 1			ES1			ESI			ESI			ES1
PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage	Depth (m)				0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00
RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas	Container		1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)
OTH - Other	Sample 7	уре	S	S	S	s	S	S	S	S	S	S	S	S	S	S	s	S	S	s	S	S	S
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 11	X			X			X			X			X			X			X		
Coronene	All	NDPs: 0 Tests: 11		X			X			X			X			X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 11		X			x			x			x			X			x			x	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 11			x			X		x				x			X			x			x
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 11		X			x			x			x			x			x			x	
Loss on Ignition in soils	All	NDPs: 0 Tests: 11		X			x			x			x			x			x			x	
Metals in solid samples by OES	All	NDPs: 0 Tests: 11		x			x			X			x			X			X			x	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 11		x			x			x			x			x			X			x	
PAH by GCMS	All	NDPs: 0 Tests: 11		X			x			x			x			x			x			x	
рН	All	NDPs: 0 Tests: 11		x			x			X			x			x			x			x	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 11		X			x			x			x			X			x			x	
Sample description	All	NDPs: 0 Tests: 11		X			x			x			x			x			x			x	
Total Organic Carbon	All	NDPs: 0 Tests: 11		X			x			x			x			x			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 11		X			x			x			x			x			x			x	
VOC MS (S)	All	NDPs: 0 Tests: 11			x			x			x			x			x			x			x

		28853570			28853577			28853512		28853518	
		V206			V207				V209		
		ES1			ESI			ES1	3 [
	0.00 - 0.00			0.00 - 0.00				0.00 - 0.00		0.00 - 0.00	
1 kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle	60g VOC (ALE215)	
S	S	S	S	S	s	s	S	s	s	S	
x			x			x			x		
	x			x			x		x		
	x			x			x		x		
		x			x			x		x	
	x			x			x		x		
	x			x			x		x		
	X			X			X		X		
	v			v			v		v		
	^			^			^		^		
	X			X			X		X		
	x			x			x		x		
	x			x			x		x		
	X			X			X		X		
	X			X			X		X		
	X			X			X		X		
		X			X			X		X	



Validated



SDG: 231027-90 Client Ref.: 104920

Report Number: 709785 Location: London In

Superseded Report:

Location: London Institute of Healthcare Engineering

Sample Descriptions

Grain Sizes						
very fine <0.0	063mm fine 0.063	3mm - 0.1mm m	edium 0.1mn	n - 2mm coai	rse 2mm - 1	10mm very coars
Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28853503	P201	0.00 - 0.00	Light Brown	Loamy Sand	Stones	Brick
28853524	P202	0.00 - 0.00	Dark Brown	Loamy Sand	Stones	Vegetation
28853531	V201	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
28853539	V202	0.00 - 0.00	Dark Brown	Loamy Sand	Vegetation	Stones
28853547	V203	0.00 - 0.00	Dark Brown	Loamy Sand	Stones	Vegetation
28853553	V204	0.00 - 0.00	Dark Brown	Loamy Sand	Stones	Vegetation
28853563	V205	0.00 - 0.00	Dark Brown	Loamy Sand	Stones	Vegetation
28853570	V206	0.00 - 0.00	Dark Brown	Loamy Sand	Brick	Stones
28853577	V207	0.00 - 0.00	Dark Brown	Loamy Sand	Stones	Vegetation
28853512	V208	0.00 - 0.00	Dark Brown	Loamy Sand	Stones	Vegetation
28853518	V209	0.00 - 0.00	Dark Brown	Loamy Sand	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



Validated

SDG: 231027-90 **Client Ref:** 104920

Report Number: 709785 Superseded Report: Location: London Institute of Healthcare Engineering

Results Legend # ISU17025 accredited. mCFRTS accredited	Cus	stomer Sample Ref.	P201	P202	V201	V202	V203	V204
 Aqueous / settled sample. diss.fitt Dissolved / filtered sample. tot.unfitt tot.l unfiltered sample. Subcontracted - refer to subcontractor a accreditation status. % recovery of the surrogate standard to efficiency of the method. The results of compounds within samples aren't corre the recovery (F) Trigger breach confirmed (Auke) Sample deviation (see appendix) 	report for o check the individual ccted for L	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Soil/Solid (S) 27/10/2023 00:00 27/10/2023 231027-90 28853503 ES1	0.00 - 0.00 Soil/Solid (S) 27/10/2023 00:00 27/10/2023 231027-90 28853524 ES1	0.00 - 0.00 Soil/Solid (S) 27/10/2023 00:00 27/10/2023 231027-90 28853531 ES1	0.00 - 0.00 Soil/Solid (S) 27/10/2023 00:00 27/10/2023 231027-90 28853539 ES1	0.00 - 0.00 Soil/Solid (S) 27/10/2023 00:00 27/10/2023 231027-90 28853547 ES1	0.00 - 0.00 Soil/Solid (S) 27/10/2023 00:00 27/10/2023 231027-90 28853553 ES1
Component	LOD/Unit	s Method						
Moisture Content Ratio (% of as received sample)	%	PM024	23	21	16	11	13	15
Loss on ignition	<0.7 %	TM018	5.36 M	5.96 M	7.79 M	7.89 M	9.11 M	8.21 M
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	0.0238 M	0.0226 M	<0.01 M	0.0118 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	0.0357 M	0.0565 M	0.0345 M	0.0236 M
Xylenols	<0.015 mg/kg	TM062 (S)	0.0524 M	0.0635 M	0.0357 M	0.0339 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	0.0524 M	0.0635 M	0.0952 M	0.113 M	<0.035 M	<0.035 M
Organic Carbon, Total	<0.2 %	TM132	2.49 M	2.06 M	3.19 M	4.73 M	3.39 M	3.32 M
pH	1 pH Units	TM133	8.72 M	8.6 M	7.91 M	8.72 M	7.96 M	8.08 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Antimony	<0.6 mg/kg	TM181	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	0.738 #
Arsenic	<0.6 mg/kg	TM181	8.57 M	9.28 M	20.9 M	22.9 M	23.3 M	23.5 M
Barium	<0.6 mg/kg	TM181	134 #	134 #	30.3 #	28.9 #	32.8 #	66.2 #
Cadmium	<0.02 mg/kg	TM181	0.218 M	0.206 M	0.193 M	0.214 M	0.231 M	0.202 M
Chromium	<0.9 mg/kg	TM181	23.5 M	18.2 M	7.37 M	7.73 M	9.94 M	8.65 M
Copper	<1.4 mg/kg	TM181	32.9 M	38 M	14 M	22.3 M	24.2 M	15.2 M
Lead	<0.7 mg/kg	TM181	11.5 M	10.4 M	19.8 M	22.5 M	24.5 M	20.6 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Molybdenum	<0.1 mg/kg	TM181	2.18 #	1.85 #	0.931 #	1.28 #	2.11 #	0.988 #
Nickel	<0.2 mg/kg	TM181	16.3 M	15.4 M	9.35 M	11.4 M	14.7 M	11.2 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	33.5 #	29.9 #	21.9 #	24.4 #	27.4 #	25.4 #
Zinc	<1.9 mg/kg	TM181	162 M	167 M	86.1 M	95.4 M	116 M	81.6 M
PAH, Total Detected USEPA 16 + Coronene	<0.318 mg/kg	TM410	<0.318	<0.318	0.418	9.4	0.573	0.664
Coronene	<0.2 mg/kg	TM410	<0.2	<0.2	<0.2	0.237	<0.2	<0.2



SDG: 231027-90 Client Ref.: 104920 Report Number: 709785 Superseded Report: Location: London Institute of Healthcare Engineering

Results Legend	Custo	mer Sample Ref	1/205	1/200	1/207	1/200	1/200	
# ISO17025 accredited.	Cusio	iner Sample Rei.	V205	V206	V207	V208	V209	
aq Aqueous / settled sample.		Denth (m)						
diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Sample Type	0.00 - 0.00 Soil/Solid (S)					
 Subcontracted - refer to subcontractor r accreditation status. 	report for	Date Sampled	27/10/2023	27/10/2023	27/10/2023	27/10/2023	27/10/2023	
** % recovery of the surrogate standard to	check the	Sampled Time	00:00 27/10/2023	00:00 27/10/2023	00:00 27/10/2023	00:00 27/10/2023	00:00 27/10/2023	
compounds within samples aren't corre	cted for	SDG Ref	231027-90	231027-90	231027-90	231027-90	231027-90	
(F) Trigger breach confirmed	Lab	Sample No.(s)	28853563	28853570	28853577	28853512	28853518	
1-4+§@ Sample deviation (see appendix)		AGS Reference	LOT	201	LOT	201	201	
Component Moisture Content Ratio (% of as	LOD/Units	DM024	15	16	10	15	12	
received sample)	%		15	10	12	IJ	15	
Loss on ignition	<0.7	TM018	10.7	9.63	10.9	87	8.67	
2000 011 191110011	%	11010	10.7	0.00 M	10.0 M	0.7 M	0.07 M	
Phenol	<0.01	TM062 (S)	<0.01	0.0119	0.0113	<0.01	0.0115	
	ma/ka	111002 (0)	M	M	M	M	M	
Cresols	< 0.01	TM062 (S)	0.437	0.0595	0.0565	0.0351	0.207	
	mg/kg	()	М	М	М	М	М	
Xylenols	< 0.015	TM062 (S)	0.0236	0.0357	0.0226	0.0234	<0.015	
	mg/kg	. ,	М	М	М	М	М	
Phenols, Total Detected monohydric	<0.035	TM062 (S)	0.46	0.107	0.0904	0.0585	0.219	
	mg/kg		М	М	М	М	М	
Organic Carbon, Total	<0.2	TM132	3.97	4.04	4.01	3.36	3.8	
	%		M	M	М	M	М	
рН	1	TM133	8.31	8.37	8.26	8.1	8.3	
	pH Units		М	М	М	М	М	
Chromium, Hexavalent	<0.6	TM151	<0.6	<0.6	<0.6	<0.6	<0.6	
	mg/kg		M	M	M	M	M	
Antimony	<0.6	TM181	<0.6	<0.6	<0.6	<0.6	0.661	
	mg/kg	T1404	#	#	#	#	#	
Arsenic	<0.6	TM181	20.8	22.6	26.9	23.1	23.3	
Darium	mg/kg	T1404	M	M	M	M	M	
Banum	<0.6 ma/ka	11/11/01	۳ 21.2	28.8 ي	54	20.3 بر	23.1 بر	
Cadmium		TM101	#	#	#	#	#	
Caumum	<0.02 ma/ka	I IVI I O I	0.234	0.217	0.21	0.195	0.17	
Chromium	-0 Q	TM181	0.25	0.01	0.7	NI 8.5	10.5	
Chromium	<0.9 ma/ka	TIVITOT	9.20 M	9.91 M	9.7 M	0.J M	10.5 M	
Copper	<1.4	TM181	17.8	16.6	16.4	13 <i>4</i>	13.1	
ooppol	ma/ka	TWITCH	17.0 M	10.0 M	10.4 M	10. 1 M	N M	
Lead	<0.7	TM181	22.7	24	26.9	21	19.7	
	ma/ka			2.' M	20.0 M	2. M	M	
Mercury	<0.1	TM181	<0.1	<0.1	<0.1	<0.1	<0.1	
· ·	mg/kg		М	М	М	М	M	
Molybdenum	<0.1	TM181	1.66	1.34	1.28	0.966	0.915	
	mg/kg		#	#	#	#	#	
Nickel	<0.2	TM181	13.6	11.9	11.5	9.69	10.8	
	mg/kg		М	М	М	М	М	
Selenium	<1	TM181	<1	<1	<1	<1	<1	
	mg/kg		#	#	#	#	#	
Vanadium	<0.2	TM181	25.1	24.6	27	24.5	23.8	
	mg/kg		#	#	#	#	#	
Zinc	<1.9	TM181	111	95.8	87.9	75.3	66.6	
	mg/kg	T14440	M	M	M	M	M	
PAH, Total Detected USEPA 16 + Coronene	< 0.318	I M410	0.583	0.625	0.632	0.615	0.844	
Coronono	ing/Kg	TM440	-0.0	-0.0	~0.0	~0.0	-0.0	
Coronene	<0.2 ma/ka	1 1014 10	<0.Z	<0.Z	<0.Z	<0.Z	<0.Z	
	iiig/itg							

(ALS)



SDG: 231027-90 Client Ref.: 104920

CERTIFICATE OF ANALYSIS

Report Number: 709785 Superseded Report: Location: London Institute of Healthcare Engineering

PAH by GCMS								
Results Legend # ISU17025 accredited. M mCERTS accredited. Aqueous / settled sample.	C	ustomer Sample Ref.	P201	P202	V201	V202	V203	V204
aq Proceeding Sectors ample. diss.filt Dissolved filtered sample. tot.unfilt Total / unfiltered sample. Subcontracted - refer to subcontractor accreditation status. * % recovery of the surrogate standard th efficiency of the method. The results of compounds within samples aren't corre	report for o check the f individual ected for	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref	0.00 - 0.00 Soil/Solid (S) 27/10/2023 00:00 27/10/2023 231027-90	0.00 - 0.00 Soii/Solid (S) 27/10/2023 00:00 27/10/2023 231027-90	0.00 - 0.00 Soil/Solid (S) 27/10/2023 00:00 27/10/2023 231027-90			
(F) Trigger breach confirmed		Lab Sample No.(s) AGS Reference	28853503 ES1	28853524 ES1	28853531 ES1	28853539 ES1	28853547 ES1	28853553 ES1
Component	LOD/Un	its Method						
Naphthalene-d8 % recovery**	%	TM218	90.8	88.5	88.8	90.5	88.8	90.7
Acenaphthene-d10 % recovery**	%	TM218	92.1	91.4	93.6	95	92.8	93.3
Phenanthrene-d10 % recovery**	%	TM218	87.3	91	89.7	97.9	95	89.8
Chrysene-d12 % recovery**	%	TM218	91.1	88.9	88.7	95.9	92.7	91.7
Perylene-d12 % recovery**	%	TM218	84.7	82.4	80.7	87.5	85.2	85.2
Naphthalene	<0.009 mg/kg	9 TM218	<0.009 M	<0.009 M	<0.009 M	<0.009 M	<0.009 M	<0.009 M
Acenaphthylene	<0.012 mg/kg	2 TM218	<0.012 M	<0.012 M	<0.012 M	0.0529 M	<0.012 M	<0.012 M
Acenaphthene	<0.008 mg/kg	8 TM218	<0.008 M	<0.008 M	<0.008 M	<0.008 M	<0.008 M	<0.008 M
Fluorene	<0.01 mg/kg	TM218	<0.01 M	<0.01 M	<0.01 M	0.012 M	<0.01 M	<0.01 M
Phenanthrene	<0.015 mg/kg	5 TM218	<0.015 M	<0.015 M	0.0194 M	0.192 M	0.0216 M	0.0211 M
Anthracene	<0.016 mg/kg	6 TM218	<0.016 M	<0.016 M	<0.016 M	0.0746 M	<0.016 M	<0.016 M
Fluoranthene	<0.017 mg/kg	7 TM218	0.0363 M	0.041 M	0.0758 M	1.14 M	0.123 M	0.113 M
Pyrene	<0.015 mg/kg	5 TM218	0.0273 M	0.0342 M	0.059 M	1.32 M	0.0963 M	0.0886 M
Benz(a)anthracene	<0.014 mg/kg	4 TM218	0.0331 M	0.0334 M	0.0397 M	1.07 M	0.0498 M	0.0686 M
Chrysene	<0.01 mg/kg	TM218	0.0353 M	0.0333 M	0.0472 M	1.02 M	0.0585 M	0.0739 M
Benzo(b)fluoranthene	<0.015 mg/kg	5 TM218	0.0473 M	0.0519 M	0.063 M	1.29 M	0.0762 M	0.0996 M
Benzo(k)fluoranthene	<0.014 mg/kg	4 TM218	<0.014 M	0.018 M	0.0215 M	0.466 M	0.0269 M	0.0375 M
Benzo(a)pyrene	<0.015 mg/kg	5 TM218	0.0267 M	0.033 M	0.0325 M	1.15 M	0.0442 M	0.0608 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	8 TM218	<0.018 M	0.024 M	0.0296 M	0.598 M	0.034 M	0.0504 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	3 TM218	<0.023 M	<0.023 M	<0.023 M	0.133 M	<0.023 M	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	4 TM218	<0.024 M	<0.024 M	0.0307 M	0.653 M	0.0425 M	0.0498 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	8 TM218	0.206	0.269	0.418	9.17	0.573	0.664

(ALS)

t Number: 709785 Superseded Report: Location: London Institute of Healthcare Engineering Report Number: 709785

PAH by GCMS

Results Legend	c	ustomer Sample Ref.	V205	V206	V207	V208	V209	
M mickins accretence. aq Aqueous / settled sample. tot.unfit. Subcontracted - refer to subcontractor accreditation status. * % recovery of the surrogate standard tr efficiency of the method. The results of compounds within samples aren't correc the recovery. (F) Trigger breach confirmed 1446@ Sample deviation (see appendix)	report for o check the individual ected for	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Soil/Solid (S) 27/10/2023 00:00 27/10/2023 231027-90 28853563 ES1	0.00 - 0.00 Soil/Solid (S) 27/10/2023 00:00 27/10/2023 231027-90 28853570 ES1	0.00 - 0.00 Soil/Solid (S) 27/10/2023 00:00 27/10/2023 231027-90 28853577 ES1	0.00 - 0.00 Soil/Solid (S) 27/10/2023 00:00 27/10/2023 231027-90 28853312 ES1	0.00 - 0.00 Soil/Solid (S) 27/10/2023 00:00 27/10/2023 231027-90 28853518 ES1	
Component	LOD/Un	its Method						
Naphthalene-d8 % recovery**		TM218	89.3	89.5	91.3	90.4	90.9	
A	%	TM040	00.4	00.0	04.0	05.5	00.0	
Acenaphinene-u to % recovery	%	TIVIZ TO	92.4	92.0	94.0	95.5	90.0	
Phenanthrene-d10 % recovery**	%	TM218	87.6	96.1	89.2	91.1	92.5	
Chrysene-d12 % recovery**	%	TM218	89.3	94.1	88.9	86.8	87.8	
Perylene-d12 % recovery**	%	TM218	81.8	88.3	81.3	79	80.6	
Naphthalene	<0.00	9 TM218	<0.009	<0.009	<0.009	<0.009	<0.009	
A server bible dan s	mg/kg		M	M	M	M	M	
Acenaphthylene	<0.012 mg/kg	2 IM218 I	<0.012 M	<0.012 M	<0.012 M	<0.012 M	<0.012 M	
Acenaphthene	<0.00	8 TM218	<0.008	<0.008	<0.008	<0.008	<0.008	
Fluorene	mg/kg <0.01	TM218	M <0.01	<0.01	<0.01	M <0.01	M <0.01	
	mg/kg		M	M	M	M	M	
Phenanthrene	<0.01	5 TM218	0.0269	0.0397	0.0189	0.0239	0.0378	
Anthracene	<0.01	6 TM218	<0.016	<0.016	<0.016	<0.016	<0.016	
Electron theory	mg/kg		M	M	M	M	M	
Fluoranthene	<0.01 mg/kg	7 TM218	0.116 M	0.135 M	0.11 M	0.108 M	0.161 M	
Pyrene	<0.01	5 TM218	0.0886	0.107	0.0859	0.0828	0.126	
Benz(a)anthracene	< 0.01	4 TM218	0.0529	0.051	0.0617	0.0542	0.0717	
	mg/kg	I	M	M	М	М	М	
Chrysene	<0.01 ma/ka	TM218	0.0657 M	0.0562 M	0.072 M	0.0676 M	0.103 M	
Benzo(b)fluoranthene	<0.01	5 TM218	0.0812	0.0789	0.0979	0.0985	0.118	
Benzo(k)fluoranthene	mg/kg <0.01/	I TM218	0 0293	0 0304	0 0329	0 0335	0.0417	
	mg/kg		M	M	M	M	М	
Benzo(a)pyrene	<0.01 mg/kg	5 TM218	0.0438 M	0.0449 M	0.0543 M	0.053 M	0.0695 M	
Indeno(1,2,3-cd)pyrene	<0.01	8 TM218	0.0389	0.0368	0.0491	0.0474	0.0587	
Dibenzo(a,h)anthracene	тд/кд <0.02	3 TM218	M <0.023	<0.023	<0.023	M <0.023	M	
	mg/kg		M	М	М	M	М	
Benzo(g,h,i)perylene	<0.024 ma/ka	4 TM218	0.0392 M	0.045 M	0.0489 M	0.0459 M	0.0573 М	
PAH, Total Detected USEPA 16	<0.118	8 TM218	0.582	0.625	0.632	0.615	0.844	

(ALS)

Report Number: 709785

TPH CWG (S)								
Results Legend ISOT/025 accredited. M mCERTS accredited. Autosus (cattled example)	Cı	ustomer Sample Ref.	P201	P202	V201	V202	V203	V204
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
tot.unfilt Total / unfiltered sample. Subcontracted - refer to subcontractor i	report for	Sample Type	Soil/Solid (S)					
accreditation status.	report for	Date Sampled	27/10/2023	27/10/2023	27/10/2023	27/10/2023	27/10/2023	27/10/2023
** % recovery of the surrogate standard to efficiency of the method. The results of	check the	Date Received	27/10/2023	27/10/2023	27/10/2023	27/10/2023	27/10/2023	27/10/2023
compounds within samples aren't corre	cted for	SDG Ref	231027-90	231027-90	231027-90	231027-90	231027-90	231027-90
the recovery Trigger breach confirmed		Lab Sample No.(s)	28853503	28853524	28853531	28853539	28853547	28853553
(F) Higger breach commence 1-4+§@ Sample deviation (see appendix)		AGS Reference	ES1	ES1	ES1	ES1	ES1	ES1
Component	LOD/Uni	its Method						
GRO Surrogate % recovery**		TM089	126	90.7	78.8	78.7	73.7	75.7
	%							
Aliphatics >C5-C6	<0.01	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
(HS_1D_AL)	ma/ka							
Aliphatics >C6 C8	<0.01	TM090	<0.01	<0.01	<0.01	<0.01	<0.01	-0.01
	<0.01	1 10009	×0.01	×0.01	×0.01	×0.01	<0.01	×0.01
	niy/ky	T1 4000	.0.04	.0.04	.0.04	.0.04	10.04	.0.04
	<0.01	11/1089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	mg/кg							
Aliphatics >C10-C12	<1	TM414	<1	<1	<1	<1	<1	<1
(EH_2D_AL_#1)	mg/kg		#	#	#	#	#	#
Aliphatics >C12-C16	<1	TM414	<1	<1	1.69	<1	<1	<1
(EH_2D_AL_#1)	mg/kg		#	#	#	#	#	#
Aliphatics >C16-C21	<1	TM414	<1	<1	6.48	6.82	8	6.45
(EH_2D_AL_#1)	mg/kg		#	#	#	#	#	#
Aliphatics >C21-C35	<1	TM414	41.5	31.3	28.6	27.7	29.5	23.5
(EH_2D_AL_#1)	ma/ka	1 101-4 144	4 4	4	20.0	£1.1 #	25.5	20.0 #
	111g/Kg ~1	TM414	7 47	4 76	1 0 00		9.54	
(EH 2D AL #1)	< 	1 1/14 14	1.17	4.70	2.80	2.8	2.54	Ζ.Ζ
	тg/кg		10.1	00.5	10.0	07.0	10.0	
Total Aliphatics >C10-C44	<5	I M414	49.1	36.5	40.2	37.9	40.6	32.3
(EH_2D_AR_#1)	mg/kg							
Total Aliphatics & Aromatics >C10-C44	<10	TM414	73.9	54.1	205	118	121	97.7
(EH_2D_Total_#1)	mg/kg							
Aromatics >EC5-EC7	<0.01	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
(HS_1D_AR)	mg/kg							
Aromatics >EC7-EC8	< 0.01	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	< 0.01
(HS_1D_AR)	ma/ka							
Aromatics >EC8-EC10	<0.01	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
(HS 1D AR)	ma/ka	110000	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Aromatica > EC10 EC12	-1	TM414	-1	-1	-1	-1	1	-1
(EH 2D AR #1)	~ ma//ra	1 1014 14	N	N	N I "	N	N	` '
	mg/kg		#	#	#	#	#	#
Aromatics > $EU12-EU16$	<1	TM414	<1	<1	6.44	2.59	1.26	<1
(EH_2D_AR_#1)	mg/kg		#	#	#	#	#	#
Aromatics > EC16-EC21	<1	TM414	3.87	1.87	24.9	10.2	12	9.29
(EH_2D_AR_#1)	mg/kg		#	#	#	#	#	#
Aromatics > EC21-EC35	<1	TM414	19.6	14.7	119	59.6	56.6	47.9
(EH_2D_AR_#1)	mg/kg		#	#	#	#	#	#
Aromatics >EC35-EC44	<1	TM414	1.32	<1	14.8	7.27	10.2	7.48
(EH_2D_AR_#1)	mg/kg							
Aromatics > EC40-EC44	<1	TM414	<1	<1	3.22	1.22	1.99	<1
(EH_2D_AR_#1)	ma/ka				-			
Total Aromatics > EC10-EC44	<5	TM414	24.8	17.6	165	79.6	80	65.4
(EH_2D_AR_#1)	ma/ka							
Total Aliphatics & Aromatics >05-044	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	TM/1/	72.0	5/ 1	205	110	101	07 7
(EH 2D Total #1+HS 1D Total)	malka	1 1014 14	10.0	ו דיט	200	110	121	51.1
Total Aliabatica SCE C10	- 119/NY	TMOOO	-0 0E	~0.0E	-0 0E	-0 0E	20 DE	~0.05
$(HS 1D \Delta I TOTAI)$	<0.05	1 10009	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	nig/kg	T1 4000	.0.05	.0.05	.0.05	.0.05	.0.05	.0.05
I otal Aromatics >EC5-EC10	<0.05	TM089	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
(HS_ID_AR_IOTAL)	mg/kg							
GRO >C5-C10	<0.02	TM089	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
(HS_1D_IUTAL)	mg/kg							

(ALS)

Validated

TPH CWG (S)

	•							
# ISOT/025 accredited. M mCERTS accredited. Autopus / cattled cample	Cu	stomer Sample Ref.	V205	V206	V207	V208	V209	
diss.filt Dissolved / filtered sample.		Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
tot.unfilt Total / unfiltered sample.	report for	Sample Type	Soil/Solid (S)					
accreditation status.	report for	Date Sampled	27/10/2023	27/10/2023	27/10/2023	27/10/2023	27/10/2023	
** % recovery of the surrogate standard to	check the	Sampled Time	00:00	00:00	00:00	00:00	00:00	
compounds within samples aren't corre	cted for	SDG Ref	231027-90	231027-90	231027-90	231027-90	231027-90	
the recovery		Lab Sample No.(s)	28853563	28853570	28853577	28853512	28853518	
(F) Trigger breach commend 1-4+§@ Sample deviation (see appendix)		AGS Reference	ES1	ES1	ES1	ES1	ES1	
Component	LOD/Unit	ts Method						
GRO Surrogate % recovery**		TM089	73	76.6	76.3	76.6	78.3	
	%							
Aliphatics >C5-C6	< 0.01	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	
(HS_1D_AL)	mg/kg							
Aliphatics >C6-C8	<0.01	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	
(HS 1D AL)	~0.01 ma/ka	110003	-0.01	NU.01	NU.U 1	~0.01	NO.01	
	-0.01	TM090	<0.01	<0.01	<0.01	<0.01	<0.01	
(HS 1D AL)	<0.01 ma/ka	1 101009	×0.01	×0.01	<0.01	<0.01	<0.01	
	mg/kg	T 1444						
	<1	IM414	<1	<1	<1	<1	<1	
(EH_2D_AL_#1)	mg/kg		#	#	#	#	#	
Aliphatics >C12-C16	<1	TM414	<1	<1	<1	<1	<1	
(EH_2D_AL_#1)	mg/kg		#	#	#	#	#	
Aliphatics >C16-C21	<1	TM414	5.27	14.1	7.82	7.63	9.27	
(EH_2D_AL_#1)	mg/kg		#	#	#	#	#	
Aliphatics >C21-C35	<1	TM414	25.8	216	24.9	26.3	87.9	
(EH_2D_AL_#1)	ma/ka		#	#	#	#	±	
Aliphatics >C35-C44	<1	TM414	2 61	10.7	2 31	2 13	25	
(EH_2D_AL_#1)	ma/ka	1 101-7 1-4	2.01	10.7	2.01	2.10	20	
	111g/Kg	TN4444	24.0	242	2E 2	26.6	100	
(EH 2D AR $\#1$)	<5 ma//ra	1 1/14 14	34.2	242	30.3	30.0	123	
	mg/kg		(=0	00.1	105		0.10	
Total Aliphatics & Aromatics >C10-C44	<10	TM414	172	334	105	117	246	
(EH_2D_1otal_#1)	mg/kg							
Aromatics >EC5-EC7	<0.01	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	
(HS_1D_AR)	mg/kg							
Aromatics >EC7-EC8	< 0.01	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	
(HS_1D_AR)	mg/kg							
Aromatics >EC8-EC10	< 0.01	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	
(HS_1D_AR)	ma/ka			0.01	0.01	0.01	0.01	
Aromatics > EC10-EC12	//////////////////////////////////////	TM414	-1	-1	<u>1</u>	<1	<1	
(EH 2D AR #1)	ma/ka	1101414	×1	×1 #	×1 #	~ 1 #	~ 1 #	
$\Lambda_{\text{romatics}} > EC12 EC16$	//////////////////////////////////////	TM414	2.02	167	#	1 90	1 22	
(FH 2D AR #1)	NI ma/ka	1 1014 14	J.2J	1.07	۳ ۱	1.09	1.33	
	шу/ку	T 1444	#	#	#	#	#	
Aromatics > $EU10-EU21$	<1	IM414	28.3	12.9	9.82	11.4	16.7	
(EH_2D_AR_#1)	mg/kg		#	#	#	#	#	
Aromatics > EC21-EC35	<1	TM414	92.8	66.8	50.4	58.8	97.3	
(EH_2D_AR_#1)	mg/kg		#	#	#	#	#	
Aromatics >EC35-EC44	<1	TM414	12.9	11	9.17	7.88	7.99	
(EH_2D_AR_#1)	mg/kg							
Aromatics > EC40-EC44	<1	TM414	2.36	2.79	1.48	1.27	2.5	
(EH_2D_AR_#1)	mg/kg							
Total Aromatics > EC10-EC44	<5	TM414	137	92.4	70.1	79.9	123	
(EH_2D_AR_#1)	ma/ka						-	
Total Aliphatics & Aromatics >C5-C44	<10	TM414	172	334	105	117	246	
(EH_2D_Total_#1+HS_1D_Total)	ma/ka	1101-11-1		007	100		270	
Total Aliphatics $\Sigma C5 C10$	~0.0E	TMOOD	~0 0E					
(HS 1D AL TOTAL)	50.05 ma//ca	TIVIU89	CU.U2	CU.U2	SO.02	SO.02	SO.05	
	ing/kg	T14000	-0.05	-0.05	-0.05	-0.05	-0.05	
	< 0.05	110089	<0.05	<0.05	<0.05	<0.05	<0.05	
	mg/kg		0.00	0.00	0.00	0.00	0.00	
GRU > C5-C10	< 0.02	1M089	<0.02	<0.02	<0.02	<0.02	<0.02	
(HS_ID_IOTAL)	mg/kg							

A	Ls)

Validated

SDG: 231027-90 Client Ref.: 104920 Report Number: 709785 Superseded Report: Location: London Institute of Healthcare Engineering

voc	MS (S)								
# M	Results Legend		Customer Sample I	Ref. P201	P202	V201	V202	V203	V204
aq diss.filt tot.unfilt * **	Aqueous / sections / s	d sample. ed sample. sample. refer to subcontractor report for tus. subcontractor report		m) 0.00 - 0.00 pe Soil/Solid (S) ed 27/10/2023 ne 00:00 ed 27/10/2023 lef 231027-90 (s) 28853503 re ES1	0.00 - 0.00 Soil/Solid (S) 27/10/2023 00:00 27/10/2023 231027-90 28853524 ES1	0.00 - 0.00 Soil/Solid (S) 27/10/2023 00:00 27/10/2023 231027-90 28853531 ES1	0.00 - 0.00 Soil/Solid (S) 27/10/2023 00:00 27/10/2023 231027-90 28853539 ES1	0.00 - 0.00 Soil/Solid (S) 27/10/2023 00:00 27/10/2023 231027-90 28853547 ES1	0.00 - 0.00 Soii/Solid (S) 27/10/2023 00:00 27/10/2023 231027-90 28853553 ES1
1-4+§@ Comp	Sample deviation (see appendix)		nits Metho	d					
Dibromo	ofluoromethane**	%	TM116	5 107	107	107	107	107	106
Toluene	-d8**	%	TM116	98.3	99.1	97.3	96.9	97.1	97.8
4-Bromo	ofluorobenzene**	%	TM116	95.4	93.3	89.7	88.7	87.6	90.8
Methyl 1	Fertiary Butyl Ether	<0.00 ma/k	005 TM116	6 <0.01 M	<0.01	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Benzen	9	<0.0 mg/k	01 TM116	6 <0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene		<0.0 mg/k	01 TM116	6 <0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbei	nzene	<0.0 mg/k	01 TM116	6 <0.02	<0.02	<0.02	<0.02	<0.02	<0.02
p/m-Xyl	ene	<0.0 mg/k	02 TM116	6 <0.04 #	<0.04	<0.04 #	<0.04 #	<0.04 #	<0.04
o-Xylen	9	<0.0 mg/k	02 TM116	6 <0.04 M	<0.04	<0.04	<0.04 M	<0.04	<0.04
Sum of	Detected Xylenes	<0.0 mg/k)2 TM116	o <0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Sum of	BTEX	<0.0 mg/k	07 TM116 (g	s <0.14	<0.14	<0.14	<0.14	<0.14	<0.14

	1
ALS	



Report Number:709785Superseded Report:Location:London Institute of Healthcare Engineering

					_							_	
Results Legend # ISUTV23 accreated. M mCERTS accredited. aq Aqueous / settled sample. diss.fiit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Depth (m) Sample Type Date Sampled		V205 0.00 - 0.00 Soil/Solid (S)		V206 0.00 - 0.00 Soil/Solid (S)		V207 0.00 - 0.00 Soil/Solid (S)	V208 0.00 - 0.00 Soil/Solid (S)		V209 0.00 - 0.00 Soil/Solid (S)		
Subcontracted - refer to subcontractor i accreditation status. Kereovery of the surrogate standard to	report for	l S	Date Sampled Sampled Time	27/10/2023 00:00		27/10/2023 00:00		27/10/2023 00:00	27/10/2023 00:00		27/10/2023 00:00		
efficiency of the method. The results of compounds within samples aren't corre	individual Date Received		27/10/2023 231027-90		27/10/2023		27/10/2023 231027-90	27/10/2023		27/10/2023			
the recovery (F) Trigger breach confirmed		Lab S	Sample No.(s)	28853563		28853570 ES1		28853577 ES1	28853512		28853518		
1-4+§@ Sample deviation (see appendix)	LOD/U	nits	Method	LOT		LOT		201	201		201		
Dibromofluoromethane**	%		TM116	107		106		106	106		107		
Toluene-d8**	%		TM116	96.4		96.6		96.8	96.8		96.6		
4-Bromofluorobenzene**	%		TM116	87		85.8		86.1	90.6		88.6		
Methyl Tertiary Butyl Ether	<0.00 mg/k	105 .g	TM116	<0.01	м	<0.01 M		<0.01 M	<0.01	М	<0.01	М	
Benzene	<0.00 mg/k	01 .q	TM116	<0.02	м	<0.02 M		<0.02 M	<0.02	м	<0.02	м	
Toluene	<0.00 mg/k	01 .g	TM116	<0.02	м	<0.02 M	T	<0.02 M	<0.02	M	<0.02	м	
Ethylbenzene	<0.00 mg/k	01 .g	TM116	<0.02	м	<0.02 M	T	<0.02 M	<0.02	М	<0.02	М	
p/m-Xylene	<0.00 mg/k	02 .g	TM116	<0.04	#	<0.04 #		<0.04 #	<0.04	#	<0.04	#	
o-Xylene	<0.00 mg/k	02 .g	TM116	<0.04	м	<0.04 M		<0.04 M	<0.04	М	<0.04	М	
Sum of Detected Xylenes	<0.0 mg/k	12 .g	TM116	<0.4		<0.4		<0.4	<0.4		<0.4		
Sum of BTEX	<0.00 mg/k	07 .g	TM116	<0.14		<0.14		<0.14	<0.14		<0.14		



Results Legend

CERTIFICATE OF ANALYSIS

t Number: 709785 Superseded Report: Location: London Institute of Healthcare Engineering Report Number: 709785

Asbestos Identification - Solid Samples

# ISO1702	5 accredited.	-									
* Subcont	racted test.	Date of Analysis	Analysed By	Comments	Amosite (Brown)	Asbestos	Asbestos	Asbestos	Chrysotile	Crocidolite	Non-Asbestos
(F) Trigger I	preach confirmed				Asbestos	Actinolite	Anthophyllite	Tremolite	(White)	(Blue) Asbestos	Fibre
1-5&+s@ Sample	P201ES1	02/11/2023	lamoc		Not Detected	Not Detected	Not Detected	Not Detected	Aspesios	Not Detected	Not Detected
Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	0.00 - 0.00 SOLID 27/10/2023 00:00:00 27/10/2023 05:00:00 231027-90 28853503 TM048	02/11/2023	Richards		(#)	(#)	(#)	(#)	(#)	(#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	P202ES1 0.00 - 0.00 SOLID 27/10/2023 00:000 27/10/2023 05:00:00 231027-90 28853524 TM048	02/11/2023	James Richards	-	Not Detected (#)	Not Detected					
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	V201ES1 0.00 - 0.00 SOLID 27/10/2023 00:00:00 27/10/2023 05:00:00 231027-90 28853531 TM048	02/11/2023	Odhran McLernon	-	Not Detected (#)	Not Detected					
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	V202ES1 0.00 - 0.00 SOLID 27/10/2023 00:00:00 27/10/2023 05:00:00 231027-90 28853539 TM048	02/11/2023	Odhran McLernon	-	Not Detected (#)	Not Detected					
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	V203ES1 0.00 - 0.00 SOLID 27/10/2023 00:00:00 27/10/2023 05:00:00 231027-90 28853547 TM048	02/11/2023	Odhran McLernon	-	Not Detected (#)	Not Detected					
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	V204ES1 0.00 - 0.00 SOLID 27/10/2023 00:00:00 27/10/2023 05:00:00 231027-90 28853553 TM048	02/11/2023	Odhran McLernon	-	Not Detected (#)	Not Detected					
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	V205ES1 0.00 - 0.00 SOLID 27/10/2023 00:00:00 27/10/2023 05:00:00 231027-90 28853563 TM048	01/11/2023	James Richards	-	Not Detected (#)	Not Detected					
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	V206ES1 0.00 - 0.00 SOLID 27/10/2023 00:00:00 27/10/2023 05:00:00 231027-90 28853570 TM048	02/11/2023	Odhran McLernon	-	Not Detected (#)	Not Detected					



Validated

	·													
(ALS)	Clien	SDG: 2310 t Ref.: 1049	027-90 920	Re	port Numb Locatio	er: 709785 on: London	Institute of	Sup Healthcare	perseded R Engineering	eport:				
		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre			
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	V207ES1 0.00 - 0.00 SOLID 27/10/2023 00:00:00 27/10/2023 05:00:00 231027-90 28853577 TM048	01/11/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected			
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	V208ES1 0.00 - 0.00 SOLID 27/10/2023 00:00:00 27/10/2023 05:00:00 231027-90 28853512 TM048	02/11/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected			
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	V209ES1 0.00 - 0.00 SOLID 27/10/2023 00:00:00 27/10/2023 05:00:00 231027-90 28853518 TM048	01/11/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected			



CERTIFICATE OF ANALYSIS

Validated

Report Number: 709785

t Number: 709785 Superseded Report: Location: London Institute of Healthcare Engineering

Table of Results - Appendix

Method No	Description
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM018	Determination of Loss on Ignition
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM410	Determination of Coronene in soils by GCMS
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM218	The determination of PAH in soil samples by GC-MS
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM151	Determination of Hexavalent Chromium using Kone analyser
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



SDG: 231027-90 Client Ref.: 104920

t Number: 709785 Superseded Report: Location: London Institute of Healthcare Engineering Report Number: 709785

Test Completion Dates

Lab Sample No(s)	28853503	28853524	28853531	28853539	28853547	28853553	28853563	28853570	28853577	28853512
Customer Sample Ref.	P201	P202	V201	V202	V203	V204	V205	V206	V207	V208
AGS Ref.	ES1									
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Туре	Soil/Solid (S)									
Asbestos ID in Solid Samples	02-Nov-2023	02-Nov-2023	02-Nov-2023	02-Nov-2023	02-Nov-2023	02-Nov-2023	01-Nov-2023	02-Nov-2023	01-Nov-2023	02-Nov-2023
Coronene	01-Nov-2023	02-Nov-2023	01-Nov-2023	02-Nov-2023	02-Nov-2023	01-Nov-2023	01-Nov-2023	02-Nov-2023	01-Nov-2023	01-Nov-2023
EPH CWG GC (S)	01-Nov-2023									
GRO by GC-FID (S)	31-Oct-2023	31-Oct-2023	01-Nov-2023	31-Oct-2023						
Hexavalent Chromium (s)	31-Oct-2023									
Loss on Ignition in soils	02-Nov-2023									
Metals in solid samples by OES	01-Nov-2023									
PAH 16 & 17 Calc	01-Nov-2023	02-Nov-2023	01-Nov-2023	02-Nov-2023	02-Nov-2023	01-Nov-2023	01-Nov-2023	02-Nov-2023	01-Nov-2023	01-Nov-2023
PAH by GCMS	31-Oct-2023	01-Nov-2023	31-Oct-2023	01-Nov-2023	01-Nov-2023	31-Oct-2023	31-Oct-2023	01-Nov-2023	31-Oct-2023	31-Oct-2023
pH	01-Nov-2023	02-Nov-2023	31-Oct-2023	02-Nov-2023	02-Nov-2023	31-Oct-2023	01-Nov-2023	02-Nov-2023	01-Nov-2023	31-Oct-2023
Phenols by HPLC (S)	01-Nov-2023	01-Nov-2023	01-Nov-2023	01-Nov-2023	01-Nov-2023	31-Oct-2023	31-Oct-2023	01-Nov-2023	01-Nov-2023	31-Oct-2023
Sample description	28-Oct-2023	30-Oct-2023	28-Oct-2023	30-Oct-2023	30-Oct-2023	28-Oct-2023	28-Oct-2023	30-Oct-2023	28-Oct-2023	28-Oct-2023
Total Organic Carbon	02-Nov-2023	02-Nov-2023	02-Nov-2023	02-Nov-2023	02-Nov-2023	03-Nov-2023	02-Nov-2023	02-Nov-2023	03-Nov-2023	03-Nov-2023
TPH CWG GC (S)	01-Nov-2023									
VOC MS (S)	01-Nov-2023									

Lab Sam	nple No(s)	28853518
Customer Sample Ref.		V209
	AGS Rof	ES1
	Denth	0.00 - 0.00
	Туре	Soil/Solid (S)
Asbestos ID in Solid Samples		01-Nov-2023
Coronene		01-Nov-2023
EPH CWG GC (S)		01-Nov-2023
GRO by GC-FID (S)		31-Oct-2023
Hexavalent Chromium (s)		31-Oct-2023
Loss on Ignition in soils		02-Nov-2023
Metals in solid samples by OES		01-Nov-2023
PAH 16 & 17 Calc		01-Nov-2023
PAH by GCMS		31-Oct-2023
pH		01-Nov-2023
Phenols by HPLC (S)		31-Oct-2023
Sample description		28-Oct-2023
Total Organic Carbon		03-Nov-2023
TPH CWG GC (S)		01-Nov-2023
VOC MS (S)		01-Nov-2023

























CERTIFICATE OF ANALYSIS

Validated

Report Number: 709785 Location: London Institute of Healthcare Engineering

Superseded Report:

Analysis: GRO by GC-FID (S)

Chromatogram

Depth: 0.00 - 0.00

Sample No : Sample ID : P201

28868698





CERTIFICATE OF ANALYSIS

Validated

Report Number: 709785 Location: London Institute of Healthcare Engineering

Superseded Report:

Analysis: GRO by GC-FID (S)

Chromatogram Sample No : Sample ID :

Depth: 0.00 - 0.00

28869201

V206





CERTIFICATE OF ANALYSIS

Validated

Report Number: 709785 Location: London Institute of Healthcare Engineering

Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : Sample ID : 28869325 V203

Depth: 0.00 - 0.00

28869325_GRO_S.DATA - Chem 67 FID





CERTIFICATE OF ANALYSIS

Validated

Report Number: 709785 Location: London Institute of Healthcare Engineering

Superseded Report:

Analysis: GRO by GC-FID (S)

Chromatogram

Depth: 0.00 - 0.00

Sample No : Sample ID : V204

28869425





CERTIFICATE OF ANALYSIS

Validated

Report Number: 709785 Location: London Institute of Healthcare Engineering

Superseded Report:

Analysis: GRO by GC-FID (S)

Chromatogram Sample No : Sample ID :

Depth: 0.00 - 0.00

V205 28869465_GRO_S.DATA - Chem 67 FID

28869465




CERTIFICATE OF ANALYSIS

Validated

Report Number: 709785 Location: London Institute of Healthcare Engineering

Superseded Report:

Analysis: GRO by GC-FID (S)

Chromatogram 28869666

Depth: 0.00 - 0.00

Sample No : Sample ID : V208

28869666_GRO_S.DATA - Chem 67 FID





CERTIFICATE OF ANALYSIS

Validated

Report Number: 709785 Location: London Institute of Healthcare Engineering

Superseded Report:

Analysis: GRO by GC-FID (S)

Chromatogram Sample No : Sample ID :

Depth: 0.00 - 0.00

28869728

V209





CERTIFICATE OF ANALYSIS

Validated

Report Number: 709785 Location: London Institute of Healthcare Engineering

Superseded Report:

Analysis: GRO by GC-FID (S)

Chromatogram Sample No : Sample ID :

Depth: 0.00 - 0.00

V207

28869799





CERTIFICATE OF ANALYSIS

Validated

Report Number: 709785 Location: London Institute of Healthcare Engineering

Superseded Report:

Analysis: GRO by GC-FID (S)

Chromatogram Sample No : Sample ID :

Depth: 0.00 - 0.00

28869861_GRO_S.DATA - Chem 67 FID

28869861

P202





CERTIFICATE OF ANALYSIS

Validated

Report Number: 709785 Location: London Institute of Healthcare Engineering

Superseded Report:

Analysis: GRO by GC-FID (S)

Chromatogram Sample No : Sample ID :

Depth: 0.00 - 0.00

28869945

V202





CERTIFICATE OF ANALYSIS

Validated

Report Number: 709785 Location: London Institute of Healthcare Engineering

Superseded Report:

Analysis: GRO by GC-FID (S)

Chromatogram Sample No : Sample ID :

Depth: 0.00 - 0.00

28874962_GRO_S.DATA - HP6850 Signal 1

28874962

V201



CERTIFICATE OF ANALYSIS



231027-90 104920

Report Number: 709785 Location: London Institute of Healthcare Engineering

Superseded Report:

opendix

General

sults are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. Surrogate recoveries - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. Tentatively Identified Compounds (TICs) are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
•	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining

Asbe stos Type	Common Name
Chrysof le	White Asbestos
Amosite	Brow n Asbestos
Cio d dolite	Blue Asbe stos
Fibrous Act nolite	-
Fib no us Anthop hyll ite	-
Fibrous Tremol ite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Appendix E Correspondence

From: Davies, Philip (MSC) <Morgan Sindall>
Sent: 15 November 2023 13:55
To: Anna-Kaisa Tadayon <Pell Frischmann>
Subject: LIHE - PF - Summary of Remediation - MS Actions - 15.11.23
Importance: High

Hello PF

Building upon previous correspondence, to confirm, in relation to the localised soil that didn't meet the necessary performance specification, we (Morgan Sindall) have undertaken the following remediation:

GF East

- Approx. 5m3 topsoil removed down to separation membrane (orange)
- Approx. 400mm deep
- Soil was removed in stages and has been temporarily stored (covered) within our site compounded awaiting collection / disposal at licenced facility
- As defined previously the soil was replaced with the "clean" soil has prescribed in the attached document 231027-90-MCERTS-COMPLETE-2023-11-03
- Works were undertaken and completed on 10.11.23

GF North East

- Approx. 3m3 topsoil removed and replaced
- Approx. 400mm deep
- Soil was removed in stages and has been temporarily stored (covered) within our site compounded awaiting collection / disposal at licenced facility
- As defined previously the soil was replaced with the "clean" soil has prescribed in the attached document 231027-90-MCERTS-COMPLETE-2023-11-03
- Works were undertaken and completed on 10.11.23

Level 3 West

- Approx. 0.3m3 substrate and soil removed and replaced, down to the drainage board (black plastic crates)
- Approx. 400mm deep
- Soil and substrate was removed in stages and has been temporarily stored (covered) within our site compounded awaiting collection / disposal at licenced facility
- As defined previously the substrate was replaced with the "clean" soil has prescribed in the attached document 231027-90-MCERTS-COMPLETE-2023-11-03
- Works were undertaken and completed on 15.11.23

The soil was collected today - see attached WTN. All remediation works are now completed.

Before concluding your reporting requirements, if you require anymore information let me know.

Regards,

Philip J. Davies BSc (Hons) DIS EngD MCIOB PIEMA Project Manager



Mark-up of Areas Remediated (part of the 15-Nov-23 email on the previous page)



Pell Frischmann

Appendix F Verification photographs

Inspection pits V101-V114



V101 geotextile in place, cover soil thickness 0.37m



V102 geotextile in place, cover soil thickness 0.30m



V103 geotextile in place, cover soil thickness 0.30m



V104 geotextile in place, cover soil thickness 0.40m







V106 geotextile in place, cover soil thickness 0.72m



V107 geotextile in place, cover soil thickness 0.82m



V108 geotextile in place, cover soil thickness 0.86m



V109 geotextile in place, cover soil thickness 0.32m

Pell Frischmann

Inspection pits V101-V114



V110 geotextile in place, cover soil thickness 0.45m



V111 geotextile in place, cover soil thickness 0.43m



V112 geotextile in place, cover soil thickness 0.50m



V113 geotextile in place, cover soil thickness 0.43m



V114 geotextile in place, cover soil thickness 0.40m

Appendix G Waste transfer note

NR. The Comments Association of the single set o	CUDE ANTRAS CUDE ANTRAS	LOND SUPPI UNITSDELANWOOD, HI BOHELANWOOD, HI Vehicle Reg Deivens Name Time on Size 12 Name and Size Adda
the Agena, Representation of Re- exploring a to your sublation of London Interaction and conditions of London Interaction has been considered DIST F. NT. UN MST F. NT. UN any documentation and the second large true and these entirely at the large true and these entirely at the	Stones doentraction (Rabbiak) andoore (Brick / Concrete) Park (Biodegradable) Park (Biodegrad	ON ROC LIES LT T. MANOR WAX, SHIPPOLOSHIRE, WDS IF STG-G170 JOANS 200 Time off SI 200 Time off SI 200 Time off SI 200 Time off SI
A A A A A A A A A A A A A A	SIC Gab	TE Day S The Cost State
The wave management hierarchy has be On behalf of Disport Signed	Addres	DELIVERY NOTE DUTY OF CARE CONTROL Environmental Protection Act 1990 Registered water survive No. Ecompt from requirement to have wan disposed of water management licence Daponal Facility_KeAHoot Site Name
een considered. <u>A</u> Duce <u>L</u> some has been given te of sole or an agreement for the sale time als daturating to your site.	DWW Barryte fan regilement to hae dapoal or wate mangement Bo Eempt from regilement to regin	Ticker No. 10434 LED WASTE TRANSFER N Carry GGC (1 Carry Dock Q)