



## Technical Note

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<b>To:</b>	Frank Cowell Project Manager JJ Rhatigan Limited Anna House 214-218 High Road Seven Sisters London N15 4NP	<b>Date:</b>	14 May 2025
		<b>Turnkey ref:</b>	0112-TN003i4
		<b>Author:</b>	Kene Onwubuya
		<b>Reviewed:</b>	Dave Rutherford

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**Title:** CTC, Hayes – Blocks E and F Addendum Verification Report

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### 1 Introduction

JJ Rhatigan instructed Turnkey Regeneration Limited (Turnkey) to prepare an addendum Verification Report at their CTC Hayes site. This report is 'Issue 4', following further assessment of chemical data from imported topsoil used in Blocks E & F.

This addendum report is specific for Blocks E and F and provides an update to the site-wide Verification Report referenced below:

- Turnkey Verification Report (Final). Crown Trading Centre, Hayes. Ref: 0112-R002i3. Dated: March 2025

As part of the requirements set out in the Remediation Method Statement (RMS)<sup>1</sup>, verification of the clean cover to be placed as part of soft landscaping is required, underlain by a marker layer when at ground level. Landscaping is subject to the ground level and also at podium level in planters – the layouts, also showing block areas, is presented in Appendix A for these levels. The landscaping to the west of Block E will be fenced off (inaccessible to future residents as it will be part of the construction site) and handed over with another block; this slight variation to the block plan is shown in Appendix A (see third drawing).

For clarity, all works regarding contamination-related conditions are complete for these two blocks.

#### 1.1 Regulatory Context

The primary objective of this addendum Verification Report is to seek partial discharge of Planning Condition 36iii and iv (Ref: Hillingdon 73955/APP/2022/3516) for the CTC Hayes development as outlined below:

*(iii) Upon completion of the approved remedial works, this condition will not be discharged until a comprehensive verification report has been submitted to and approved by the LPA. The report shall include the details of the final remediation works and their verification to show that the works for each phase have been carried out in full and in accordance with the approved methodology.*

*(iv) No contaminated soils or other materials shall be imported to the site. All imported soils for landscaping purposes shall be clean and free of contamination.*

*Before any part of the development is occupied, all imported soils shall be independently tested for chemical contamination, and the results of this testing shall be submitted and approved in writing by the Local Planning Authority. All soils used for gardens and/or landscaping purposes shall be clean and free of contamination.*

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<sup>1</sup> Turnkey Remediation Statement (Final). Crown Trading Centre, Hayes. Ref: 0097-R002i3. Dated: May 2023

## REASON

*To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems and the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors in accordance with 'Hillingdon Local Plan: Part 2 (January 2020) Policies – DME1 11: Protection of Ground Water Resources and DME1 12: Development of Land Affected by Contamination'*

Planning Condition 36i was discharged in 2023 and it is understood that Turnkey's recent verification report discharged Planning Condition 36ii.

### 1.2 Objectives

The objectives of this addendum Verification Report are summarised below:

- Partial discharge of Planning Condition 36ii, iii & iv of planning permission 73955/APP/2022/3516 (wording updated via Non Material Amendment reference: 73955/APP/2025/604).
- ensure any identified potential pollutant linkages are broken or will be broken on completion of the works across sectional areas; and
- comply with all relevant planning conditions and ensure works are carried out in a suitable manner to discharge relevant planning conditions.

The report has been completed in accordance with Land Contamination: Risk Management (issued October 2020 and updated July 2023).

## 2 Topsoil and Soft Landscaping Verification

Topsoil to be utilised within Blocks E and F as a clean cover layer comprises is supplied from two sources:

- Boughton Loam Ltd. Telford Way. Kettering. Northamptonshire NN16 8UN
- Springfield Direct Ltd. Denham. Middlesex UB9 4DF

Supplier documentation is presented in Appendix A. JJ Rhatigan also supplied Turnkey with certification from the supplier confirming that the soils complied with the chemical thresholds set in the verification criteria and those set out in BS3882 Specification for Topsoil.

The imported topsoil is to be used within plant boxes and soft landscaping areas within Blocks E and F.

To refresh on the frequency of sampling, 1 sample per 100m<sup>3</sup> for the first 500m<sup>3</sup> and then every 500m<sup>3</sup> for further import, should the source be consistent.

### 2.1 Verification Testing of Imported Soil

The following sections are reported in the chronological order that topsoil was imported.

#### 2.1.1 Block F

Based on information provided by JJ Rhatigan, the volume of topsoil imported for use in Block F was 275m<sup>3</sup>. An initial 6 no. samples of the topsoil so far delivered to site were collected for testing (3 no. from each source, meaning there was flexibility on where each was used and represent adequate quota to also partially represent topsoil used in Block E). The contractor deemed these to be representative of the Block F topsoil, i.e. negating the need for further sampling/testing.

The samples were analysed for the suite of contaminants listed in the RMS including heavy metals, PAHs, speciated TPH, other organics and asbestos. This is with the exception of 1 no. sample (TS3-03) where a marginal exceedance of vanadium (84mg/kg vs screening criteria of 82mg/kg, which is 2.4%) was recorded. This is not considered a significant issue (see Section 2.2 for further justification). Asbestos was not identified in any of the samples analysed.

The analytical data was screened against the RMS verification criteria for imported material with no exceedances identified in majority of the samples. This is with the exception of 2 no. samples (TS2-01 and TS2-03) from the same source where very marginal exceedances of boron (3.1mg/kg vs screening criteria of 3.0mg/kg, which is 3.1%) was recorded. This is not considered to be a significant issue (see Section 2.2 for further justification). Asbestos was not identified in any of the samples analysed.

The verification screening exercise is reported in Appendix B with the laboratory certificates of analysis provided in Appendix C.

### 2.1.2 Block E

The maximum volume of topsoil imported for use in Block E is ~380m<sup>3</sup>, as confirmed by JJ Rhatigan. To build on what was sampled to represent Block F, a further 3 no. samples of the material were collected that the contractor deemed to be representative of the Block E topsoil material, thus negating the requirement for further sampling/testing. In addition, some imported sand was utilised in planters at podium level and therefore 1 no. representative sample (sample ref. SS01-01) of this material was collected for record purposes<sup>2</sup>.

The samples were analysed for the suite of contaminants listed in the RMS including heavy metals, polycyclic aromatic hydrocarbons (PAHs), speciated total petroleum hydrocarbons (TPH), other organics and asbestos.

The analytical data was screened against the RMS verification criteria for imported material with no exceedances identified in majority of the samples.

The verification screening exercise is reported in Appendix B with the laboratory certificates of analysis provided in Appendix C.

## 2.2 Justification for use of topsoil with marginal boron and vanadium exceedances

Following the marginal exceedances recorded for boron and vanadium (as indicated in Section 2.1), it is imperative to provide justification to show that these exceedances are not detrimental to human health – these points are outlined below.

### 2.2.1 Statistical analysis

It is possible to undertake statistical analysis under planning using the UCL95 approach in line with the CL:AIRE Statistical Guidance<sup>3</sup>, which is a conservative approach (e.g. when compared to Part 2A, which uses LCL95). This assessment was undertaken for the two contaminants (boron and vanadium), which recorded exceedances of the RMS verification criteria for imported material. The outputs from the calculations are outlined below:

- Boron – UCL95 = 2.82mg/kg versus screening criteria of 3.0mg/kg
- Vanadium – UCL95 = 54.88mg/kg versus screening criteria of 82mg/kg

From the above, the UCL95 values are below the RMS verification criteria. This means that the topsoil is suitable for its intended use without further action.

Additional information on the assessment is presented in Appendix B.

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<sup>2</sup> This material does not constitute part of the required thickness of topsoil in locations where it was used.

<sup>3</sup> CL:AIRE (2008); Guidance on Comparing Soil Contamination Data with a Critical Concentration

## 2.2.2 Derivation of cover layer and import verification criteria

Under typical circumstances, in order to identify potential contaminants of concern (CoC), soil analytical data is screened against Land Quality Management Suitable 4 Use Levels (S4UL)<sup>4,5</sup> generic assessment criteria (GAC) for public open space – residential<sup>6</sup> (POSresi) and residential - with homegrown produce (Resi hgp)<sup>7</sup> end use.

However, in order to be conservative and reduce the potential for increasing the contaminant load on the site (via importation of material with high concentrations), some of the RMS verification criteria were derived using historic concentrations recorded at the site, i.e. lower than the S4UL GAC. This rationale is presented in Appendix C2 of the Remediation Statement. The criteria for boron and vanadium were based on “twice site-wide average” of concentrations recorded on the site.

For completeness, the topsoil concentrations have now also been screened against the S4UL GACs for both POSresi and Resihgp, with no exceedances recorded (including for the two compounds under consideration).

In addition, the mean concentrations for each compound were also calculated with the resulting concentrations below all the screening criteria, including the RMS verification criteria and the S4UL for POSresi and Resihgp.

A breakdown of the comparison for boron and vanadium is outlined in Table 2.1 below with the full screening spreadsheet provided in Appendix B.

Table 2.1: Boron and vanadium comparison against various screening criteria

Contaminant	Recorded Concentration (mg/kg)	UCL (mg/kg)	Mean Concentration (mg/kg)	Site Derived GAC (mg/kg)	S4UL GAC (POSresi) <sup>8</sup> mg/kg	S4UL GAC (Reshgp) <sup>8</sup> mg/kg
Boron	3.1	2.82	2.35	3.0	290	21,000
Vanadium	84	54.88	39.20	82	410	2000

Based on the above evidence, we can conclude that the topsoil utilised in the development is suitable for intended use with no detriment to human health.

## 2.3 Verification of Thickness of Clean Cover

There is a requirement to confirm that 600mm thickness of clean cover (i.e. imported topsoil) was installed within soft landscaping areas in Blocks E and F, as indicated in the RMS. Where laid on site won soils, a marker layer (e.g. terram) should be laid prior to topsoil being laid.

The contractor has verified that the recommended 600mm thick topsoil was placed across the soft landscaping areas. Example photos are presented in Appendix D. The only exception to this is within the footprint of installed below ground utilities where a reduced thickness of topsoil has been installed (typically 300-450mm).

<sup>4</sup> LQM/CIEH S4ULs (2015) for Human Health Risk Assessment (Copyright Land Quality Management Limited reproduced with permission); publication number S4UL3759.

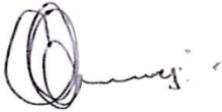
<sup>5</sup> Category 4 Screening Levels (C4SL) will sometimes be considered in screening contaminant concentrations but there are no C4SL values for a number of contaminants (including boron and vanadium) and therefore S4UL is generally utilised.

<sup>6</sup> This is the end use of the development based on conceptual site model submitted for Planning

<sup>7</sup> This is considered the most conservative S4UL GAC

<sup>8</sup> The screening criteria was developed with the following assumptions which have been changed from the CLEA default parameter set. Soil type is a sandy loam with an organic matter content of 1%. This is considered to be more conservative than the CLEA default of 6%.

Site photographs showing the topsoil and marker layer placement is presented in Appendix D.

<b>Author:</b>	
<b>Kene Onwubuya</b>	
<b>Reviewer:</b>	
<b>Dave Rutherford</b>	

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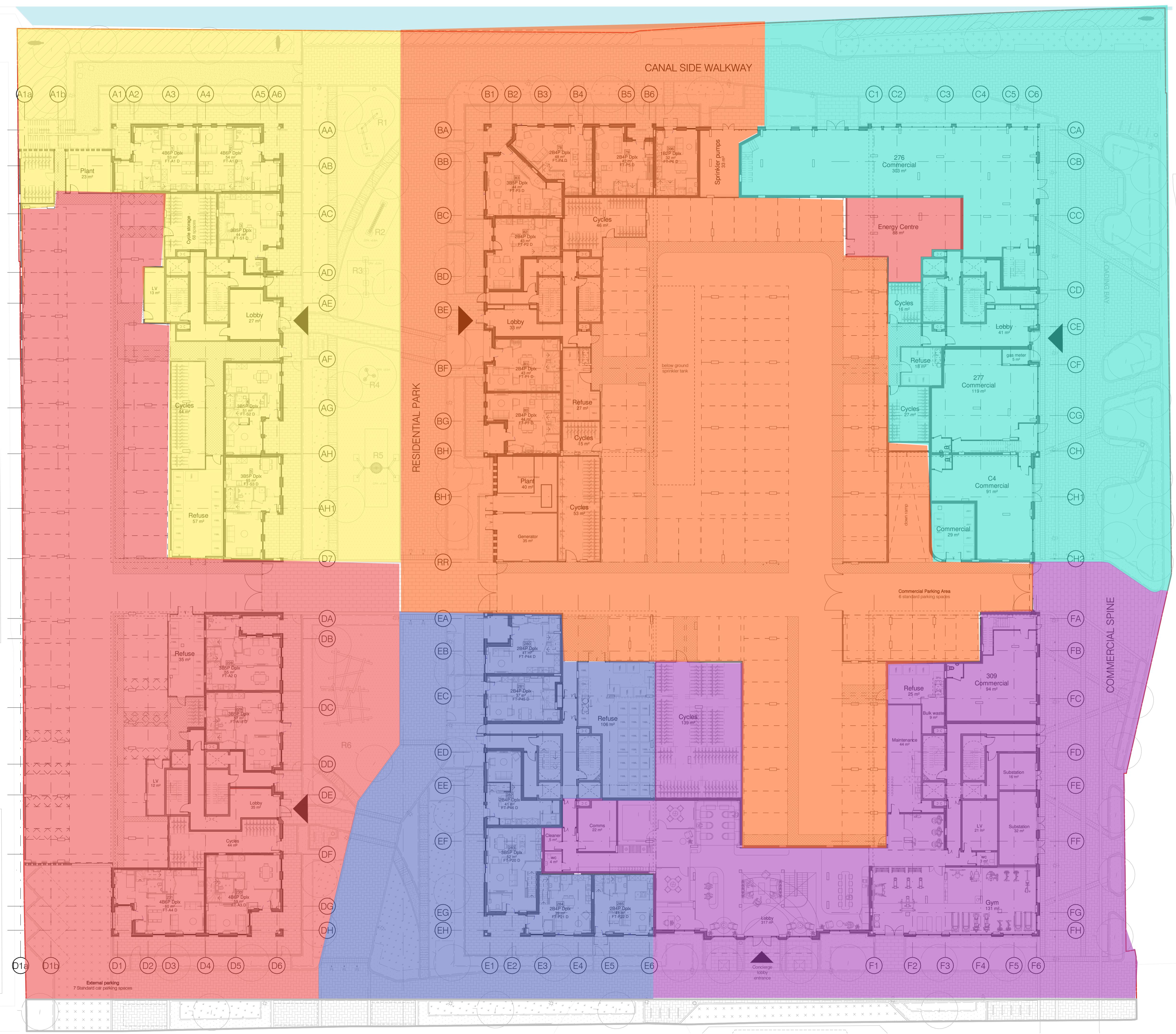
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## Appendix A – Supporting Documentation

GENERAL NOTES  
 1. DO NOT SCALE FROM THIS DRAWING  
 2. ALL DIMENSIONS TO BE CHECKED ON SITE  
 3. ALL DIMENSIONS ARE IN METRES  
 4. THIS DRAWING IS THE PROPERTY OF THE  
 ARCHITECT/CONTRACT ADMINISTRATOR

Scale 1:200  
 0 4 8 12 24 36ft 12m



P01 09.09.22 Stage 3B Issue - Scheme adjusted to 2 stairs per core

Rev Date Description

**FRA**  
Hoxton, London N1 7LB  
T: +44 (0)20 7812 8454

**FRANK REYNOLDS ARCHITECTS**

CLIENT Greystar

PROJECT CTC - Stage 3B (SEP 2022)

DRAWING NAME Stage 3B - Ground Floor - GA Plan

STATUS TENDER DATE MAY 2022

DRAWN BY JM CHECK BY AD SCALE 1:200 SIZE A1

JOB NO. 1140 DRAWING NO. 010101 REVISION P01

1140CTC-FRA-ZZ-00-DR-A-010101



GENERAL NOTES  
 1. DO NOT SCALE FROM THIS DRAWING  
 2. ALL DIMENSIONS TO BE CHECKED ON SITE  
 3. ALL DIMENSIONS ARE IN METRES AND ARE REFERRED TO THE  
 ARCHITECT / CONTRACT ADMINISTRATOR

Scale 1:200  
 0 4 8 12 24 36ft 12m

P01 09.09.2022 Stage 3B Issue - Scheme adjusted to 2 stairs per core

Rev Date Description

**FRA**  
Frank Reynolds Architects  
Hoxton, London N1 7LB  
T: +44 (0)20 7812 8454

CLIENT

PROJECT

DRAWING NAME

DATE

STATUS

TENDER

SIZE

DRAWN BY

CHECK BY

SCALE

JM AD 1:200 A1

JOB NO.

DRAWING NO.

REVISION

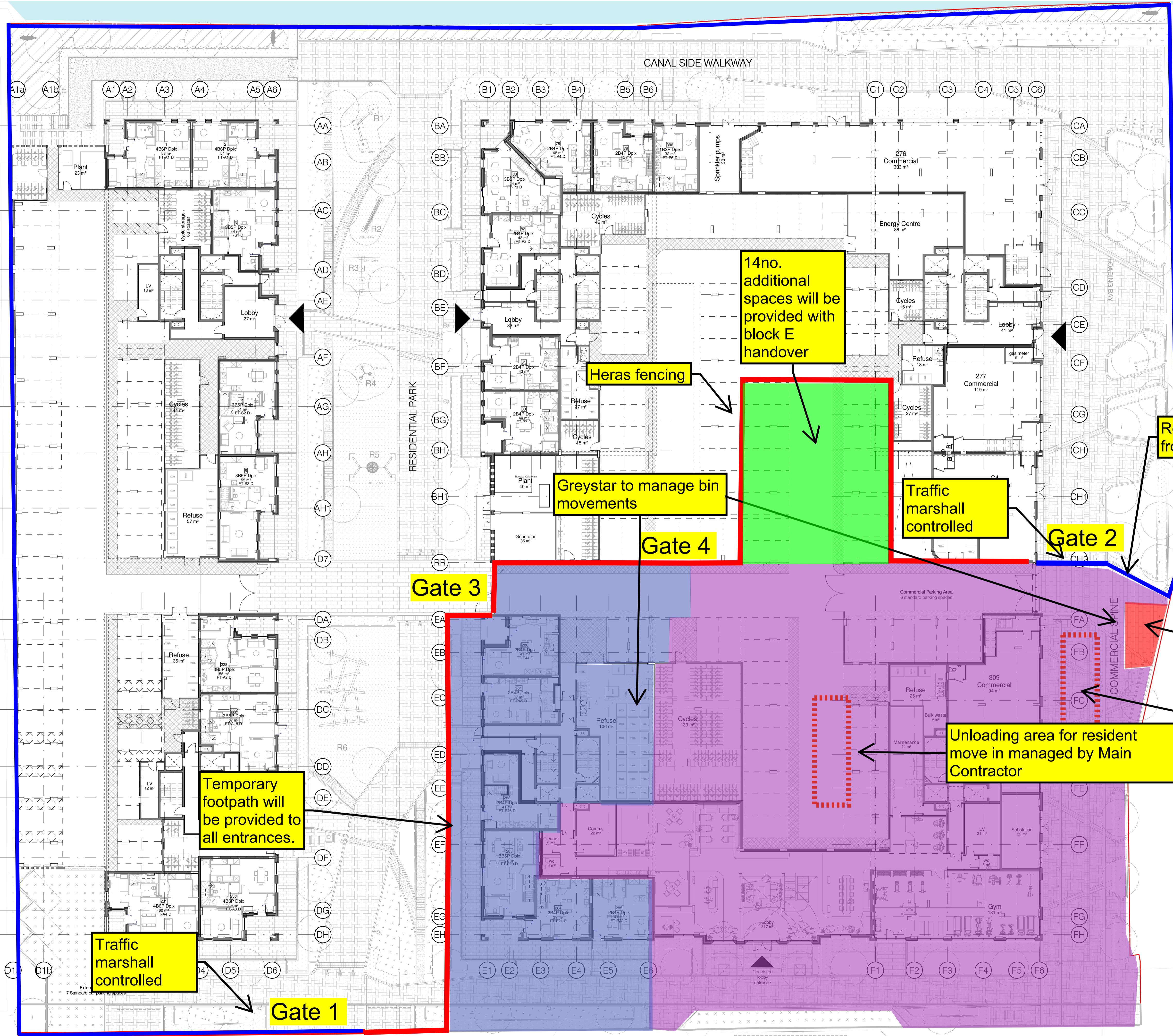
P01

1140

010103

P01

1140CTC-FRA-ZZ-01-DR-A-010103





## Amended Report

<b>Report No.:</b>	25-02435-2		
<b>Initial Date of Issue:</b>	10-Feb-2025	<b>Date of Re-Issue:</b>	10-Feb-2025
<b>Re-Issue Details:</b>	This report has been revised and directly supersedes 25-02435-1 in its entirety		
<b>Client</b>	Springbridge Direct Ltd		
<b>Client Address:</b>	Oxford Road Denham Middlesex UB9 4DF		
<b>Contact(s):</b>	Tom Hawkins		
<b>Project</b>	Springbridge Yard		
<b>Quotation No.:</b>	Q25-37158	<b>Date Received:</b>	24-Jan-2025
<b>Order No.:</b>		<b>Date Instructed:</b>	24-Jan-2025
<b>No. of Samples:</b>	2		
<b>Turnaround (Wkdays):</b>	10	<b>Results Due:</b>	06-Feb-2025
<b>Date Approved:</b>	07-Feb-2025	<b>Subcon Results Due:</b>	06-Feb-2025

**Approved By:**

**Details:** David Smith, Technical Director

**For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report**

## Results - Soil

Project: Springbridge Yard

Client: Springbridge Direct Ltd		Chemtest Job No.: 25-02435			
Quotation No.: Q25-37158		Chemtest Sample ID.: 1922378			
Order No.:		Client Sample Ref.:	Topsoil		
		Client Sample ID.:	Top		
		Sample Type:	SOIL		
		Date Sampled:	22-Jan-2025		
		Time Sampled:	11:26		
		Asbestos Lab:	DURHAM		
Determinand	HWOL Code	Accred.	SOP	Units	LOD
ACM Type		U	2192		N/A
Asbestos Identification		U	2192		N/A
Moisture		N	2030	%	0.020
Soil Colour		N	2040		N/A
Other Material		N	2040		N/A
Soil Texture		N	2040		N/A
Boron (Hot Water Soluble)		M	2120	mg/kg	0.40
Cyanide (Total)		M	2300	mg/kg	0.50
Arsenic		M	2455	mg/kg	0.5
Cadmium		M	2455	mg/kg	0.10
Chromium		M	2455	mg/kg	0.5
Copper		M	2455	mg/kg	0.50
Mercury		M	2455	mg/kg	0.05
Nickel		M	2455	mg/kg	0.50
Lead		M	2455	mg/kg	0.50
Selenium		M	2455	mg/kg	0.25
Zinc		M	2455	mg/kg	0.50
Chromium (Hexavalent)		N	2490	mg/kg	0.50
					< 0.50

## Results - Soil

**Project: Springbridge Yard**

<b>Client: Springbridge Direct Ltd</b>		<b>Chemtest Job No.:</b>			25-02435
Quotation No.: Q25-37158		<b>Chemtest Sample ID.:</b>			1922378
Order No.:		<b>Client Sample Ref.:</b>			Topsoil
		<b>Client Sample ID.:</b>			Top
		<b>Sample Type:</b>			SOIL
		<b>Date Sampled:</b>			22-Jan-2025
		<b>Time Sampled:</b>			11:26
		<b>Asbestos Lab:</b>			DURHAM
<b>Determinand</b>	<b>HWOL Code</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>
Aliphatic VPH >C5-C6	HS_2D_AL	U	2780	mg/kg	0.05 < 0.05
Aliphatic VPH >C6-C7	HS_2D_AL	U	2780	mg/kg	0.05 < 0.05
Aliphatic VPH >C7-C8	HS_2D_AL	U	2780	mg/kg	0.05 < 0.05
Aliphatic VPH >C6-C8 (Sum)	HS_2D_AL	N	2780	mg/kg	0.10 < 0.10
Aliphatic VPH >C8-C10	HS_2D_AL	U	2780	mg/kg	0.05 < 0.05
Total Aliphatic VPH >C5-C10	HS_2D_AL	U	2780	mg/kg	0.25 < 0.25
Aliphatic EPH >C10-C12 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00 < 2.0
Aliphatic EPH >C12-C16 MC	EH_2D_AL_#1	M	2690	mg/kg	1.00 < 1.0
Aliphatic EPH >C16-C21 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00 3.5
Aliphatic EPH >C21-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	3.00 25
Aliphatic EPH >C35-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00 17
Total Aliphatic EPH >C10-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	5.00 30
Total Aliphatic EPH >C10-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00 47
Aromatic VPH >C5-C7	HS_2D_AR	U	2780	mg/kg	0.05 < 0.05
Aromatic VPH >C7-C8	HS_2D_AR	U	2780	mg/kg	0.05 < 0.05
Aromatic VPH >C8-C10	HS_2D_AR	U	2780	mg/kg	0.05 < 0.05
Total Aromatic VPH >C5-C10	HS_2D_AR	U	2780	mg/kg	0.25 < 0.25
Aromatic EPH >C10-C12 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00 < 1.0

## Results - Soil

**Project: Springbridge Yard**

<b>Client: Springbridge Direct Ltd</b>		<b>Chemtest Job No.:</b>			25-02435	
Quotation No.: Q25-37158		<b>Chemtest Sample ID.:</b>			1922378	
Order No.:		<b>Client Sample Ref.:</b>			Topsoil	
		<b>Client Sample ID.:</b>			Top	
		<b>Sample Type:</b>			SOIL	
		<b>Date Sampled:</b>			22-Jan-2025	
		<b>Time Sampled:</b>			11:26	
		<b>Asbestos Lab:</b>			DURHAM	
<b>Determinand</b>	<b>HWOL Code</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>	
Aromatic EPH >C12-C16 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	< 1.0
Aromatic EPH >C16-C21 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	11
Aromatic EPH >C21-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	6.0
Aromatic EPH >C35-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	1.00	31
Total Aromatic EPH >C10-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	5.00	17
Total Aromatic EPH >C10-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	10.00	48
Total VPH >C5-C10	HS_2D_Total	U	2780	mg/kg	0.50	< 0.50
Total EPH >C10-C35 MC	EH_2D_Total_#1	U	2690	mg/kg	10.00	47
Total EPH >C10-C40 MC	EH_2D_Total_#1	N	2690	mg/kg	10.00	95
Benzene		M	2760	µg/kg	1.0	< 1.0
Toluene		M	2760	µg/kg	1.0	< 1.0
Ethylbenzene		M	2760	µg/kg	1.0	< 1.0
m & p-Xylene		M	2760	µg/kg	1.0	< 1.0
o-Xylene		M	2760	µg/kg	1.0	< 1.0
Nitrogen (Total)		SN	2790	%	0.10	0.23
Naphthalene		M	2800	mg/kg	0.10	< 0.10
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10
Acenaphthene		M	2800	mg/kg	0.10	< 0.10

## Results - Soil

**Project: Springbridge Yard**

Client: Springbridge Direct Ltd		Chemtest Job No.:			25-02435
Quotation No.: Q25-37158		Chemtest Sample ID.:			1922378
Order No.:		Client Sample Ref.:		Topsoil	
		Client Sample ID.:		Top	
		Sample Type:		SOIL	
		Date Sampled:		22-Jan-2025	
		Time Sampled:		11:26	
		Asbestos Lab:		DURHAM	
Determinand	HWOL Code	Accred.	SOP	Units	LOD
Fluorene		M	2800	mg/kg	0.10
Phenanthrene		M	2800	mg/kg	0.10
Anthracene		M	2800	mg/kg	0.10
Fluoranthene		M	2800	mg/kg	0.10
Pyrene		M	2800	mg/kg	0.10
Benzo[a]anthracene		M	2800	mg/kg	0.10
Chrysene		M	2800	mg/kg	0.10
Benzo[b]fluoranthene		M	2800	mg/kg	0.10
Benzo[k]fluoranthene		M	2800	mg/kg	0.10
Benzo[a]pyrene		M	2800	mg/kg	0.10
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10
Total Of 16 PAH's		N	2800	mg/kg	2.0
Total Phenols		M	2920	mg/kg	0.10
					< 0.10

# Results - Topsoil Report

BS3882:2015

Chemtest Job No.: 25-02435

Chemtest Sample ID.: 1922378

Client Sample Ref.: Topsoil

Sample Location:

**Client Sample ID.: Top**

Top Depth (m):

Bottom Depth (m):

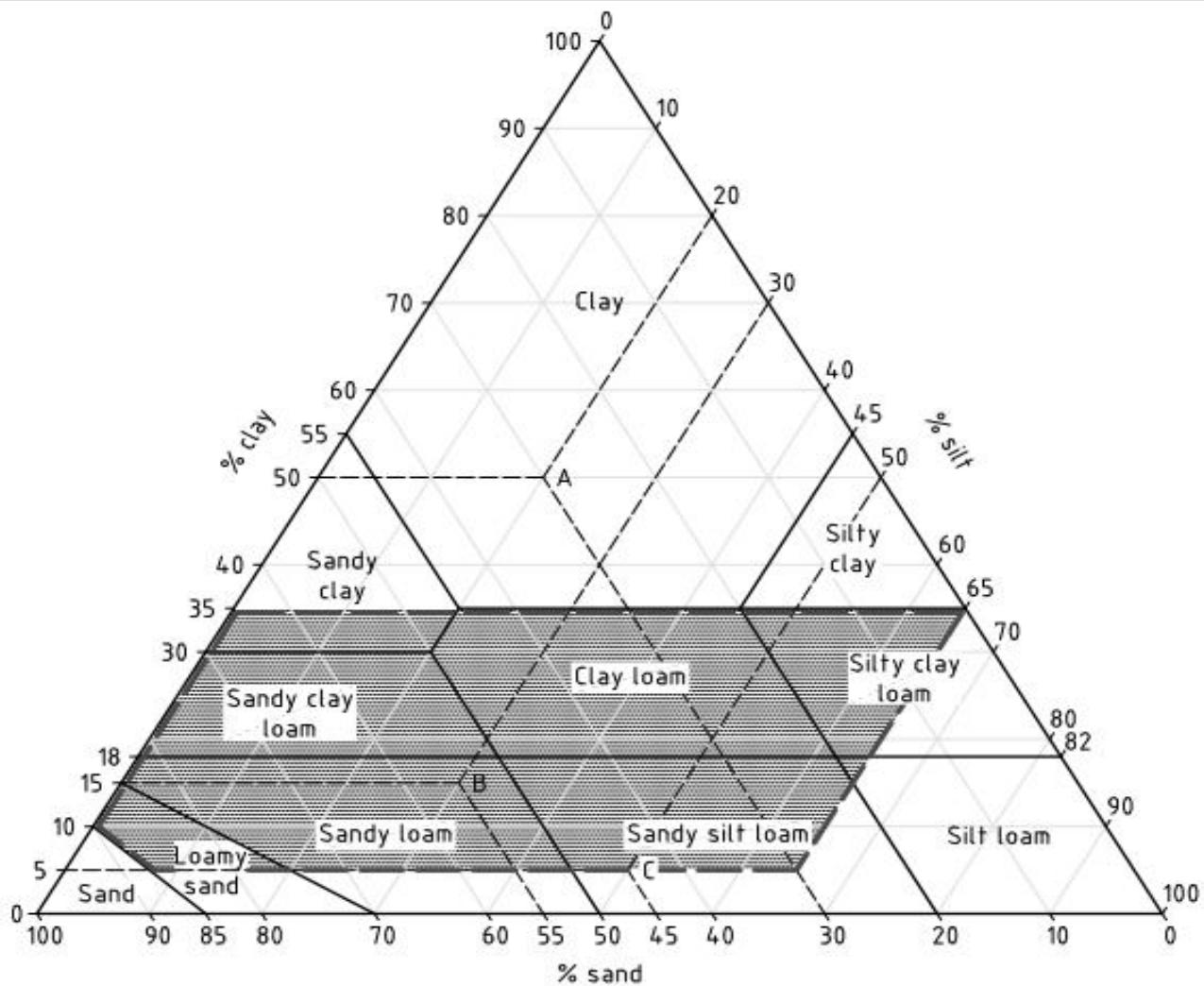
Date Sampled: 22-Jan-2025

Time Sampled:

Parameter	Units	Multipurpose Range			Result	Compliant with Multipurpose Range? (Y/N)	Compliant with Specific Purpose Range? (Y/N)		
<b>Texture</b>							Acid	Low F	Calc.
Clay content (Sub Contracted)	%				6.0				
Silt content (Sub Contracted)	%				11.0				
Sand content (Sub Contracted)	%				84				
Soil texture class		See Attached Chart			Loamy Sand	YES			
<b>Mass Loss on Ignition</b>									
Clay 5-20%		3.0-20							
Clay 20-35%		5.0-20			3.1	YES	YES	YES	YES
<b>Stone Content</b>	% m/m								
>2mm (Sub Contracted)		0-30			4.2	YES			
>20mm (Sub Contracted)		0-10			0.70	YES			
>50mm (Sub Contracted)		0			< 0.10	YES			
Soil pH value		5.5-8.5			8.2	YES	NO	YES	YES
Carbonate (Calcareous only)	%				1.2				YES
Electrical Conductivity	µS/cm	If >3300 do ESP			3200	YES			
<b>Available Nutrient Content</b>									
Nitrogen %		>0.15			0.23	YES	YES		YES
Extractable phosphorus	mg/l	16-140			110	YES	YES	NO	YES
Extractable potassium	mg/l	121-1500			1400	YES	YES		YES
Extractable magnesium	mg/l	51-600			220	YES	YES		YES
<b>Carbon : Nitrogen Ratio</b>		<20:1			7.4/1	YES	YES	YES	YES
<b>Exchangeable sodium</b>	%	<15			4.2				
Available Calcium	mg/l				1700				
Available Sodium	mg/l				160				
<b>Phytotoxic Contaminants (by soil pH)</b>		< 6.0	6.0-7.0	> 7.0					
Zinc (Nitric Acid extract)	mg/kg	<200	<200	<300	38	YES			
Copper (Nitric Acid extract)	mg/kg	<100	<135	<200	8.6	YES			
Nickel (Nitric Acid extract)	mg/kg	<60	<75	<110	5.4	YES			
<b>Visible Contaminants</b>	% mm								
>2mm		<0.5			0.000	YES			
.... of which plastics		<0.25			0.000	YES			
.... man-made sharps		zero in 1kg			0.000	YES			

BS3882:2015

## Topsoil: Texture Classification Chart



**Key**



Area within which the texture of topsoil is required to fall

**NOTE** Examples of textural classification are as follows.

- Soil A with 30% sand, 20% silt and 50% clay is in the "clay" textural class.
- Soil B with 55% sand, 30% silt and 15% clay is in the "sandy loam" textural class.
- Soil C with 45% sand, 50% silt and 5% clay is in the "sandy silt loam" textural class.

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## Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2010	pH Value of Soils	pH at 20°C	pH Meter	
2020	Electrical Conductivity	Electrical conductivity (EC) of aqueous extract or calcium sulphate solution for topsoil	Measurement of the electrical resistance of a 2:1 water/soil extract.	
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <30°C.	
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930	
2115	Total Nitrogen in Soils	Nitrogen	Determination by elemental analyser	
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES	
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	
2260	Carbonate	Carbonate	Titration	
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.	
2400	Cations	Cations	ICP-MS	
2420	Phosphate	Phosphate	Spectrophotometry - Discrete analyser	
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.	
2620	LOI 440	LOI 440 Trommel Fines	Determination of the proportion by mass that is lost from a soil by ignition at 440°C.	
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection	
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.	
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8–C10 Aromatics: >C5–C7,>C7–C8,>C8–C10	Water extraction / Headspace GCxGC FID detection	
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS	
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS	
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.	

## Report Information

### **Key**

---

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

This report shall not be reproduced except in full, and only with the prior approval of the laboratory.

Any comments or interpretations are outside the scope of UKAS accreditation.

The Laboratory is not accredited for any sampling activities and reported results relate to the samples 'as received' at the laboratory.

Uncertainty of measurement for the determinands tested are available upon request .

None of the results in this report have been recovery corrected.

All results are expressed on a dry weight basis.

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

For all other tests the samples were dried at  $\leq 30^{\circ}\text{C}$  prior to analysis.

All Asbestos testing is performed at the indicated laboratory .

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

NEW\_ASB Eurofins Chemtest Limited, 11 Depot Road, Newmarket, CB8 0AL  
DURHAM Eurofins Chemtest Limited, Unit A North Wing, Prospect Business Park, Crookhall Lane, Consett, Co Durham, DH8 7PW

### Sample Deviation Codes

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

### Sample Retention and Disposal

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

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

Charges may apply to extended sample storage.

### Water Sample Category Key for Accreditation

## Report Information

DW - Drinking Water  
GW - Ground Water  
LE - Land Leachate  
NA - Not Applicable  
PL - Prepared Leachate  
PW - Processed Water  
RE - Recreational Water  
SA - Saline Water  
SW - Surface Water  
TE - Treated Effluent  
TS - Treated Sewage  
UL - Unspecified Liquid

## Clean Up Codes

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NC - No Clean Up  
MC - Mathematical Clean Up  
FC - Florisil Clean Up

## HWOL Acronym System

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HS - Headspace analysis  
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent  
CU - Clean-up – e.g. by Florisil, silica gel  
1D - GC – Single coil gas chromatography  
Total - Aliphatics & Aromatics  
AL - Aliphatics only  
AR - Aromatic only  
2D - GC-GC – Double coil gas chromatography  
#1 - EH\_2D\_Total but with humics mathematically subtracted  
#2 - EH\_2D\_Total but with fatty acids mathematically subtracted  
+ - Operator to indicate cumulative e.g. EH+EH\_Total or EH\_CU+HS\_Total

If you require extended retention of samples, please email your requirements to:  
[customerservices@chemtest.com](mailto:customerservices@chemtest.com)



**TIM O'HARE ASSOCIATES**  
SOIL & LANDSCAPE CONSULTANCY

Mr Jason Lock  
Boughton Loam Ltd  
Telford Way Industrial Estate  
Telford Way  
Kettering  
Northamptonshire NN16 8UN

15<sup>th</sup> January 2025  
Our Ref: TOHA/25/1658/1/SS  
Your Ref: PO 9765

Dear Sirs

**Topsoil Analysis Report: Intensive Roof Garden Substrate**

We have completed the analysis of the soil sample recently submitted, referenced *IN1 Green Roof Substrate*, 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 or waste designation purposes, especially after the topsoil has left the Boughton Loam Ltd site.

**SAMPLE EXAMINATION**

The sample was described as a dark brown (Munsell Colour 10YR 3/3), dry, friable to non-plastic, slightly calcareous SAND with a single grain structure. The sample was free of stone-sized material, with the exception of frequent lightweight expanded clay aggregates (leca) particles. The sample contained a moderate proportion of organic fines and occasional woody fragments. No unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed.



Plate 1: IN1 Green Roof Substrate 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);
- saturated hydraulic conductivity;
- bulk density (as received, saturated @ field capacity);
- 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 less than 2mm fraction fell into the *sand* texture class, with a predominance of medium sand (0.25-0.50mm). This indicates a narrow overall particle size distribution, which is beneficial for roof garden environments as good porosity levels are usually maintained in a consolidated state and the risk of particle interpacking is minimised.

The 'stone' sized fraction (>2mm) of the sample was very low (by mass), and comprised entirely of lightweight expanded clay aggregate (leca) up to 20mm in diameter. The proportion of stone sized particles recorded would be considered acceptable for an intensive roof garden substrate.

### Saturated Hydraulic Conductivity and Bulk Density

The saturated hydraulic conductivity of the sample was high (143 mm/hour) and the soil would be described as 'free-draining'. This 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 soil is free-draining and may therefore benefit from additional irrigation input in dry periods, depending on the nature of the recipient scheme.

The sample displayed a bulk density at Field Capacity of 1.55 Mg/m<sup>3</sup>, 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.

### 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 moderately high; however, the exchangeable sodium percentage was low, indicating low sodium risk. The source of the elevated soluble salts in this instance is likely to be from soluble potassium (see comments below).

The electrical conductivity value by CaSO<sub>4</sub> extract (3833 µS/cm) exceeded our maximum recommended value (3300 µS/cm).

### Organic Matter and Fertility Status

The sample was adequate to well supplied with organic matter and major plant nutrients. The sample contained a high level of extractable potassium (2158 mg/l) that exceed our recommended value (1500 mg/l).

High potassium levels such as that found in this sample can also have an antagonistic effect on other soil nutrients, particularly magnesium. This can reduce nutrient uptake, leading to plant stress, particularly for establishing specimens.

### Potential Contaminants

With reference to BS3882:2015 - *Table 1*: Notes 3 and 4, there is a requirement 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 exceeded 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 material for use as an intensive lightweight substrate in a roof garden or podium landscape environment.

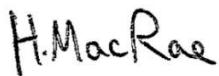
From the soil examination and subsequent laboratory analysis, the sample was described as a strongly alkaline, saline, slightly calcareous sand with a weakly developed structure and frequent 'leca' particles. The sample was found to be free draining. The sample was adequately well supplied with organic matter and major plant nutrients, with a high level of extractable potassium. Of the potential contaminants determined, none exceeded their respective guideline values.

Based on our findings, the substrate represented by this sample appears to be a little rich on account of its high potassium content and slightly elevated electrical conductivity. The source of the elevated potassium content could be associated with the proportion and/or the type of compost in the blend. Potassium is highly soluble, and the level is likely to fall when the material is wetted by rain or irrigation water. However, in this instance we recommend reviewing the quality and quantity of compost that has been used.

---

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



**Harriet MacRae**  
BSc MSc  
Soil Scientist



**Aaron Cross**  
BSc MSc M/SoilSci  
Senior Soil Scientist

For & on behalf of Tim O'Hare Associates LLP



<b>Client:</b>	<b>Boughton Loam Ltd</b>
<b>Project:</b>	<b>Intensive Roof Garden Substrate</b>
<b>Job:</b>	<b>Topsoil Analysis</b>
<b>Date:</b>	<b>15/01/2025</b>
<b>Job Ref No:</b>	<b>TOHA/25/1658/1/SS</b>

Sample Reference		Accreditation
Clay (<0.002mm)	%	UKAS
Silt (0.002-0.063mm)	%	UKAS
Very Fine Sand (0.05-0.15mm)	%	UKAS
Fine Sand (0.15-0.25mm)	%	UKAS
Medium Sand (0.25-0.50mm)	%	UKAS
Coarse Sand (0.50-1.0mm)	%	UKAS
Very Coarse Sand (1.0-2.0mm)	%	UKAS
Total Sand (0.05-2.0mm)	%	UKAS
Texture Class (UK Classification)	--	UKAS
Stones (2-20mm)	% DW	GLP
Stones (20-50mm)	% DW	GLP
Stones (>50mm)	% DW	GLP

Saturated Hydraulic Conductivity (m)	mm/hr	A2LA
Bulk Density (as Received)	Mg/m <sup>3</sup>	UKAS
Bulk Density (Saturated @ Field Capacity)	Mg/m <sup>3</sup>	UKAS

pH Value (1:2.5 water extract)	units	UKAS
Electrical Conductivity (1:2.5 water extract)	uS/cm	UKAS
Electrical Conductivity (1:2 CaSO <sub>4</sub> extract)	uS/cm	UKAS
Exchangeable Sodium Percentage	%	UKAS
Organic Matter (LOI)	%	UKAS
Total Nitrogen (Dumas)	%	UKAS
C : N Ratio	ratio	UKAS
Extractable Phosphorus	mg/l	UKAS
Extractable Potassium	mg/l	UKAS
Extractable Magnesium	mg/l	UKAS

Total Arsenic (As)	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 Zinc (Zn)	mg/kg	MCERTS
Water Soluble Boron (B)	mg/kg	MCERTS
Total Cyanide (CN)	mg/kg	MCERTS
Total (mono) Phenols	mg/kg	MCERTS

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	mg/kg	MCERTS
Pyrene	mg/kg	MCERTS
Benz(a)anthracene	mg/kg	MCERTS
Chrysene	mg/kg	MCERTS
Benz(b)fluoranthene	mg/kg	MCERTS
Benz(k)fluoranthene	mg/kg	MCERTS
Benz(a)pyrene	mg/kg	MCERTS
Indeno[1,2,3-cd]pyrene	mg/kg	MCERTS
Dibenzo(a,h)anthracene	mg/kg	MCERTS
Benz(o,g,h)perylene	mg/kg	MCERTS
Total PAHs (sum USEPA16)	mg/kg	MCERTS

Aliphatic TPH >C5 - C6	mg/kg	MCERTS
Aliphatic TPH >C6 - C8	mg/kg	MCERTS
Aliphatic TPH >C8 - C10	mg/kg	MCERTS
Aliphatic TPH >C10 - C12	mg/kg	MCERTS
Aliphatic TPH >C12 - C16	mg/kg	MCERTS
Aliphatic TPH >C16 - C21	mg/kg	MCERTS
Aliphatic TPH >C21 - C35	mg/kg	MCERTS
Aliphatic TPH (C5 - C35)	mg/kg	MCERTS
Aromatic TPH >C5 - C7	mg/kg	MCERTS
Aromatic TPH >C7 - C8	mg/kg	MCERTS
Aromatic TPH >C8 - C10	mg/kg	MCERTS
Aromatic TPH >C10 - C12	mg/kg	MCERTS
Aromatic TPH >C12 - C16	mg/kg	MCERTS
Aromatic TPH >C16 - C21	mg/kg	MCERTS
Aromatic TPH >C21 - C35	mg/kg	MCERTS
Aromatic TPH (C5 - C35)	mg/kg	MCERTS

Benzene	mg/kg	MCERTS
Toluene	mg/kg	MCERTS
Ethylbenzene	mg/kg	MCERTS
p & m-xylene	mg/kg	MCERTS
o-xylene	mg/kg	MCERTS
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	MCERTS

IN1 Green Roof Substrate
4
7
7
20
45
15
2
89
S
0
0
0

143
1.29
1.55

8.3
1576
3833
3.2
5.4
0.20
16
93
2158
143

22
< 0.2
33
< 1.8
5
7
< 0.3
12
< 1.0
38
3.3
< 1.0
< 1.0

< 0.010  
< 0.010  
< 0.010  
< 1.0  
< 2.0  
< 8.0  
< 8.0  
< 10  
< 0.010  
< 0.010  
< 0.020  
< 1.0  
5  
11  
< 10  
16

< 0.005
< 0.005
< 0.005
< 0.008
< 0.005
< 0.005

S = SAND

## Visual Examination

**Visual Examination**  
The sample was described as a dark brown (Munsell Colour 10YR 3/3), dry, friable to non-plastic, slightly calcareous SAND with a single grain structure. The sample was free of stone-sized material, with the exception of frequent lightweight expanded clay aggregates (leca) particles. The sample contained a moderate proportion of organic fines and occasional woody fragments. No unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed.

H. MacRae

***Harriet MacRae***  
***BSc MSc***  
***Soil Scientist***

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

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## Appendix B – Topsoil Verification Screening and Statistical Analysis

## Project / Site name: CTC Hayes

Lab Sample Number						484897	484898	484899	484900	484901	484902	514941	514942	514943	514944
Sample Reference						TS1-01	TS1-02	TS1-03	TS2-01	TS2-02	TS2-03	TS3-01	TS3-02	TS3-03	SS01-01
Sample Number						None Supplied	None Supplied								
Water Matrix						N/A	N/A								
Depth (m)						None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	0.10-0.30	0.10-0.30	0.10-0.30	0.60-0.80
Date Sampled						18/03/2025	18/03/2025	18/03/2025	18/03/2025	18/03/2025	18/03/2025	13/04/2025	13/04/2025	13/04/2025	13/04/2025
Time Taken						1300	1300	1300	1315	1315	1315	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	EC19.5	Concentration	Stone Content	Moisture Content								
						mg/kg	mg/kg								

Stone Content	%	0.1	NONE	-	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	-	-	15	15	14	11	11	12	4.2	1.1	5.8	2.5
Total mass of sample received	kg	0.1	NONE	-	-	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.5	0.7

Asbestos															
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	-	-	Not-detected									
Asbestos Analyst ID	N/A	N/A	N/A	-	-	Non-detected									
Analysis completed	N/A	N/A	N/A	-	-	21/03/2025	21/03/2025	21/03/2025	21/03/2025	21/03/2025	21/03/2025	18/04/2025	18/04/2025	18/04/2025	18/04/2025

General Inorganics															
Total Cyanide	mg/kg	1	MCERTS	-	-	N/A	N/A	<MDL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	-	-	N/A	N/A	<MDL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	-	-	N/A	N/A	<MDL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Total Phenols															
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	<1.0	760	750	<MDL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Speciated PAHs															
Naphthalene	mg/kg	0.05	MCERTS	-	<0.05	4900	2.3	2.3	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	-	<0.05	15000	170	170	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	0.09	15000	210	210	0.05	0.16	0.07	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	-	0.15	9900	170	170	< 0.05	0.15	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	-	0.63	3100	95	15	0.32	1.2	0.38	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	-	0.15	74000	2400	4	0.07	0.29	0.09	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	-	0.49	3100	280	26	0.66	1.7	0.7	0.08	0.07	0.14	< 0.05
Pyrene	mg/kg	0.05	MCERTS	-	0.42	7400	620	21	0.59	1.4	0.61	0.07	0.07	0.13	< 0.05
Benz(a)anthracene	mg/kg	0.05	MCERTS	-	0.31	29	7.2	9	0.28	0.62	0.26	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	-	0.268	57	15	15	0.3	0.62	0.27	0.06	< 0.05	0.09	< 0.05
Benz(b)fluoranthene	mg/kg	0.05	ISO 17025	-	0.38	7.1	2.6	7.1	0.42	0.82	0.38	0.11	< 0.05	0.17	< 0.05
Benz(k)fluoranthene	mg/kg	0.05	ISO 17025	-	0.19	190	77	77	0.15	0.28	0.13	< 0.05	< 0.05	< 0.05	< 0.05
Benz(a)pyrene	mg/kg	0.05	MCERTS	-	0.41	5.70	2.2	5.7	0.34	0.62	0.28	< 0.05	< 0.05	< 0.05	< 0.05
Indeno[1,2,3-c]pyrene	mg/kg	0.05	MCERTS	-	0.175	82	27	27	0.18	0.3	0.15	< 0.05	< 0.05	0.07	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	<0.05	0.57	0.24	0.57	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benz(g,h)perylene	mg/kg	0.05	MCERTS	-	0.19	640	3.0	320	0.2	0.33	0.16	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH															
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-	5.20	-	-	114	3.58	8.52	3.49	< 0.80	< 0.80	< 0.80	< 0.80

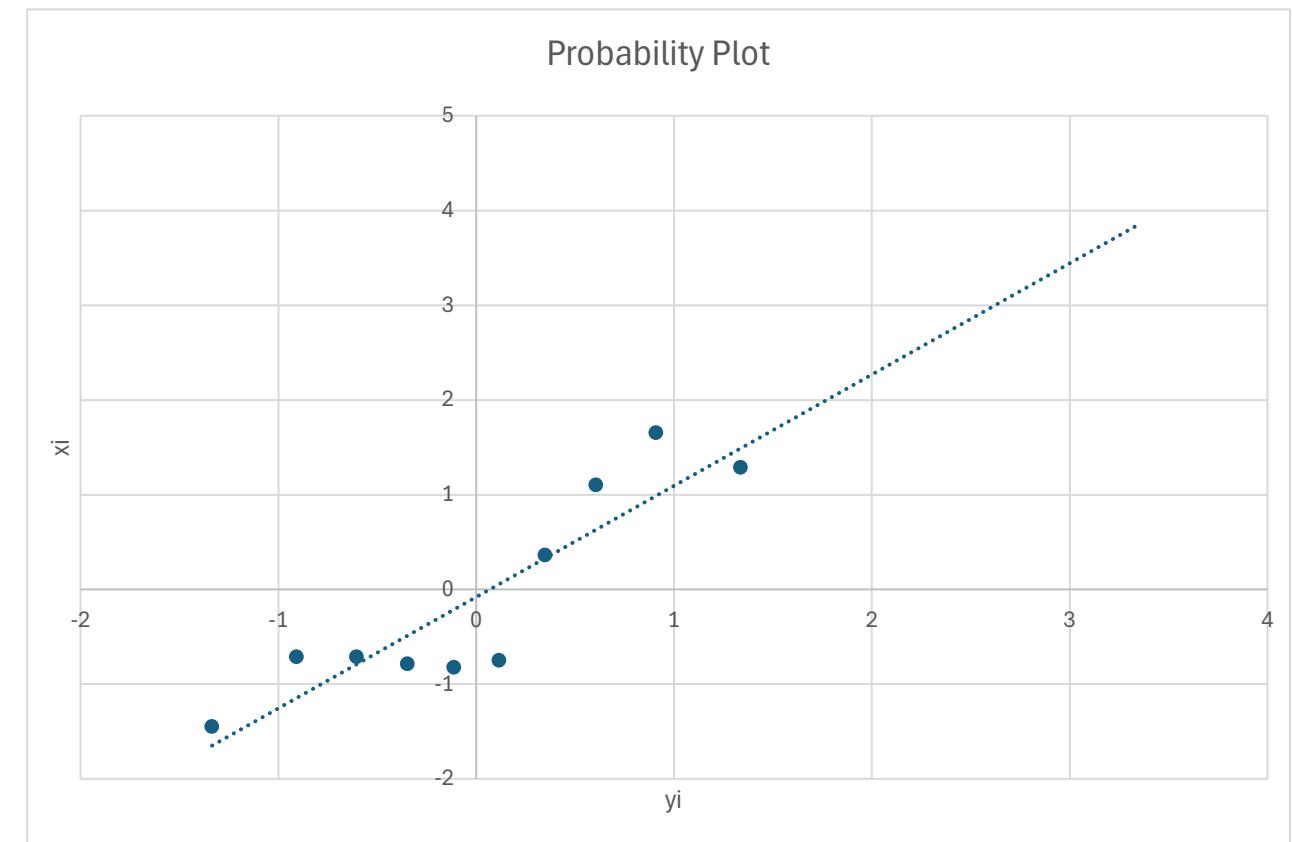
Heavy Metals / Metalloids															
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	12.44	79	37	37	7.9	7.9	8.8	6.6	7.6	6.6	13
Boron (water soluble)	mg/kg	0.2	MCERTS	-	2.35	21000	290	3	2	2.8	2.9	3.1	2.7	3.1	2.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	0.30	120	11	11	0.3	0.4	< 0.2	< 0.2	0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	-	<1.8	7.70	5	6	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	MCERTS	-	17.00	1500	810	43	14	12	13	11	13	15	23
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	17.00	1500	810	43	14	13	14	11	11	14	21
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	18.82	1200	2400	153	25	26	27	28	19	22	13
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	22.64	630	208	630	60	41	38	19	14	16	8.3
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	<0.3	120	40	2.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	11.33	230	180	61	9.5	9.5	8.6	10	8.9	10	13
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	<1.0	1100	250	250	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sodium (aqua regia extractable)	mg/kg	1	MCERTS	-	54.88	39.20	2000	410	82	22	20	18	17	19	49
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	54.8	8100	3700	328	75	76	72	68	47	51	30

PtHCWG - Aromatic >EC5 - EC7_H<10_AK	mg/kg	0.01	MCERTS	-	<0.01	56000	70	70	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PtHCWG - Aromatic >EC5 - EC7_H<10_AK	mg/kg	0.02	MCERTS	-	<0.02	5000	34	34	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
PtHCWG - Aromatic >EC10 - EC12_H<10_AK	mg/kg	1	MCERTS	-	1.5	5000	74	74	< 1.0	1.5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
PtHCWG - Aromatic >EC12 - EC14_H<10_AK	mg/kg	2	MCERTS	-	6.2	5100	140	20	< 2.0	6.2	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
PtHCWG - Aromatic >EC16 - EC21_H<10_AK	mg/kg	10	MCERTS	-	<10	3800	260	500	< 10	< 10	< 10	< 10	< 10	< 10	< 10
PtHCWG - Aromatic >EC21 - EC25_H<10_AK	mg/kg	10	MCERTS	-	32.67	3800	1100	1000	34	36	28	< 10	< 10	< 10	< 10
PtHCWG - Aromatic >EC25 - EC44_H<10_AK	mg/kg	8.4	MCERTS	-	42.33	3800	1100	1000	61	37	29				

# VANADIUM UCL95

Average	39.2
SD	27.05057
Sample size	10
Confidence Coff	1.96
Margin of error	16.76612
Upper Bound	55.96612
Lower Bound	22.43388
Max	84
Min	17
Range	67
Square root of N	3.162278

$X_i$	$Y_i = X_i - \text{Mean}/S$	$Q_i$	$Z_i$
22	-1.445440895	0.090909	-1.33518
20	-0.709781718	0.181818	-0.90846
20	-0.709781718	0.272727	-0.60459
18	-0.783717314	0.363636	-0.34876
17	-0.820685112	0.454545	-0.11419
19	-0.746749516	0.545455	0.114185
49	0.362284419	0.636364	0.348756
69	1.101640375	0.727273	0.604585
84	1.656157342	0.818182	0.908458
74	1.286479364	0.909091	1.335178



$$UCL_{0.95} = \bar{x} + \left( t_{(n-1, 0.95)} \times \frac{s}{\sqrt{n}} \right)$$

t-test

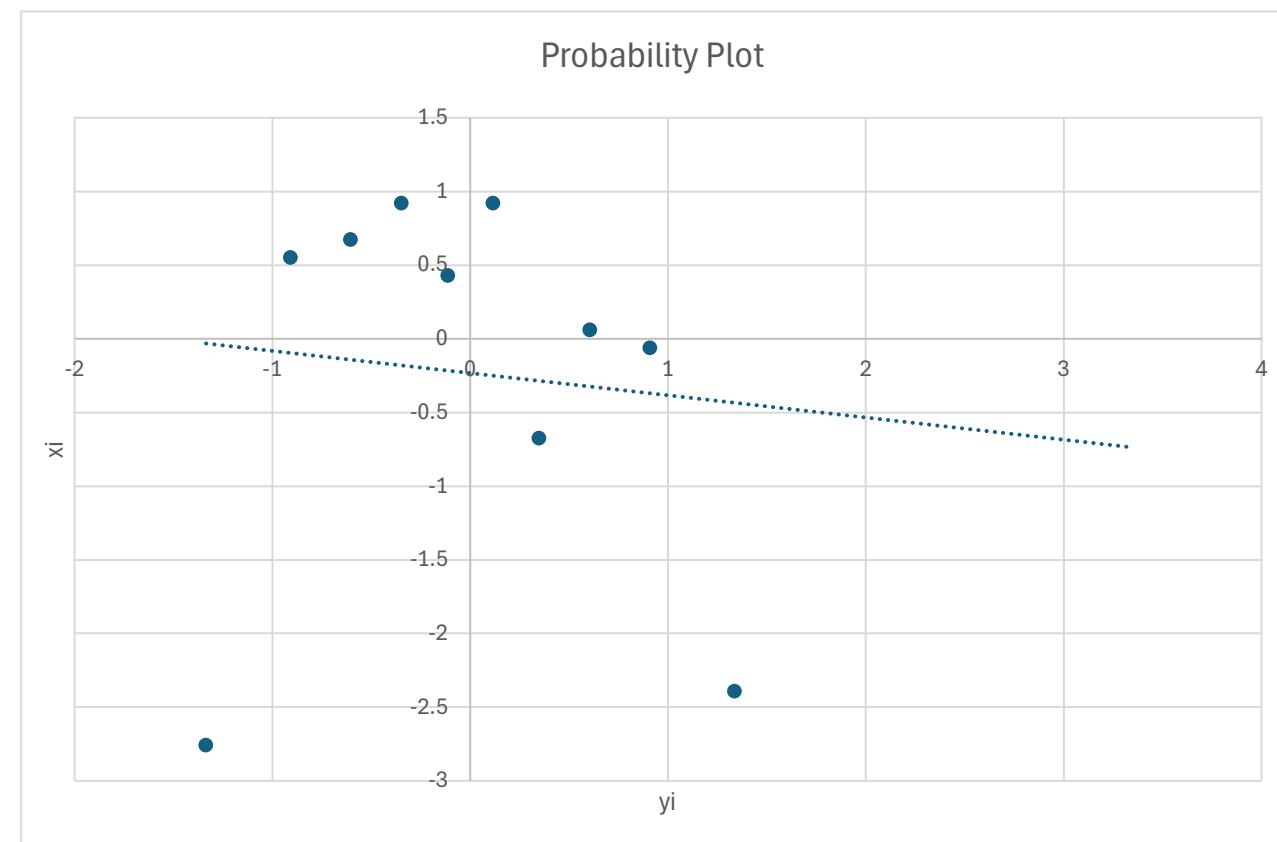
54.87974

$t_{(n-1, 0.95)} = 1.833$  from one-sample t-test theorem (CLAIRES)

# BORON UCL95

Average	2.35
SD	0.815475
Sample size	10
Confidence Coff	1.96
Margin of error	0.505437
Upper Bound	2.855437
Lower Bound	1.844563
Max	3.1
Min	0.4
Range	2.7
Square root of N	3.162278

$X_i$	$Y_i = X_i - \text{Mean}/S$	$Q_i$	$Z_i$
2	-2.759127028	0.090909	-1.33518
2.8	0.551825406	0.181818	-0.90846
2.9	0.674453273	0.272727	-0.60459
3.1	0.919709009	0.363636	-0.34876
2.7	0.429197538	0.454545	-0.11419
3.1	0.919709009	0.545455	0.114185
1.8	-0.674453273	0.636364	0.348756
2.4	0.061313934	0.727273	0.604585
2.3	-0.061313934	0.818182	0.908458
0.4	-2.391243424	0.909091	1.335178



$$UCL_{0.95} = \bar{x} + \left( t_{(n-1, 0.95)} \times \frac{s}{\sqrt{n}} \right)$$

t-test

2.822687

$t_{(n-1, 0.95)} = 1.833$  from one-sample t-test theorem (CLAIRES)



## Appendix C – Laboratory Certificates



Turnkey Regeneration Ltd  
2 Caffyn Place  
Broadbridge Heath  
Horsham  
West Sussex  
RH123XH

**e:** dave.rutherford@turnkeyregeneration.com

i2 Analytical Ltd.  
7 Woodshots Meadow,  
Croxley Green  
Business Park,  
Watford,  
Herts,  
WD18 8YS

**t:** 01923 225404  
**f:** 01923 237404  
**e:** reception@i2analytical.com

## Analytical Report Number : 25-019276

<b>Project / Site name:</b>	CTC	<b>Samples received on:</b>	15/04/2025
<b>Your job number:</b>	0112	<b>Samples instructed on/ Analysis started on:</b>	15/04/2025
<b>Your order number:</b>	0112	<b>Analysis completed by:</b>	23/04/2025
<b>Report Issue Number:</b>	1	<b>Report issued on:</b>	23/04/2025
<b>Samples Analysed:</b>			

**Signed:**

Rafał Szczepańczyk  
Technical Reviewer  
**For & on behalf of i2 Analytical Ltd.**

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting  
leachates - 2 weeks from reporting  
waters - 2 weeks from reporting  
asbestos - 6 months from reporting  
air - once the analysis is complete

Excel copies of reports are only valid when accompanied by this PDF certificate.

Retention period for records and reports is minimum 6 years from the date of issue of the final report.

Some records may be kept for longer according to other legal/best practice requirements.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.  
Application of uncertainty of measurement would provide a range within which the true result lies.

An estimate of measurement uncertainty can be provided on request.



4041

**Analytical Report Number: 25-019276****Project / Site name: CTC****Your Order No: 0112**

Lab Sample Number	514941	514942	514943	514944
Sample Reference	TS3-01	TS3-02	TS3-03	SS01-01
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A
Depth (m)	0.10-0.30	0.10-0.30	0.10-0.30	0.60-0.80
Date Sampled	13/04/2025	13/04/2025	13/04/2025	13/04/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied
<b>Analytical Parameter (Soil Analysis)</b>	<b>Units</b>	<b>Test Limit of detection</b>	<b>Test Accreditation Status</b>	

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	4.2	1.1	5.8	2.5
Total mass of sample received	kg	0.1	NONE	0.6	0.6	0.5	0.7

**Asbestos**

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SCA	SCA	SCA	SCA
Analysis completed	N/A	N/A	N/A	18/04/2025	18/04/2025	18/04/2025	18/04/2025

**General Inorganics**

Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0

**Total Phenols**

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
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**Speciated PAHs**

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.1	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.08	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05

**Total PAH**

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80	< 0.80
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4041



Analytical Report Number: 25-019276

Project / Site name: CTC

Your Order No: 0112

Lab Sample Number	514941	514942	514943	514944
Sample Reference	TS3-01	TS3-02	TS3-03	SS01-01
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A
Depth (m)	0.10-0.30	0.10-0.30	0.10-0.30	0.60-0.80
Date Sampled	13/04/2025	13/04/2025	13/04/2025	13/04/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

**Heavy Metals / Metalloids**

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	20	28	18
Boron (water soluble)	mg/kg	0.2	MCERTS	1.8	2.4	2.3	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	15	23	29	21
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	16	24	30	21
Copper (aqua regia extractable)	mg/kg	1	MCERTS	13	10	12	7.2
Lead (aqua regia extractable)	mg/kg	1	MCERTS	8.3	11	14	5.1
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	10	13	19	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	49	69	84	74
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	30	40	61	28

**Petroleum Hydrocarbons**

TPHCWG - Aliphatic >EC5 - EC6_HS_1D_AL	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8_HS_1D_AL	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10_HS_1D_AL	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12_EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16_EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21_EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35_EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC35 - EC44_EH_CU_1D_AL	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4
TPHCWG - Aliphatic >EC5 - EC35_EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	< 10	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC44_EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	< 10	< 10	< 10

TPHCWG - Aromatic >EC5 - EC7_HS_1D_AR	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8_HS_1D_AR	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10_HS_1D_AR	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12_EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16_EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21_EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35_EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC35 - EC44_EH_CU_1D_AR	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4
TPHCWG - Aromatic >EC5 - EC35_EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC44_EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	< 10	< 10	< 10

TPH Total >EC6 - EC40_EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	< 10	< 10	< 10	< 10
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Petroleum Range Organics (EC6 - EC10)_HS_1D_TOTAL	mg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH (EC10 - EC40)_EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10

**VOCs**

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0



**Analytical Report Number: 25-019276**

**Project / Site name: CTC**

**Your Order No: 0112**

Lab Sample Number	514941	514942	514943	514944
Sample Reference	TS3-01	TS3-02	TS3-03	SS01-01
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A
Depth (m)	0.10-0.30	0.10-0.30	0.10-0.30	0.60-0.80
Date Sampled	13/04/2025	13/04/2025	13/04/2025	13/04/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied
<b>Analytical Parameter (Soil Analysis)</b>	Units	Test Limit of detection	Test Accreditation Status	

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



**Analytical Report Number : 25-019276**

**Project / Site name: CTC**

\* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
514941	TS3-01	None Supplied	0.10-0.30	Brown loam and sand with gravel and vegetation
514942	TS3-02	None Supplied	0.10-0.30	Brown loam and sand with gravel and vegetation
514943	TS3-03	None Supplied	0.10-0.30	Brown loam and sand with gravel and vegetation
514944	SS01-01	None Supplied	0.60-0.80	Brown sand with gravel



4041

**Analytical Report Number : 25-019276****Project / Site name: CTC****Water matrix abbreviations:****Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)****Final Sewage Effluent (FSE) Landfill Leachate (LL)**

<b>Analytical Test Name</b>	<b>Analytical Method Description</b>	<b>Analytical Method Reference</b>	<b>Method number</b>	<b>Wet / Dry Analysis</b>	<b>Accreditation Status</b>
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES	In-house method based on Second Site Properties version 3	L038B	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088-PL	D/W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088-PL	D/W	MCERTS
Complex Cyanide in soil	Determination of complex cyanide by calculation	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Chromium III in soil	In-house method by calculation from total Cr and Cr VI	In-house method by calculation	L080-PL/L130B	W	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS



Analytical Report Number : 25-019276

Project / Site name: CTC

**Water matrix abbreviations:**

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total petroleum hydrocarbons by HS-GC-MS in soil	Determination of total petroleum hydrocarbons in soil by HS-GC-MS	In-house method	L129-PL	W	ISO 17025
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution



Turnkey Regeneration Ltd  
2 Caffyn Place  
Broadbridge Heath  
Horsham  
West Sussex  
RH123XH

**e:** dave.rutherford@turnkeyregeneration.com

i2 Analytical Ltd.  
7 Woodshots Meadow,  
Croxley Green  
Business Park,  
Watford,  
Herts,  
WD18 8YS  
**t:** 01923 225404  
**f:** 01923 237404  
**e:** reception@i2analytical.com

## Analytical Report Number : 25-013442

<b>Project / Site name:</b>	CTC	<b>Samples received on:</b>	18/03/2025
<b>Your job number:</b>	0112	<b>Samples instructed on/ Analysis started on:</b>	18/03/2025
<b>Your order number:</b>	0112	<b>Analysis completed by:</b>	24/03/2025
<b>Report Issue Number:</b>	1	<b>Report issued on:</b>	24/03/2025
<b>Samples Analysed:</b>			

Signed:

Joanna Wawrzeczk  
Senior Reporting Specialist  
**For & on behalf of i2 Analytical Ltd.**

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting  
leachates - 2 weeks from reporting  
waters - 2 weeks from reporting  
asbestos - 6 months from reporting  
air - once the analysis is complete

Excel copies of reports are only valid when accompanied by this PDF certificate.

Retention period for records and reports is minimum 6 years from the date of issue of the final report.

Some records may be kept for longer according to other legal/best practice requirements.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.  
Application of uncertainty of measurement would provide a range within which the true result lies.

An estimate of measurement uncertainty can be provided on request.



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Analytical Report Number: 25-013442

Project / Site name: CTC

Your Order No: 0112

Lab Sample Number	484897	484898	484899	484900	484901
Sample Reference	TS1-01	TS1-02	TS1-03	TS2-01	TS2-02
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	18/03/2025	18/03/2025	18/03/2025	18/03/2025	18/03/2025
Time Taken	1300	1300	1300	1315	1315
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	15	14	11	11
Total mass of sample received	kg	0.1	NONE	0.7	0.7	0.7	0.7	0.7

**Asbestos**

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MJN	MJN	MJN	MJN	MJN
Analysis completed	N/A	N/A	N/A	21/03/2025	21/03/2025	21/03/2025	21/03/2025	21/03/2025

**General Inorganics**

Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

**Total Phenols**

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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**Speciated PAHs**

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.05	0.16	0.07	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.15	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.32	1.2	0.38	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	0.07	0.29	0.09	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.66	1.7	0.7	0.08	0.07
Pyrene	mg/kg	0.05	MCERTS	0.59	1.4	0.61	0.07	0.07
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.28	0.62	0.26	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.3	0.62	0.27	0.06	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.42	0.82	0.38	0.11	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.15	0.28	0.13	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.34	0.62	0.28	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.18	0.3	0.15	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.2	0.33	0.16	< 0.05	< 0.05

**Total PAH**

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	3.58	8.52	3.49	< 0.80	< 0.80
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4041



Analytical Report Number: 25-013442

Project / Site name: CTC

Your Order No: 0112

Lab Sample Number	484897	484898	484899	484900	484901
Sample Reference	TS1-01	TS1-02	TS1-03	TS2-01	TS2-02
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	18/03/2025	18/03/2025	18/03/2025	18/03/2025	18/03/2025
Time Taken	1300	1300	1300	1315	1315
<b>Analytical Parameter (Soil Analysis)</b>	<b>Units</b>	<b>Test Limit of detection</b>	<b>Test Accreditation Status</b>		

**Heavy Metals / Metalloids**

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.9	7.9	8.8	6.6	7.6
Boron (water soluble)	mg/kg	0.2	MCERTS	2	2.8	2.9	3.1	2.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.3	0.4	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	14	12	13	12	11
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	14	13	14	13	11
Copper (aqua regia extractable)	mg/kg	1	MCERTS	25	25	27	28	19
Lead (aqua regia extractable)	mg/kg	1	MCERTS	60	41	38	19	14
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	9.5	9.3	8.6	10	8.9
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	22	20	20	18	17
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	75	76	72	68	47

**Petroleum Hydrocarbons**

TPHCWG - Aliphatic >EC5 - EC6_H5_1D_AL	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8_H5_1D_AL	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10_H5_1D_AL	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12_EH CU_1D_AL	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16_EH CU_1D_AL	mg/kg	2	MCERTS	3	4.6	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21_EH CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35_EH CU_1D_AL	mg/kg	8	MCERTS	38	29	28	< 8.0	< 8.0
TPHCWG - Aliphatic >EC35 - EC44_EH CU_1D_AL	mg/kg	8.4	NONE	11	8.7	< 8.4	< 8.4	< 8.4
TPHCWG - Aliphatic >EC5 - EC35_EH CU+HS_1D_AL	mg/kg	10	NONE	41	34	28	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC44_EH CU+HS_1D_AL	mg/kg	10	NONE	51	42	28	< 10	< 10

TPHCWG - Aromatic >EC5 - EC7_H5_1D_AR	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8_H5_1D_AR	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10_H5_1D_AR	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12_EH CU_1D_AR	mg/kg	1	MCERTS	< 1.0	1.5	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16_EH CU_1D_AR	mg/kg	2	MCERTS	< 2.0	6.2	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21_EH CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35_EH CU_1D_AR	mg/kg	10	MCERTS	34	36	28	< 10	< 10
TPHCWG - Aromatic >EC35 - EC44_EH CU_1D_AR	mg/kg	8.4	NONE	61	37	29	< 8.4	< 8.4
TPHCWG - Aromatic >EC5 - EC35_EH CU+HS_1D_AR	mg/kg	10	NONE	34	43	28	< 10	< 10
TPHCWG - Aromatic >EC5 - EC44_EH CU+HS_1D_AR	mg/kg	10	NONE	94	80	57	< 10	< 10

TPH Total >EC6 - EC40_EH CU+HS_1D_TOTAL	mg/kg	10	NONE	120	110	84	< 10	< 10
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Petroleum Range Organics (EC6 - EC10)_HS_1D_TOTAL	mg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH (EC10 - EC40)_EH CU_1D_TOTAL	mg/kg	10	MCERTS	120	110	84	< 10	< 10



4041

**Analytical Report Number: 25-013442****Project / Site name: CTC****Your Order No: 0112**

Lab Sample Number	484897	484898	484899	484900	484901
Sample Reference	TS1-01	TS1-02	TS1-03	TS2-01	TS2-02
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	18/03/2025	18/03/2025	18/03/2025	18/03/2025	18/03/2025
Time Taken	1300	1300	1300	1315	1315
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

**VOCs**

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



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**Analytical Report Number: 25-013442****Project / Site name: CTC****Your Order No: 0112**

Lab Sample Number	484902		
Sample Reference	TS2-03		
Sample Number	None Supplied		
Water Matrix	N/A		
Depth (m)	None Supplied		
Date Sampled	18/03/2025		
Time Taken	1315		
<b>Analytical Parameter (Soil Analysis)</b>	Units	Test Limit of detection	Test Accreditation Status

Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	12
Total mass of sample received	kg	0.1	NONE	0.7

**Asbestos**

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MJN
Analysis completed	N/A	N/A	N/A	21/03/2025

**General Inorganics**

Total Cyanide	mg/kg	1	MCERTS	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0

**Total Phenols**

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0
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**Speciated PAHs**

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.14
Pyrene	mg/kg	0.05	MCERTS	0.13
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.08
Chrysene	mg/kg	0.05	MCERTS	0.09
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.17
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.07
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.07

**Total PAH**

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80
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4041

**Analytical Report Number: 25-013442****Project / Site name: CTC****Your Order No: 0112**

Lab Sample Number	484902		
Sample Reference	TS2-03		
Sample Number	None Supplied		
Water Matrix	N/A		
Depth (m)	None Supplied		
Date Sampled	18/03/2025		
Time Taken	1315		
<b>Analytical Parameter (Soil Analysis)</b>	Units	Test Limit of detection	Test Accreditation Status

**Heavy Metals / Metalloids**

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	6.6
Boron (water soluble)	mg/kg	0.2	MCERTS	3.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (III)	mg/kg	1	NONE	13
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	14
Copper (aqua regia extractable)	mg/kg	1	MCERTS	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	16
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	10
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	19
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	51

**Petroleum Hydrocarbons**

TPHCWG - Aliphatic >EC5 - EC6_HS_1D_AL	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aliphatic >EC6 - EC8_HS_1D_AL	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aliphatic >EC8 - EC10_HS_1D_AL	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aliphatic >EC10 - EC12_EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0
TPHCWG - Aliphatic >EC12 - EC16_EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0
TPHCWG - Aliphatic >EC16 - EC21_EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0
TPHCWG - Aliphatic >EC21 - EC35_EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0
TPHCWG - Aliphatic >EC35 - EC44_EH_CU_1D_AL	mg/kg	8.4	NONE	< 8.4
TPHCWG - Aliphatic >ECS - EC35_EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10
TPHCWG - Aliphatic >ECS - EC44_EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10

TPHCWG - Aromatic >EC5 - EC7_HS_1D_AR	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aromatic >EC7 - EC8_HS_1D_AR	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aromatic >EC8 - EC10_HS_1D_AR	mg/kg	0.02	MCERTS	< 0.020
TPHCWG - Aromatic >EC10 - EC12_EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0
TPHCWG - Aromatic >EC12 - EC16_EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0
TPHCWG - Aromatic >EC16 - EC21_EH_CU_1D_AR	mg/kg	10	MCERTS	< 10
TPHCWG - Aromatic >EC21 - EC35_EH_CU_1D_AR	mg/kg	10	MCERTS	< 10
TPHCWG - Aromatic >EC35 - EC44_EH_CU_1D_AR	mg/kg	8.4	NONE	< 8.4
TPHCWG - Aromatic >EC5 - EC35_EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10
TPHCWG - Aromatic >EC5 - EC44_EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10

TPH Total >EC6 - EC40_EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	< 10
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Petroleum Range Organics (EC6 - EC10)_HS_1D_TOTAL	mg/kg	1	ISO 17025	< 1.0
TPH (EC10 - EC40)_EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10



4041

**Analytical Report Number: 25-013442****Project / Site name: CTC****Your Order No: 0112**

Lab Sample Number	484902		
Sample Reference	TS2-03		
Sample Number	None Supplied		
Water Matrix	N/A		
Depth (m)	None Supplied		
Date Sampled	18/03/2025		
Time Taken	1315		
<b>Analytical Parameter (Soil Analysis)</b>	Units	Test Limit of detection	Test Accreditation Status

**VOCs**

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



**Analytical Report Number : 25-013442**

**Project / Site name: CTC**

\* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
484897	TS1-01	None Supplied	None Supplied	Brown loam and sand with gravel and vegetation
484898	TS1-02	None Supplied	None Supplied	Brown loam and sand with gravel and vegetation
484899	TS1-03	None Supplied	None Supplied	Brown loam and sand with gravel and vegetation
484900	TS2-01	None Supplied	None Supplied	Brown sand with gravel
484901	TS2-02	None Supplied	None Supplied	Brown sand with gravel
484902	TS2-03	None Supplied	None Supplied	Brown sand with gravel



4041

**Analytical Report Number : 25-013442****Project / Site name: CTC****Water matrix abbreviations:****Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)****Final Sewage Effluent (FSE) Landfill Leachate (LL)**

<b>Analytical Test Name</b>	<b>Analytical Method Description</b>	<b>Analytical Method Reference</b>	<b>Method number</b>	<b>Wet / Dry Analysis</b>	<b>Accreditation Status</b>
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES	In-house method based on Second Site Properties version 3	L038B	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088-PL	D/W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088-PL	D/W	MCERTS
Complex Cyanide in soil	Determination of complex cyanide by calculation	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Chromium III in soil	In-house method by calculation from total Cr and Cr VI	In-house method by calculation	L080-PL/L130B	W	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS



Analytical Report Number : 25-013442

Project / Site name: CTC

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total petroleum hydrocarbons by HS-GC-MS in soil	Determination of total petroleum hydrocarbons in soil by HS-GC-MS	In-house method	L129-PL	W	ISO 17025

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution



## Appendix D – Site Photographs

## APPENDIX D – Site Photographs



Representative photo showing bulk bags with imported topsoil prior to placement

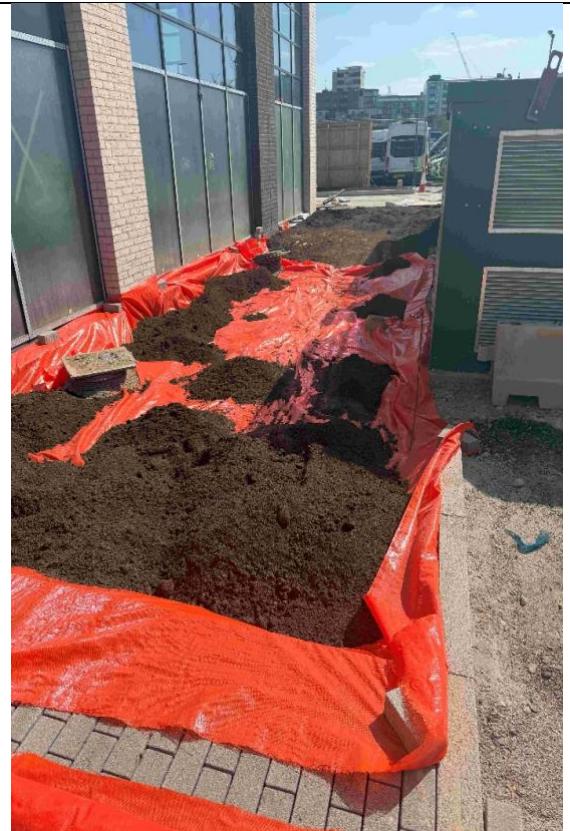


Soil texture of imported topsoil (TS2 and TS3)



Soil texture of imported topsoil (TS1)

## APPENDIX D – Site Photographs



Representative photos showing marker layer and topsoil within area of installed utilities in Block F



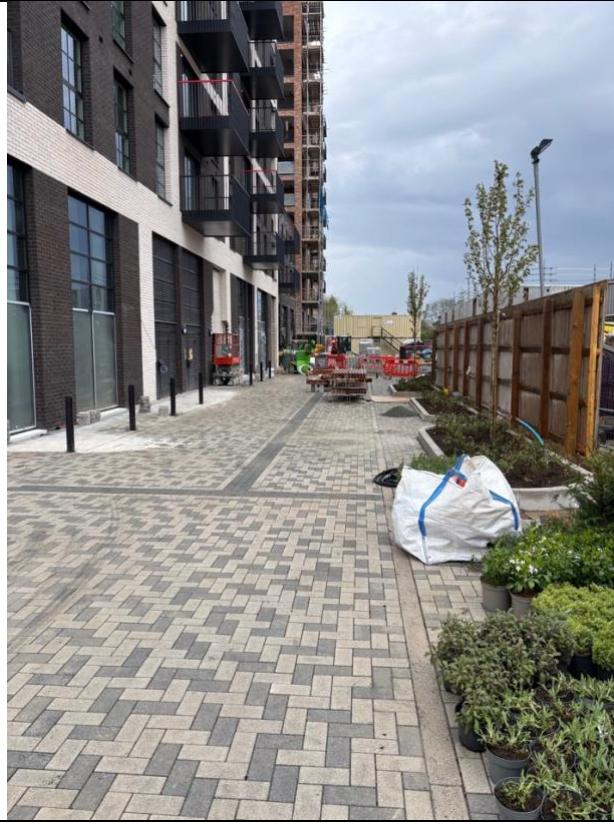
Representative photo showing marker layer and topsoil within asset protection in Block F

## APPENDIX D – Site Photographs



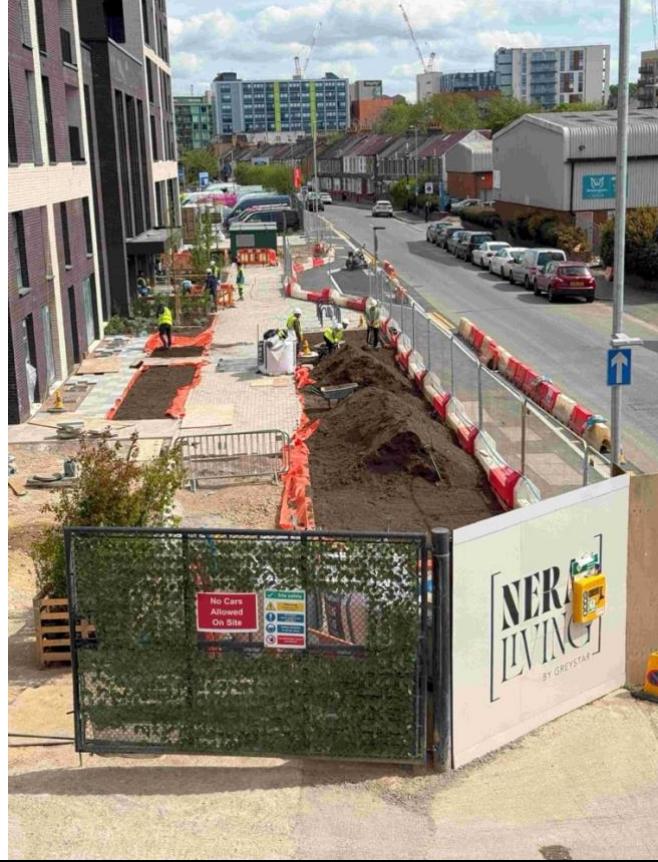
**Reduced thickness example within asset protection in Block F**

**600mm thickness example within Block F (Ground Level)**



**Examples of completed landscaped areas (with planting) in Block F (east side)**

## APPENDIX D – Site Photographs

 A wide-angle photograph showing the construction of soft landscaping in Blocks E and F. The site is a mix of dirt, gravel, and some paved areas. Construction equipment and materials are visible. In the foreground, there's a fence with a sign that reads 'No Cars On Site' and 'NERV LIVING BY GREYSTAK'. In the background, there are modern apartment buildings and a street with parked cars.	 A close-up photograph of a dark, moist soil sample taken at ground level in Block E. A yellow tape measure is placed vertically next to the soil, showing a length of 600mm. The soil appears to be a mix of dark earth and some organic material.
 A photograph showing the landscaping work in Block F at the podium level. A black rectangular planter box is filled with soil and contains a black drain cover. An orange and black garden trowel is resting on top of the planter. In the background, there's a brick wall and some construction materials.	 A close-up photograph of a soil sample taken within the podium area of Block F prior to topsoil placement. A yellow tape measure is placed vertically next to the soil, showing a length of 600mm. The soil is a lighter-colored, sandy material.
<b>Landscaping in Block F (Podium Level)</b>	<b>Thickness example (600mm) within podium prior to topsoil placement in Block F</b>

## APPENDIX D – Site Photographs

	
<p>Thickness after topsoil placement in Block F Podium</p>	<p>Representative photo showing bulk bag with imported sand prior to placement <i>(laid under the 600mm of topsoil at podium level)</i></p>
	
<p><b>Topsoil Example (Block E Podium)</b></p>	



**Turnkey Regeneration Ltd**

2 Caffyn Place  
Broadbridge Heath  
Horsham RH12 3XH

[www.turnkeyregeneration.com](http://www.turnkeyregeneration.com)