



Smith Grant
Environmental Consultancy

**Former Tetrosyl Works:
Bevis Green, Bury**

Phase 1B Validation Completion Report

For: Barratt Homes Manchester

Date: August 2025

Report Ref: R2174-R23-v1

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Validation Completion Report

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Signed For Smith Grant LLP

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PHASE 1B, WALDMERS WOOD, TETROSYL

VALIDATION COMPLETION REPORT

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1. Introduction

- 1.1. Barratt Homes Manchester (BHM) instructed Smith Grant LLP (SGP) to undertake the verification and validation of works to address risks from ground contamination during the construction phase of a residential development at Waldmers Wood, Bury.

Table 1.1: Site Details

Address	Waldmers Wood, Walmersley Old Road, Bury, BL9 6SB
National Grid Reference	380950, 413950
Local Authority	Bury Metropolitan Borough Council
Current Nature of Site	Completed residential development with Phase 1B of the wider development
Planning Reference	63533

Figure 1.1: Site Location



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- 1.1. The site is covered by an outline remediation strategy (ref: R2174-R01-v2, dated May 2019) produced by SGP which addresses the entire site. SGP undertook supplementary site investigations and produced phased Developer-Stage Remediation Strategies for submission to Bury Metropolitan Borough Council (BMBC).
- 1.2. Remedial works were completed within the area referred to as Phase 1B (Plots 152-189) under the Outline Remediation Strategy and the Phase 1B Developer-Stage Remediation Strategy (ref: R2174-R12-v2). Following this preparatory works were completed and verification works were undertaken by Groundtech Consulting on behalf of Urban Regen Limited (URL) for Phase 1B area (ref: GRO-21459-3559_1_2).
- 1.3. This report contains details of the validation works carried out on Phase 1B, the extent of which is indicated in Drawing D01 (ref: Phasing Plan – 456-ED-05_Remediation). This report relates

to the developer-stage mitigation measures including gas membranes and soil cover systems installed across Phase 1B.

2. Developer Remediation Requirements

Gas Protection

- 2.1. Gas sources characterised within the site were generally characterised under CIRIA CS2 “Low Risk” / NHBC Amber-1 condition. Following remedial works including the removal of made grounds soils during regrading works previously unencountered hydrocarbon impacted soils were located. Upon completion of related remedial works reported in (ref: R2174-R12-v2) inspection of formation soils showed no further impacted soils. The recommendation for CS2 / Amber-1 gas protection measures was confirmed for Plots 152-189.
- 2.2. The Remediation Strategy states verification of installation in accordance with CIRIA C735 is required. This includes the verifier to be suitably experienced, inspections to be carried out at a frequency of 1 in 10 plots (minimum of 5). Despite the guidance and following regulatory consultations SGP confirmed verification would be completed on a plot-by-plot basis in line with the verification works on Phase 1A. It was not considered that integrity testing would be required, and inspections were limited to visual inspections only.

Soil Cover System

- 2.3. Due to the potential for made ground containing elevated hydrocarbon and/or high organic materials to be present across the Site, it was recommended that within private gardens / landscaping areas a basal geotextile and 600mm clean soil cover system is installed in all plots in Phase 1B.
- 2.4. Due to the nature of the Site's history, it was not anticipated that site-recovered topsoil would be suitable for re-use in garden areas there the import of cover topsoil is required. Imports are to be carried out under the provision of a Materials Management Plan for Direct Transfer as defined in the definition of Waste: Development Industry Code of Practice.
- 2.5. Soils used within the cover system were to be chemically tested to determine suitability at the following agreed frequencies:
- Topsoil and subsoil: 1 sample per 250m³ (Well-Characterised Greenfield Source)
 - Topsoil and subsoil: 1 sample per 50m³ (Uncharacterised source)

- 2.6. The Phase 1B Developer Stage Remediation Strategy also states that independent depth validations of placed soils should be undertaken; 1 per plot.

Materials Management Plan (MMP)

- 2.7. No site-won soils suitable for reuse as part of the garden clean cover system were available and so the developer was required to import clean natural soils for placement within private gardens.

- 2.8. The MMP identified 2,357m³ of topsoil was required to be imported for placement within the garden's 600mm cover system. The MMP (v1 final) was initially produced in November 2023; however, as additional donor sites were identified or changes in proposed import volumes then the MMP was revised as follows:

Table 2.1 Summary MMP versions

MMP Version	Donor Sites	Volumes	Declaration
V1	Donor 1: Rossendale Road, Burnley	Topsoil: 2,357m ³	2023-11-10 15:06:27
V2	Donor 1: Rossendale Road, Burnley	Topsoil: 2,037m ³	2024-06-11 16:14:49
	Donor 2: Leyland Test Track (Centurion Village) Leyland, Lancashire	Topsoil: 320m ³	

- 2.9. A copy of the final MMP (v2) along with the QP declaration is presented in Appendix D.

3. Gas Protection Validation

- 3.1. A summary of the inspections of the installed gas protection measures within Phase 1B is summarised in the table below.
- 3.2. An open subfloor void specified to dilute and disperse any gas emissions below buildings to the outside air via ventilation provided by external air bricks has been constructed within Phase 1B. SGP has not undertaken dedicated inspections of the void but has confirmed the presence of air bricks used to vent the underfloor void whilst undertaking membrane inspections.
- 3.3. The installed membrane consisted of a Visqueen Gas Barrier installed by membrane specialist PRS Manchester.
- 3.4. Copies of the visual inspection certificates undertaken by SGP is provided in Appendix A.
- 3.5. The following table summarises the completed verification regime and the completed inspection.

Table 3.1 SGP Gas Membrane Inspection summary

Area	Date of Inspections	Inspection Area	Findings
Plot 152-154	09.08.23	Airbricks & Gas membranes	<i>A visual inspection was undertaken by SGP. The Visqueen Gas Membrane was in good condition, covering the full footprint of the building. Air bricks installed all clear of any obstructions. Membrane extends beyond cavity walls with 150mm welded seals on joints. At the time of inspection, no DPC was installed.</i>
Plot 155-158	17.07.23	Airbricks & Gas membranes	<i>A visual inspection was undertaken by SGP. The Visqueen Gas Membrane was in good condition, covering the full footprint of the building. Air bricks installed all clear of any obstructions. Membrane extends beyond cavity walls with 150mm welded seals on joints. At the time of inspection, no DPC was installed.</i>
Plots 159-160	21.08.23	Airbricks & Gas membranes	<i>A visual inspection was undertaken by SGP. The Visqueen Gas Membrane was in good condition, covering the full footprint of the building. Air bricks installed all clear of any obstructions. Membrane extends beyond cavity walls with 150mm welded seals on joints. At the time of inspection, no DPC was installed.</i>
Plots 161-163	26.06.23	Airbricks & Gas membranes	<i>A visual inspection was undertaken by SGP. The Visqueen Gas Membrane was in good condition, covering the full footprint of the building. Air bricks installed all clear of any obstructions. Membrane extends beyond cavity walls with 150mm welded seals on joints. At the time of inspection, no DPC was installed.</i>
Plots 164-165	03.07.24	Airbricks & Gas membranes	<i>A visual inspection was undertaken by SGP. The Visqueen Gas Membrane was in good condition, covering the full footprint of the building. Air bricks installed all clear of any obstructions.</i>

			<i>Membrane extends beyond cavity walls with 150mm welded seals on joints. At the time of inspection, no DPC was installed.</i>
Plot 166	19.06.23	Airbricks & Gas membranes	<i>A visual inspection was undertaken by SGP. The Visqueen Gas Membrane was in good condition, covering the full footprint of the building. Air bricks installed all clear of any obstructions. Membrane extends beyond cavity walls with 150mm welded seals on joints. At the time of inspection, no DPC was installed.</i>
Plot 167	14.12.23	Airbricks & Gas membranes	<i>A visual inspection was undertaken by SGP. The Visqueen Gas Membrane was in good condition, covering the full footprint of the building. Air bricks installed all clear of any obstructions. Membrane extends beyond cavity walls with 150mm welded seals on joints. At the time of inspection, no DPC was installed.</i>
Plots 168 - 174	18.10.24	Airbricks & Gas membranes	<i>A visual inspection was undertaken by SGP. The Visqueen Gas Membrane was in good condition, covering the full footprint of the building. Air bricks installed all clear of any obstructions. Membrane extends beyond cavity walls with 150mm welded seals on joints. At the time of inspection, no DPC was installed.</i>
Plots 175- 176	14.12.23	Airbricks & Gas membranes	<i>A visual inspection was undertaken by SGP. The Visqueen Gas Membrane was in good condition, covering the full footprint of the building. Air bricks installed all clear of any obstructions. Membrane extends beyond cavity walls with 150mm welded seals on joints. At the time of inspection, no DPC was installed.</i>
Plots 177- 180	5.02.24	Airbricks & Gas membranes	<i>A visual inspection was undertaken by SGP. The Visqueen Gas Membrane was in good condition, covering the full footprint of the building. Air bricks installed all clear of any obstructions. Membrane extends beyond cavity walls with 150mm welded seals on joints. At the time of inspection, no DPC was installed.</i>
Plots 181- 186	05.09.23	Airbricks & Gas membranes	<i>A visual inspection was undertaken by SGP. The Visqueen Gas Membrane was in good condition, covering the full footprint of the building. Air bricks installed all clear of any obstructions. Membrane extends beyond cavity walls with 150mm welded seals on joints. At the time of inspection, no DPC was installed.</i>
Plots 187- 189	15.09.23	Airbricks & Gas membranes	<i>A visual inspection was undertaken by SGP. The Visqueen Gas Membrane was in good condition, covering the full footprint of the building. Air bricks installed all clear of any obstructions. Membrane extends beyond cavity walls with 150mm welded seals on joints. At the time of inspection, no DPC was installed.</i>

3.6. Plots 152-189 have been subject to visual inspection and approved by NHBC.

4. Soil Cover Validation

4.1. Soil cover validation certificates have been produced which details the chemical testing and depth validation works for various plots and are included in Appendix B. A summary of the validation results as detailed within these certificates is presented below:

4.2. Soil Testing Regime

4.2.1. The compliance criteria for soils were set as 'residential with plant uptake' in accordance with the LQM/CIEH S4ULs published in 2015, in the Remediation Strategy for the site in 2019 (ref: R2174-R01-v2 May 2019). These were applied to the soils assessment of stockpiled and placed materials.

4.2.2. Testing and analysis of soils has either been carried out in stockpile, prior to spreading within garden and landscaped areas, or in-situ after placement into gardens.

4.2.3. Two topsoil sources were used in the areas under consideration as summarised in the table below.

Table 4.1 Summary of soil sources used on site

Topsoil Source & Description	
Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site). <i>Blackish brown slightly gravelly sandy clayey topsoil with grass roots.</i>	Leyland Test Track <i>Dark brown, slightly gravelly, CLAY with frequent rootlets.</i>

4.2.1 SGP attended the site on thirteen occasions to validate the depth of placed soils in the garden areas of the plots under consideration (Plots 152-189).

4.3 Topsoil Inspection Record

4.3.1 The testing regime of both topsoil sources have been summarised in Table 4.2 below.

Table 4.2 Topsoil Sources and Testing Regime

Area	Source	Testing Regime	Findings
Plots 152-166	Rossendale Road	22 topsoil samples collected from an approximate placed volume of approximately 498m ³	Exceedances for dibenzo(ah)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene. See Appendix C for topsoil reporting letters and the LA approvals/responses.

Area	Source	Testing Regime	Findings
		achieving a 1 per 22.6m ³ sampling rate.	
Plots 167-189	Leyland Test Track	5 topsoil samples collected from an approximate placed volume of 488m ³ achieving a 1 per 97.6m ³ sampling rate.	No exceedances reported.

4.3.2 The testing frequency for imported topsoil / subsoil (well-characterised Greenfield source) of 1 sample per 250m³ has been met for both topsoil sources.

4.2.4. While various PAH exceedances have been reported during sampling of the Rossendale Road topsoil, SGP considers that this soil is suitable for reuse in gardens / landscaping, as has been approved by the Local Authority in Appendix C.

4.4 Depth Validation

4.4.1 As specified within the Phase 1B Developer-Stage Remediation Strategy, depth validations have been undertaken in all rear gardens with 1 entry per plot and a photographic record has been maintained to confirm the depth of soil, placement of the geotextile, and location of the entry.

4.4.2 The depth of placed soil cover has been confirmed in all 37 Plots, meeting the prescribed frequency. A photographic record is provided within the soil depth inspection validation certificates in Appendix B.

4.4.3 The depth entries demonstrated that the descriptions of the soils present matched those from the stockpile inspections (where applicable) and that the total depth of placed soils within the garden areas inspected met or exceeded 600mm.

5. Conclusions and Recommendations

Gas Protection Measures

- 5.1 Phase 1B was classified as CIRIA CS2 with regards to ground gas risk due to extensive made ground. Independent visual inspection of the installed gas protection measures has been undertaken by SGP with all Plots (152-189) verified.

Soil Cover System

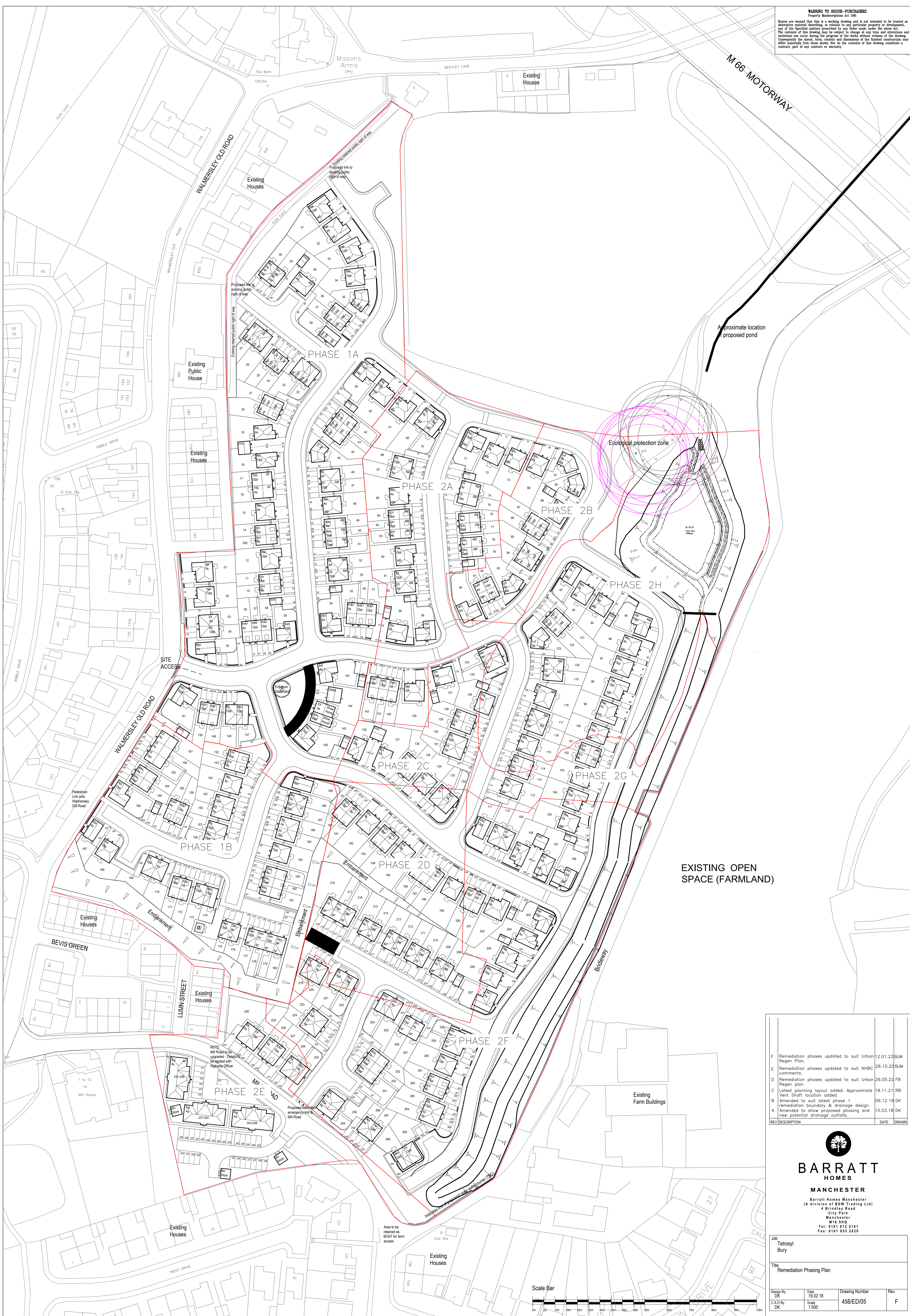
- 5.2 The soils used in the garden areas are of known provenance and have been tested at appropriate frequencies given their source and confirmed by analysis as acceptable for use in residential gardens.
- 5.3 All Plots (152-189) were prescribed a 600mm cover system with basal geotextile according to both the Outline Remediation Strategy and Phase 1B Developer Stage Remediation Strategy.
- 5.4 Depth validations have been undertaken confirming the application of 600mm of imported cover soils within rear gardens. Depth testing achieved a frequency of 1 entry per plot.
- 5.5 In conclusion, developer-stage mitigation measures as required in the Remediation Strategy (ref: R2174-R12-v2) and the Outline Remediation Strategy (ref: R2174-R01-v2) have been implemented by Barratt Homes Manchester and independently verified by SGP. It is concluded that no further remedial or verification works are required.

Limitations

- 5.6 Based on the evidence available, SGP conclude that the construction stage mitigation measures, comprising clean soil cover and gas protection measures as recommended in the remediation earthworks completion reporting have been successfully implemented by Barratt Homes Manchester. No further validation or verification reporting is proposed for the site.
- 5.7 This report has been prepared by SGP for the sole and exclusive use of Barratt Homes Manchester. Reasonable skill, care and diligence has been exercised within the budget available, and in accordance with the technical requirements of the brief. Notwithstanding the efforts made by the professional team in undertaking the assessment and preparing this report, it is possible that other ground conditions and contamination as yet undetected may exist. Reliance on the findings of this report must therefore be limited accordingly. Such reliance must be based on the whole report and not on extracts which may lead to incomplete or incorrect conclusions when taken out of context.
- 5.8 SGP reserves the right to alter any of the foregoing information in the event of new information being disclosed or provided and in the light of changes to legislation, guidelines and responses by the statutory and regulatory authorities.

DRAWINGS

Buyers are warned that this is a working drawing and is not intended to be treated as descriptive material describing, in relation to any particular property or development, any of the Specified matters prescribed by any Order made under the above Act. The contents of this drawing may be subject to change at any time and alterations and variations can occur during the progress of the works without revision of the drawing. Consequently the layout, form, content and dimensions of the finished construction may differ materially from those shown. Nor do the contents of this drawing constitute a contract, part of any contract or warranty.



F	Remediation phases updated to suit Urban Regen Plan.	21.01.23	BJM
E	Remediation phases updated to suit NHBIC comments.	26.10.22	BJM
D	Remediation phases updated to suit Urban Regen plan.	26.05.22	FB
C	Latest planning layout added. Approximate Vent Shaft location added.	18.11.21	RB
B	Amended to suit latest phase 1 remediation boundary & drainage design.	06.12.19	DK
A	Amended to show proposed phasing and new potential drainage outfalls.	15.03.18	DK
REV DESCRIPTION		DATE	DRAWN



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Job	Tetrosy
	Bury

Title	Remediation Phasing Plan
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Design By DK	Date 19.02.18	Drawing Number 456/ED/05	Rev F
C.A.D By DK	Scale 1:500		

APPENDIX A

SGP Gas Membrane Validation Certificates



G:\Jobs\R2174\Plot 152 - 154

Gas Protection Validation Record

job number	R2174	design source/ref:	R2174-R12-v2.pdf	specification source/ref:	R2174-R12-v2.pdf	other documents attached	✕
site name / location	Tetrosyl, Bury	building use:	residential	commercial	other (describe)		
plot number	152 - 154	building description:	no. of storeys =	2	detached	semi-detached	Terrace apartment block
compiled by:	CM	gas protection type:	active / passive	foundation type:	suspended floor	raft / other	

Ventilated sub-floor (if present)	inspection date/time:	09.08.23	inspected by:	CM	photographed:	✓
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void former type	✕	1. N/A
height of void space	✕	2. >150mm, not inspected, however building control minimum is confirmed by client and on design detail
gravel type	✕	3. N/A (void clear)
pipe size and spacing	✕	4. N/A
external wall airbricks	✓	5. Plot 154; 5 airbricks at each gable end, 2 on the front and 4 to the rear; Plot 153; 5 on the gable end, 1 on the front and 2 to the rear; Plot 152: 5 on the gable end, 1 on the front and 2 to the rear; all clear and free from obstructions.
internal sleeper walls	✕	6. not inspected
external vent trenches / ducts	✕	7. N/A

Gas barrier	inspection date/time:	09.08.23	inspected by:	CM	photographed:	✓
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membrane type	✓	8. Visqueen Gas Barrier installed by membrane specialist PRS Manchester
extent of coverage	✓	9. Full coverage, membrane checked throughout.
slab/membrane condition	✓	10. Membrane in good condition, standing water present; no rips or tears.
laps and joints	✓	11. Laps all > 150mm and sealed using heat sealed joints.
damp-proof course	✓	12. Visqueen Gas Barrier; gas membrane provides 100% coverage to building footprint.
service entries and seals	✓	13. 6 service entries on each plot. All service entries sealed with proprietary double/single sided tape.

Gas Protection Validation Record

Guide notes:

1	void former type	proprietary type - manufacturer and specification, in accordance with design?, installed properly without damage?
2	height of void space	height of proprietary former or constructed ventilation space below suspended floor - note any debris on void / obstructions to air flow, note formation surface soil type (e.g. crushed concrete/brick), any evidence of flooding
3	gravel type	gravel type, if used (limestone / granite etc.) and any specification (e.g. 6F2), typical particle dimensions (mm), apparent fines content (low/high), compaction (loose/dense), waterlogging / contamination by clay, organic matter, other debris
4	pipe size and spacing	diameter in mm; material type (e.g. PVC); slotted or perforated; positioning and spacing / separation and jointing as on design drawing - if not sketch arrangement - do pipes connect with external (telescopic / swan-neck) vents?
5	external wall airbricks	check numbers, size and positions as design drawing (if not shown, make sketch; check for blockage, e.g. by mortar, or soil / pavings etc.
6	internal sleeper walls	check for ventilation holes - e.g. honeycomb brickwork or pipe crossings - note size, spacing and location - in accordance with design?
7	external vent trenches / ducts	check whether located and constructed in accordance with design drawings; if open-topped gravel, note gravel type and presence of fines / contamination; if pipe or other vents - check positions and construction for functionality and absence of blockages - vents may be built over
8	membrane type	note manufacturer and product specification, including batch / roll numbers if present - in accordance with specification? check stock storage arrangements - protected from dirt and damage?
9	extent of coverage	if membrane is incomplete, further inspection will be required - note areas completed / incomplete - is membrane fully visible or have internal walls been constructed over membrane / screed placed?
10	slab/membrane condition	record presence of debris / rough surfaces, in particular sharp projections, below or above membrane; record locations of all punctures or repairs, note arrangements to protect membrane surface from traffic / tools and equipment / materials, and temporary weighting down of membrane, e.g. use of boards - record evidence of footprints / tracks on membrane surface, creases or water/wind damage
11	laps and joints	check the all joints are lapped and sealed in accordance with manufacturer's requirements / specification, particularly where creases/folds are present (usually minimum 150mm laps with double-sided tape between sheets, and single-sided tape on top surface; note size of sheets and frequency of edge seals
12	damp-proof course	record DPC manufacturer and product code - usually integrated with the membrane; measure the DPC projection from external wall in mm; check laps and seals between membrane and DPC - note any potential stress points and tension between the two; check for damage to DPC
13	service entries and seals	note number, position and diameter of service entries - check top hat seal arrangements in accordance with design / specification (laps and seals between top hat and floor membrane, pipe upstand is usually a minimum 150mm) check, with jubilee clips to secure top hat seal to pipe - note presence of clips and tightness of connections



Gas Protection Validation Record

This plot has PASSED inspection.

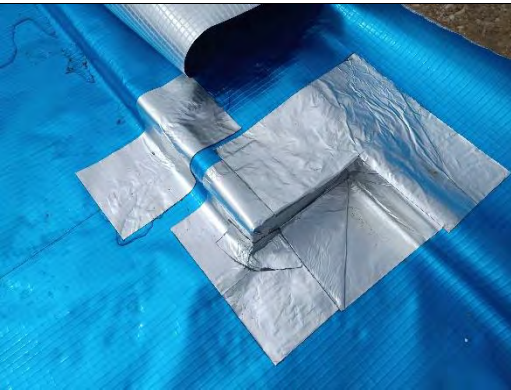
An additional inspection visit IS NOT required for this plot.

SGP Staff:	C McHugh	Signed:		09.08.23
SGP Member:	D Wayland BSc MSc AssocMCIWM MCIWEM C.WEM	Signed:		10.08.23

Gas Protection Validation Record

 Plot 152: Membrane extends across plot footprint with all areas available for inspection. Standing water indicative of watertight seal achieved	 Plot 152: Good detail on cornering using double and single sided tape.	 Plot 152: Service entry sealed with double and single sided tape and top hats.
 Plot 152: Good corner detailing with no stress points secured using double and single sided tape.	 Plot 152: Membrane external wall, overlapping the membrane at the joints.	 Plot 152: Airbricks installed were clear and free from any obstructions.

Gas Protection Validation Record

		
Plot 153: Membrane extends across plot footprint with all areas available for inspection. Standing water indicative of watertight seal achieved	Plot 153: Product used.	Plot 153: Service entry sealed with double and single sided tape.
		NO PHOTOGRAPH
Plot 153: Good detail on cornering using proprietary double and single sided tape, detailing strip to reduce stress points.	Plot 153: Airbricks installed were clear and free from any obstructions.	

Gas Protection Validation Record

		
Plot 154: Membrane extends across plot footprint with all areas available for inspection. Standing water indicative of watertight seal achieved.	Plot 154: Good detail on cornering using proprietary double and single sided tape detailing strip to reduce stress points.	Plot 154: Service entry sealed with double and single sided tape.
		
Plot 154: Membrane sealed using heat seal joints; all in good condition.	Plot 154: Membrane extending over cavity wall into garage.	Plot 154: Airbricks installed were clear and free from any obstructions.

Gas Protection Validation Record

job number	R2174	design source/ref:	R2174-R12-v2.pdf	specification source/ref:	R2174-R12-v2.pdf	other documents attached	✕
site name / location	Tetrosyl, Bury	building use:	residential	commercial	other (describe)		
plot number	155-156 & 157-158	building description:	no. of storeys =	2	detached	semi-detached	Terrace apartment block
compiled by:	CM	gas protection type:	active / passive	foundation type:	suspended floor	raft / other	

Ventilated sub-floor (if present)	inspection date/time:	19.07.23	inspected by:	CM	photographed:	✓
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void former type	✕	1. N/A
height of void space	✕	2. >150mm, not inspected, however building control minimum is confirmed by client and on design detail
gravel type	✕	3. N/A (void clear)
pipe size and spacing	✕	4. N/A
external wall airbricks	✓	5. Plot 155; 3 airbricks at the gable end, 2 on the front and 3 to the rear; Plot 156; 4 on the gable end, 1 on the front and 2 to the rear; Plot 157: 5 on the gable end, 1 on the front and 2 to the rear; and Plot 158: 5 on the gable end, 1 on the front and 2 to the rear; all clear and free from obstructions.
internal sleeper walls	✕	6. not inspected
external vent trenches / ducts	✕	7. N/A

Gas barrier	inspection date/time:	19.07.23	inspected by:	CM	photographed:	✓
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membrane type	✓	8. Visqueen Gas Membrane installed by membrane specialist PRS Manchester
extent of coverage	✓	9. Full coverage, membrane checked throughout.
slab/membrane condition	✓	10. Membrane in good condition, standing water present; no rips or tears.
laps and joints	✓	11. Laps all > 150mm and sealed using heat sealed joints.
damp-proof course	✓	12. Visqueen Gas Membrane; gas membrane provides 100% coverage to building footprint.

Gas Protection Validation Record

service entries and seals	✓	13. 6 service entries on each plot. All service entries sealed with proprietary double/single sided tape.
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Guide notes:

1	void former type	proprietary type - manufacturer and specification, in accordance with design?, installed properly without damage?
2	height of void space	height of proprietary former or constructed ventilation space below suspended floor - note any debris on void / obstructions to air flow, note formation surface soil type (e.g. crushed concrete/brick), any evidence of flooding
3	gravel type	gravel type, if used (limestone / granite etc.) and any specification (e.g. 6F2), typical particle dimensions (mm), apparent fines content (low/high), compaction (loose/dense), waterlogging / contamination by clay, organic matter, other debris
4	pipe size and spacing	diameter in mm; material type (e.g. PVC); slotted or perforated; positioning and spacing / separation and jointing as on design drawing - if not sketch arrangement - do pipes connect with external (telescopic / swan-neck) vents?
5	external wall airbricks	check numbers, size and positions as design drawing (if not shown, make sketch; check for blockage, e.g. by mortar, or soil / pavings etc.
6	internal sleeper walls	check for ventilation holes - e.g. honeycomb brickwork or pipe crossings - note size, spacing and location - in accordance with design?
7	external vent trenches / ducts	check whether located and constructed in accordance with design drawings; if open-topped gravel, note gravel type and presence of fines / contamination; if pipe or other vents - check positions and construction for functionality and absence of blockages - vents may be built over
8	membrane type	note manufacturer and product specification, including batch / roll numbers if present - in accordance with specification? check stock storage arrangements - protected from dirt and damage?
9	extent of coverage	if membrane is incomplete, further inspection will be required - note areas completed / incomplete - is membrane fully visible or have internal walls been constructed over membrane / screed placed?
10	slab/membrane condition	record presence of debris / rough surfaces, in particular sharp projections, below or above membrane; record locations of all punctures or repairs, note arrangements to protect membrane surface from traffic / tools and equipment / materials, and temporary weighting down of membrane, e.g. use of boards - record evidence of footprints / tracks on membrane surface, creases or water/wind damage
11	laps and joints	check the all joints are lapped and sealed in accordance with manufacturer's requirements / specification, particularly where creases/folds are present (usually minimum 150mm laps with double-sided tape between sheets, and single-sided tape on top surface; note size of sheets and frequency of edge seals
12	damp-proof course	record DPC manufacturer and product code - usually integrated with the membrane; measure the DPC projection from external wall in mm; check laps and seals between membrane and DPC - note any potential stress points and tension between the two; check for damage to DPC
13	service entries and seals	note number, position and diameter of service entries - check top hat seal arrangements in accordance with design / specification (laps and seals between top hat and floor membrane, pipe upstand is usually a minimum 150mm) check, with jubilee clips to secure top hat seal to pipe - note presence of clips and tightness of connections

Gas Protection Validation Record

This plot has PASSED inspection. An additional inspection visit IS NOT required for this plot.				
SGP Staff:	C McHugh	Signed:		20.07.23
SGP Member:	D Wayland BSc MSc AssocMCIWM MCIWEM C.WEM	Signed:		20.07.23

Gas Protection Validation Record



Plot 155: Membrane extends across plot footprint with all areas available for inspection. Standing water indicative of watertight seal achieved



Plot 155: Good detail on cornering using double and single sided tape.



Plot 155: Service entry sealed with double and single sided tape.



Plot 155: Good corner detailing with no stress points secured using double and single sided tape.



Plot 155: Membrane external wall, overlapping the membrane at the joints.



Plot 155: Airbricks installed were clear and free from any obstructions.

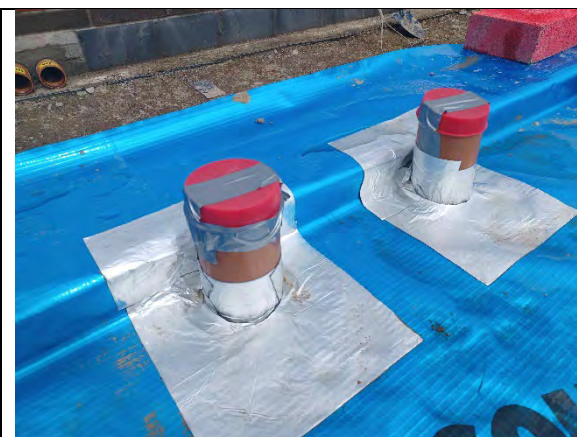
Gas Protection Validation Record



Plot 156: Membrane extends across plot footprint with all areas available for inspection. Standing water indicative of watertight seal achieved



Plot 156: Product used.



Plot 156: Service entry sealed with double and single sided tape.



Plot 156: Good detail on cornering using proprietary double and single sided tape, detailing strip to reduce stress points.



Plot 156: Airbricks installed were clear and free from any obstructions.

NO PHOTOGRAPH

Gas Protection Validation Record



Plot 157: Membrane extends across plot footprint with all areas available for inspection. Standing water indicative of watertight seal achieved.



Plot 157: Good detail on cornering using proprietary double and single sided tape detailing strip to reduce stress points.



Plot 157: Service entry sealed with double and single sided tape.



Plot 157: Membrane sealed using heat seal joints; all in good condition.



Plot 157: Membrane extending over external wall in Plot 158.



Plot 157: Airbricks installed were clear and free from any obstructions.

Gas Protection Validation Record



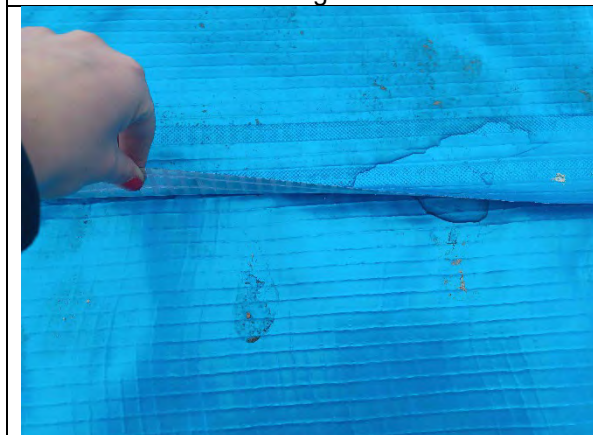
Plot 158 - Membrane extends across plot footprint with all areas available for inspection. Standing water indicative of watertight seal achieved.



Plot 158 - Good detail on cornering using proprietary double and single sided tape detailing strip to reduce stress points.



Plot 158 - Service entry sealed with double and single sided tape.



Plot 158 - Membrane sealed using heat seal joints; all in good condition.



Plot 158 - Airbricks installed were clear and free from any obstructions.



Plot 158 - Membrane extends over plots 157-158.

Gas Protection Validation Record

job number	R2174	design source/ref:	R2174-R12-v2.pdf	specification source/ref:	R2174-R12-v2.pdf	other documents attached	✕	
site name / location	Tetrosyl, Bury	building use:	residential	commercial	other (describe)			
plot number	161-163	building description:	no. of storeys =	2	detached	semi-detached	Terrace	apartment block
compiled by:	CM	gas protection type:	active / passive		foundation type:	suspended floor / raft / other		

Ventilated sub-floor (if present)	inspection date/time:	26.06.23	inspected by:	CM	photographed:	✓
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void former type	✕	1. N/A
height of void space	✕	2. >150mm, not inspected, however building control minimum is confirmed by client and on design detail
gravel type	✕	3. N/A (void clear)
pipe size and spacing	✕	4. N/A
external wall airbricks	✓	5. Plot 161: 5 on the gable end, 1 on the front and 1 to the rear; Plot 162: 2 to the rear and 1 on the front; Plot 163: 2 to the rear, 1 on the front and 5 on the gable end all clear and free from obstructions.
internal sleeper walls	✕	6. not inspected
external vent trenches / ducts	✕	7. N/A

Gas barrier	inspection date/time:	26.06.23	inspected by:	CM	photographed:	✓
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membrane type	✓	8. Visqueen Gas Membrane installed by membrane specialist PRS Manchester
extent of coverage	✓	9. Full coverage, membrane checked throughout.
slab/membrane condition	✓	10. Membrane in good condition, standing water present; no rips or tears.
laps and joints	✓	11. Laps all > 150mm and sealed using heat sealed joints.
damp-proof course	✓	12. Visqueen Gas Membrane; gas membrane also underlies DPC under internal wall providing 100% coverage to building footprint.
service entries and seals	✓	13. 6 service entries on each plot. All service entries sealed with proprietary double/single sided tape.

Gas Protection Validation Record

Guide notes:

1	void former type	proprietary type - manufacturer and specification, in accordance with design?, installed properly without damage?
2	height of void space	height of proprietary former or constructed ventilation space below suspended floor - note any debris on void / obstructions to air flow, note formation surface soil type (e.g. crushed concrete/brick), any evidence of flooding
3	gravel type	gravel type, if used (limestone / granite etc.) and any specification (e.g. 6F2), typical particle dimensions (mm), apparent fines content (low/high), compaction (loose/dense), waterlogging / contamination by clay, organic matter, other debris
4	pipe size and spacing	diameter in mm; material type (e.g. PVC); slotted or perforated; positioning and spacing / separation and jointing as on design drawing - if not sketch arrangement - do pipes connect with external (telescopic / swan-neck) vents?
5	external wall airbricks	check numbers, size and positions as design drawing (if not shown, make sketch; check for blockage, e.g. by mortar, or soil / pavings etc.
6	internal sleeper walls	check for ventilation holes - e.g. honeycomb brickwork or pipe crossings - note size, spacing and location - in accordance with design?
7	external vent trenches / ducts	check whether located and constructed in accordance with design drawings; if open-topped gravel, note gravel type and presence of fines / contamination; if pipe or other vents - check positions and construction for functionality and absence of blockages - vents may be built over
8	membrane type	note manufacturer and product specification, including batch / roll numbers if present - in accordance with specification? check stock storage arrangements - protected from dirt and damage?
9	extent of coverage	if membrane is incomplete, further inspection will be required - note areas completed / incomplete - is membrane fully visible or have internal walls been constructed over membrane / screed placed?
10	slab/membrane condition	record presence of debris / rough surfaces, in particular sharp projections, below or above membrane; record locations of all punctures or repairs, note arrangements to protect membrane surface from traffic / tools and equipment / materials, and temporary weighting down of membrane, e.g. use of boards - record evidence of footprints / tracks on membrane surface, creases or water/wind damage
11	laps and joints	check the all joints are lapped and sealed in accordance with manufacturer's requirements / specification, particularly where creases/folds are present (usually minimum 150mm laps with double-sided tape between sheets, and single-sided tape on top surface; note size of sheets and frequency of edge seals
12	damp-proof course	record DPC manufacturer and product code - usually integrated with the membrane; measure the DPC projection from external wall in mm; check laps and seals between membrane and DPC - note any potential stress points and tension between the two; check for damage to DPC
13	service entries and seals	note number, position and diameter of service entries - check top hat seal arrangements in accordance with design / specification (laps and seals between top hat and floor membrane, pipe upstand is usually a minimum 150mm) check, with jubilee clips to secure top hat seal to pipe - note presence of clips and tightness of connections

Gas Protection Validation Record

This plot has PASSED inspection.

An additional inspection visit IS NOT required for this plot.

SGP Staff:	C McHugh	Signed:		26.06.23
SGP Member:	D Wayland BSc MSc AssocMCIWM MCIWEM C.WEM	Signed:		27.06.23

Gas Protection Validation Record



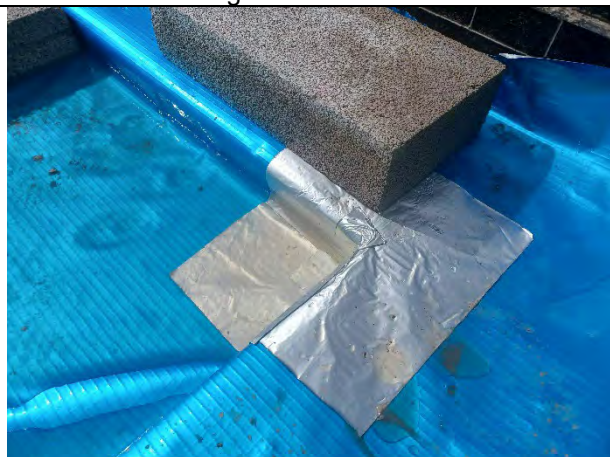
Plot 161: Membrane extends across plot footprint with all areas available for inspection. Standing water indicative of watertight seal achieved



Plot 161: Good detail on cornering using double and single sided tape.



Plot 161: Service entry sealed with double and single sided tape.



Plot 161: Good corner detailing with no stress points secured using double and single sided tape.



Plot 161: Membrane overlapping external wall.



Plot 161: Airbricks installed were clear and free from any obstructions.

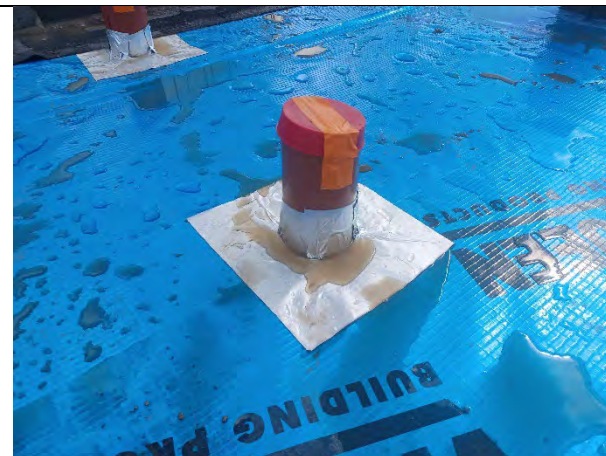
Gas Protection Validation Record



Plot 162: Membrane extends across plot footprint with all areas available for inspection. Standing water indicative of watertight seal achieved



Plot 162: Good detail on cornering using proprietary double and single sided tape, detailing strip to reduce stress points.



Plot 162: Service entry sealed with double and single sided tape.



Plot 162: Membrane extends under the interior wall.



Plot 162: Membrane overlapping external wall.



Plot 162: Airbricks installed were clear and free from any obstructions.

Gas Protection Validation Record



Plot 163: Membrane extends across plot footprint with all areas available for inspection. Standing water indicative of watertight seal achieved.



Plot 163: Good detail on cornering using proprietary double and single sided tape detailing strip to reduce stress points.



Plot 163: Service entry sealed with double and single sided tape.



Plot 163: Membrane sealed using heat seal joints; all in good condition.



Plot 163: Membrane overlapping external wall.



Plot 163: Airbricks installed were clear and free from any obstructions.



G:\Jobs\R2174\Plot 161-163

Gas Protection Validation Record

Gas Protection Validation Record

job number	R2174	design source/ref:	R2174-R12-v2.pdf	specification source/ref:	R2174-R12-v2.pdf	other documents attached	✕
site name / location	Tetrosyl, Bury	building use:	residential	commercial	other (describe)		
plot number	164-165	building description:	no. of storeys =	2	detached	semi-detached	Terrace apartment block
compiled by:	CM	gas protection type:	active / passive	foundation type:	suspended floor	raft / other	

Ventilated sub-floor (if present)	inspection date/time:	03.07.23	inspected by:	CM	photographed:	✓
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void former type	✕	1. N/A
height of void space	✕	2. >150mm, not inspected, however building control minimum is confirmed by client and on design detail
gravel type	✕	3. N/A (void clear)
pipe size and spacing	✕	4. N/A
external wall airbricks	✓	5. Plot 164: 5 airbricks on the gable end, 2 on the front and 1 to the rear; Plot 165: 5 airbricks on the gable end, 1 to the rear, 2 on the front; all clear and free from obstructions.
internal sleeper walls	✕	6. not inspected
external vent trenches / ducts	✕	7. N/A

Gas barrier	inspection date/time:	03.07.23	inspected by:	CM	photographed:	✓
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membrane type	✓	8. Visqueen Gas Membrane installed by membrane specialist PRS Manchester
extent of coverage	✓	9. Full coverage, membrane checked throughout.
slab/membrane condition	✓	10. Membrane in good condition, standing water present; one rip required repair at Plot 164.
laps and joints	✓	11. Laps all > 150mm and sealed using heat sealed joints.
damp-proof course	✓	12. Visqueen Gas Membrane; gas membrane also underlies DPC under internal wall providing 100% coverage to building footprint.
service entries and seals	✓	13. 6 service entries on each plot. All service entries sealed with proprietary double/single sided tape.

Gas Protection Validation Record

Guide notes:

1	void former type	proprietary type - manufacturer and specification, in accordance with design?, installed properly without damage?
2	height of void space	height of proprietary former or constructed ventilation space below suspended floor - note any debris on void / obstructions to air flow, note formation surface soil type (e.g. crushed concrete/brick), any evidence of flooding
3	gravel type	gravel type, if used (limestone / granite etc.) and any specification (e.g. 6F2), typical particle dimensions (mm), apparent fines content (low/high), compaction (loose/dense), waterlogging / contamination by clay, organic matter, other debris
4	pipe size and spacing	diameter in mm; material type (e.g. PVC); slotted or perforated; positioning and spacing / separation and jointing as on design drawing - if not sketch arrangement - do pipes connect with external (telescopic / swan-neck) vents?
5	external wall airbricks	check numbers, size and positions as design drawing (if not shown, make sketch; check for blockage, e.g. by mortar, or soil / pavings etc.
6	internal sleeper walls	check for ventilation holes - e.g. honeycomb brickwork or pipe crossings - note size, spacing and location - in accordance with design?
7	external vent trenches / ducts	check whether located and constructed in accordance with design drawings; if open-topped gravel, note gravel type and presence of fines / contamination; if pipe or other vents - check positions and construction for functionality and absence of blockages - vents may be built over
8	membrane type	note manufacturer and product specification, including batch / roll numbers if present - in accordance with specification? check stock storage arrangements - protected from dirt and damage?
9	extent of coverage	if membrane is incomplete, further inspection will be required - note areas completed / incomplete - is membrane fully visible or have internal walls been constructed over membrane / screed placed?
10	slab/membrane condition	record presence of debris / rough surfaces, in particular sharp projections, below or above membrane; record locations of all punctures or repairs, note arrangements to protect membrane surface from traffic / tools and equipment / materials, and temporary weighting down of membrane, e.g. use of boards - record evidence of footprints / tracks on membrane surface, creases or water/wind damage
11	laps and joints	check the all joints are lapped and sealed in accordance with manufacturer's requirements / specification, particularly where creases/folds are present (usually minimum 150mm laps with double-sided tape between sheets, and single-sided tape on top surface; note size of sheets and frequency of edge seals
12	damp-proof course	record DPC manufacturer and product code - usually integrated with the membrane; measure the DPC projection from external wall in mm; check laps and seals between membrane and DPC - note any potential stress points and tension between the two; check for damage to DPC
13	service entries and seals	note number, position and diameter of service entries - check top hat seal arrangements in accordance with design / specification (laps and seals between top hat and floor membrane, pipe upstand is usually a minimum 150mm) check, with jubilee clips to secure top hat seal to pipe - note presence of clips and tightness of connections

Gas Protection Validation Record

This plot has PASSED inspection.

An additional inspection visit IS NOT required for this plot.

SGP Staff:	C McHugh	Signed:		03.07.23
SGP Member:	D Wayland BSc MSc AssocMCIWM MCIWEM C.WEM	Signed:		04.07.23

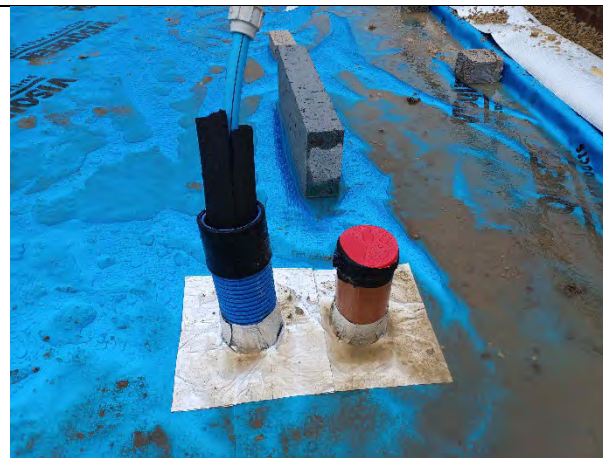
Gas Protection Validation Record



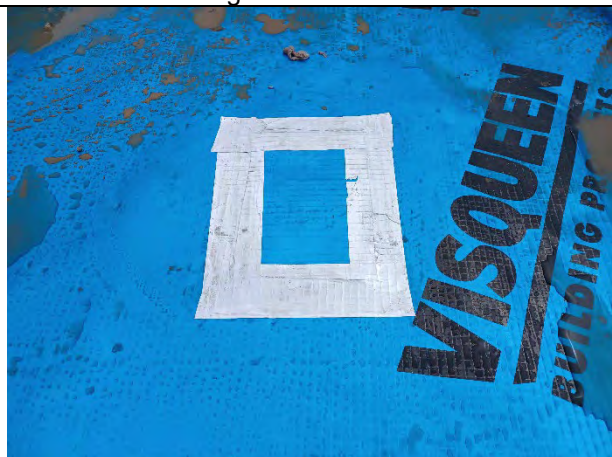
Plot 164: Membrane extends across plot footprint with all areas available for inspection. Standing water indicative of watertight seal achieved



Plot 164: Good detail on cornering using double and single sided tape.



Plot 164: Service entry sealed with double and single sided tape.



Plot 164: Repair completed using double and single sided tape with additional piece of membrane.



Plot 164: Membrane overlapping external wall. Heated sealed joints between membrane sheets



Plot 164: Airbricks installed were clear and free from any obstructions.

Gas Protection Validation Record



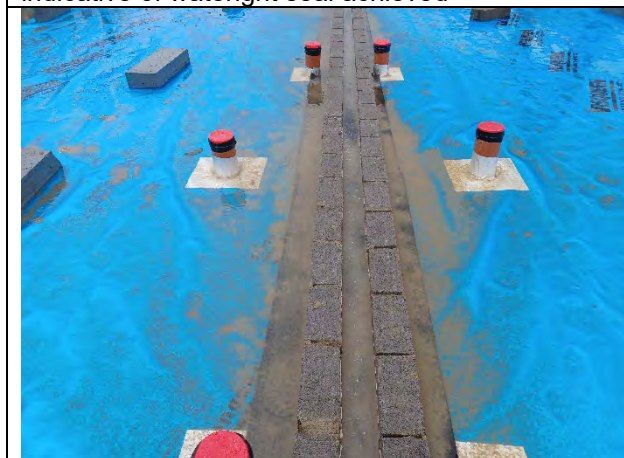
Plot 165: Membrane extends across plot footprint with all areas available for inspection. Standing water indicative of watertight seal achieved



Plot 165: Good detail on cornering using proprietary double and single sided tape, detailing strip to reduce stress points.



Plot 165: Service entry sealed with double and single sided tape.



Plot 165: Membrane extends under the interior wall.



Plot 165: Membrane overlapping external wall.



Plot 165: Airbricks installed were clear and free from any obstructions.



G:\Jobs\R2174\Plot 164-165

Gas Protection Validation Record

Gas Protection Validation Record

job number	R2174	design source/ref:	R2174-R12-v2.pdf	specification source/ref:	R2174-R12-v2.pdf	other documents attached	✕	
site name / location	Tetrosyl, Bury	building use:	residential	commercial	other (describe)			
plot number	166	building description:	no. of storeys =	2	detached	semi-detached	Terrace	apartment block
compiled by:	CM	gas protection type:	active / passive		foundation type:	suspended floor / raft / other		

Ventilated sub-floor (if present)	inspection date/time:	19.06.23	inspected by:	CM	photographed:	✓
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void former type	✕	1. N/A
height of void space	✕	2. >150mm, not inspected, however building control minimum is confirmed by client and on design detail
gravel type	✕	3. N/A (void clear)
pipe size and spacing	✕	4. N/A
external wall airbricks	✓	5. Plot 166: 5 airbricks along the rear, 3 on each side and 4 on the (total 12); all clear and free from obstructions.
internal sleeper walls	✕	6. not inspected
external vent trenches / ducts	✕	7. N/A

Gas barrier	inspection date/time:	19.06.23	inspected by:	CM	photographed:	✓
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membrane type	✓	8. Visqueen Gas Membrane
extent of coverage	✓	9. Full coverage, membranes checked throughout.
slab/membrane condition	✓	10. Membrane in good condition, standing water present; no rips or tears.
laps and joints	✓	11. Laps all > 150mm and sealed using both double and single sided tape.
damp-proof course	✓	12. Visqueen Gas Membrane; gas membrane also underlies DPC to external wall providing 100% coverage to building footprint.
service entries and seals	✓	13. 6 service entries. All service entries sealed with a preformed 'tophat', proprietary double/single sided tape, and tightened jubilee clip.

Gas Protection Validation Record

Guide notes:

1	void former type	proprietary type - manufacturer and specification, in accordance with design?, installed properly without damage?
2	height of void space	height of proprietary former or constructed ventilation space below suspended floor - note any debris on void / obstructions to air flow, note formation surface soil type (e.g. crushed concrete/brick), any evidence of flooding
3	gravel type	gravel type, if used (limestone / granite etc.) and any specification (e.g. 6F2), typical particle dimensions (mm), apparent fines content (low/high), compaction (loose/dense), waterlogging / contamination by clay, organic matter, other debris
4	pipe size and spacing	diameter in mm; material type (e.g. PVC); slotted or perforated; positioning and spacing / separation and jointing as on design drawing - if not sketch arrangement - do pipes connect with external (telescopic / swan-neck) vents?
5	external wall airbricks	check numbers, size and positions as design drawing (if not shown, make sketch; check for blockage, e.g. by mortar, or soil / pavings etc.
6	internal sleeper walls	check for ventilation holes - e.g. honeycomb brickwork or pipe crossings - note size, spacing and location - in accordance with design?
7	external vent trenches / ducts	check whether located and constructed in accordance with design drawings; if open-topped gravel, note gravel type and presence of fines / contamination; if pipe or other vents - check positions and construction for functionality and absence of blockages - vents may be built over
8	membrane type	note manufacturer and product specification, including batch / roll numbers if present - in accordance with specification? check stock storage arrangements - protected from dirt and damage?
9	extent of coverage	if membrane is incomplete, further inspection will be required - note areas completed / incomplete - is membrane fully visible or have internal walls been constructed over membrane / screed placed?
10	slab/membrane condition	record presence of debris / rough surfaces, in particular sharp projections, below or above membrane; record locations of all punctures or repairs, note arrangements to protect membrane surface from traffic / tools and equipment / materials, and temporary weighting down of membrane, e.g. use of boards - record evidence of footprints / tracks on membrane surface, creases or water/wind damage
11	laps and joints	check the all joints are lapped and sealed in accordance with manufacturer's requirements / specification, particularly where creases/folds are present (usually minimum 150mm laps with double-sided tape between sheets, and single-sided tape on top surface; note size of sheets and frequency of edge seals
12	damp-proof course	record DPC manufacturer and product code - usually integrated with the membrane; measure the DPC projection from external wall in mm; check laps and seals between membrane and DPC - note any potential stress points and tension between the two; check for damage to DPC
13	service entries and seals	note number, position and diameter of service entries - check top hat seal arrangements in accordance with design / specification (laps and seals between top hat and floor membrane, pipe upstand is usually a minimum 150mm) check, with jubilee clips to secure top hat seal to pipe - note presence of clips and tightness of connections

Gas Protection Validation Record

This plot has PASSED inspection.

An additional inspection visit IS NOT required for this plot.

SGP Staff:	C McHugh	Signed:		19.06.23
SGP Member:	D Wayland BSc MSc AssocMCIWM MCIWEM C.WEM	Signed:		19.06.23

Gas Protection Validation Record



Plot 166: Membrane extends across plot footprint with all areas available for inspection. Standing water indicative of watertight seal achieved



Plot 166: Good detail on cornering using proprietary detailing strip to reduce stress points; DPC taped to gas membrane extending to external wall



Plot 166: Service entry sealed with top hat, double and single sided tape and a jubilee clip



Plot 166: Good corner detailing with no stress points. DPC taped to membrane across cavity wall



Plot 166: Membrane overlapping external wall.



Plot 166: Airbricks installed were clear and free from any obstructions.



G:\Jobs\R2174\Plot 166

Gas Protection Validation Record

Gas Protection Validation Record

job number	R2174	design source/ref:	R2174-R12-v2.pdf	specification source/ref:	R2174-R12-v2.pdf	other documents attached	✕
site name / location	Tetrosyl, Bury	building use:	residential	commercial	other (describe)		
plot number	167 + 175-176	building description:	no. of storeys =	2	Detached (167)	Semi-detached (175-176)	Terrace apartment block
compiled by:	CM	gas protection type:	active / passive	foundation type:	suspended floor / raft / other		

Ventilated sub-floor (if present)	inspection date/time:	14.12.23	inspected by:	CM	photographed:	✓
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void former type	✕	1. N/A
height of void space	✕	2. >150mm, not inspected, however building control minimum is confirmed by client and on design detail.
gravel type	✕	3. N/A (void clear)
pipe size and spacing	✕	4. N/A
external wall airbricks	✓	5. Plot 167: 5 airbricks on gable end right, 3 on the front, 2 to the rear and 3 on gable end left; Plot 175: 4 airbricks on the gable end, 2 to the rear, 2 on the front; Plot 176: 4 airbricks on the gable end, 2 to the rear, 2 on the front; all clear and free from obstructions.
internal sleeper walls	✕	6. not inspected
external vent trenches / ducts	✕	7. N/A

Gas barrier	inspection date/time:	14.12.23	inspected by:	CM	photographed:	✓
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membrane type	✓	8. Visqueen Gas Membrane installed by membrane specialist PRS Manchester
extent of coverage	✓	9. Full coverage, membrane checked throughout.
slab/membrane condition	✓	10. Membrane in good condition, standing water present.
laps and joints	✓	11. Plots 167 and 176 achieved a lap of >150mm. Plot 175 was <150mm; and all plots were sealed using heat sealed joints.
damp-proof course	✓	12. Visqueen Gas Membrane; gas membrane also underlies DPC under internal wall providing 100% coverage to building footprint.

Gas Protection Validation Record

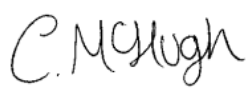
service entries and seals	✓	13. 6 service entries on both Plots 175 & 176 and 5 service entries on Plot 167. All service entries sealed with proprietary double/single sided tape.
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Guide notes:

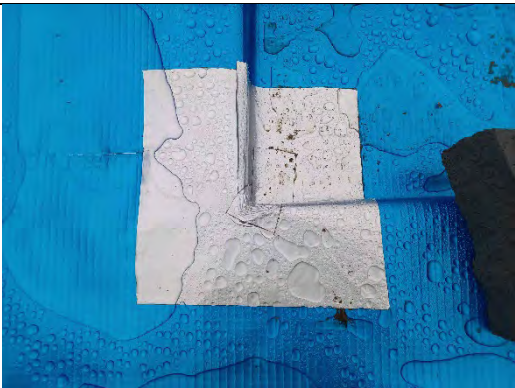
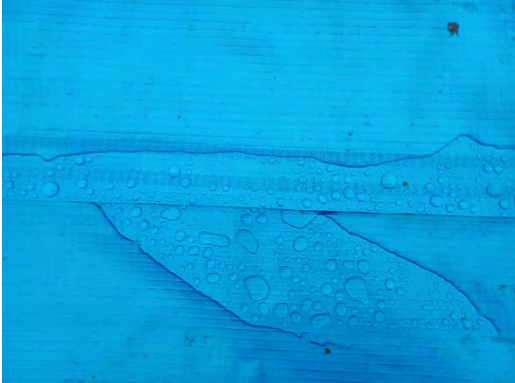
1	void former type	proprietary type - manufacturer and specification, in accordance with design?, installed properly without damage?
2	height of void space	height of proprietary former or constructed ventilation space below suspended floor - note any debris on void / obstructions to air flow, note formation surface soil type (e.g. crushed concrete/brick), any evidence of flooding
3	gravel type	gravel type, if used (limestone / granite etc.) and any specification (e.g. 6F2), typical particle dimensions (mm), apparent fines content (low/high), compaction (loose/dense), waterlogging / contamination by clay, organic matter, other debris
4	pipe size and spacing	diameter in mm; material type (e.g. PVC); slotted or perforated; positioning and spacing / separation and jointing as on design drawing - if not sketch arrangement - do pipes connect with external (telescopic / swan-neck) vents?
5	external wall airbricks	check numbers, size and positions as design drawing (if not shown, make sketch; check for blockage, e.g. by mortar, or soil / pavings etc.
6	internal sleeper walls	check for ventilation holes - e.g. honeycomb brickwork or pipe crossings - note size, spacing and location - in accordance with design?
7	external vent trenches / ducts	check whether located and constructed in accordance with design drawings; if open-topped gravel, note gravel type and presence of fines / contamination; if pipe or other vents - check positions and construction for functionality and absence of blockages - vents may be built over
8	membrane type	note manufacturer and product specification, including batch / roll numbers if present - in accordance with specification? check stock storage arrangements - protected from dirt and damage?
9	extent of coverage	if membrane is incomplete, further inspection will be required - note areas completed / incomplete - is membrane fully visible or have internal walls been constructed over membrane / screed placed?
10	slab/membrane condition	record presence of debris / rough surfaces, in particular sharp projections, below or above membrane; record locations of all punctures or repairs, note arrangements to protect membrane surface from traffic / tools and equipment / materials, and temporary weighting down of membrane, e.g. use of boards - record evidence of footprints / tracks on membrane surface, creases or water/wind damage
11	laps and joints	check the all joints are lapped and sealed in accordance with manufacturer's requirements / specification, particularly where creases/folds are present (usually minimum 150mm laps with double-sided tape between sheets, and single-sided tape on top surface; note size of sheets and frequency of edge seals
12	damp-proof course	record DPC manufacturer and product code - usually integrated with the membrane; measure the DPC projection from external wall in mm; check laps and seals between membrane and DPC - note any potential stress points and tension between the two; check for damage to DPC
13	service entries and seals	note number, position and diameter of service entries - check top hat seal arrangements in accordance with design / specification (laps and seals between top hat and floor membrane, pipe upstand is usually a minimum 150mm) check, with jubilee clips to secure top hat seal to pipe - note presence of clips and tightness of connections

Gas Protection Validation Record

This plot has PASSED inspection.
An additional inspection visit IS NOT required for this plot.

SGP Staff:	C McHugh	Signed:		14.12.23
SGP Member:	D Wayland BSc MSc AssocMCIWM MCIWEM C.WEM	Signed:		14.12.23

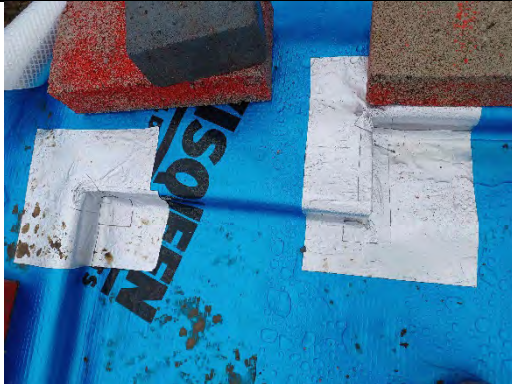
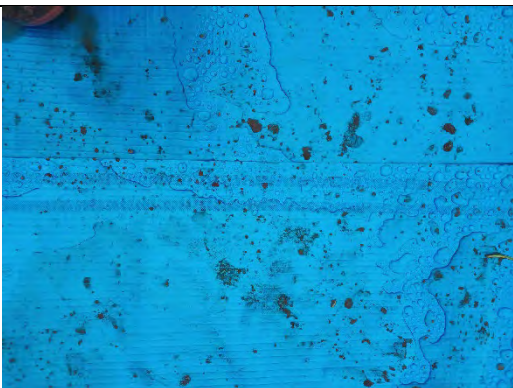
Gas Protection Validation Record

		
Plot 167: Membrane extends across plot footprint with all areas available for inspection. Standing water indicative of watertight seal achieved.	Plot 167: Good detail on cornering using double and single sided tape.	Plot 167: Service entry sealed with single sided tape.
		
Plot 167: Heated sealed joints between membrane sheets.	Plot 167: Membrane overlapping external wall.	Plot 167: Airbricks installed were clear and free from any obstructions.

Gas Protection Validation Record

		
Plot 175: Membrane extends across plot footprint with all areas available for inspection. Standing water indicative of watertight seal achieved	Plot 175: Good detail on cornering using proprietary single sided tape, detailing strip to reduce stress points.	Plot 175: Service entry sealed with double and single sided tape.
		
Plot 175: Membrane used.	Plot 175: Membrane overlapping external wall.	Plot 175: Airbricks installed were clear and free from any obstructions.

Gas Protection Validation Record

		
Plot 176: Membrane extends across plot footprint with all areas available for inspection. Standing water indicative of watertight seal achieved.	Plot 176: Good detail on cornering using proprietary double and single sided tape, detailing strip to reduce stress points.	Plot 176: Service entry sealed with single sided tape.
		
Plot 176: Heated sealed joints between membrane sheets.	Plot 176: Membrane overlapping external wall.	Plot 176: Airbricks installed were clear and free from any obstructions.

Gas Protection Validation Record

job number	R2174	design source/ref:	R2174-R12-v2.pdf	specification source/ref:	R2174-R12-v2.pdf	other documents attached	✕
site name / location	Tetrosyl, Bury	building use:	residential	commercial	other (describe)		
plot number	177-180	building description:	no. of storeys =	2	detached	semi-detached	Terrace apartment block
compiled by:	CM	gas protection type:	active / passive	foundation type:	suspended floor	raft / other	

Ventilated sub-floor (if present)	inspection date/time:	05.02.24	inspected by:	CM	photographed:	✓
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void former type	✕	1. N/A
height of void space	✕	2. >150mm, not inspected, however building control minimum is confirmed by client and on design detail
gravel type	✕	3. N/A (void clear)
pipe size and spacing	✕	4. N/A
external wall airbricks	✓	5. Plots 177 and 180; 4 airbricks at the gable end, 1 on the front and 2 to the rear; Plot 178 and 179; 1 on the front and 2 to the rear; all clear and free from obstructions.
internal sleeper walls	✕	6. not inspected
external vent trenches / ducts	✕	7. N/A

Gas barrier	inspection date/time:	05.02.24	inspected by:	CM	photographed:	✓
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membrane type	✓	8. Visqueen Gas Membrane installed by membrane specialist PRS Manchester
extent of coverage	✓	9. Full coverage, membrane checked throughout.
slab/membrane condition	✓	10. Membrane in good condition, standing water present; no rips or tears.
laps and joints	✓	11. Laps all > 150mm and sealed using heat sealed joints.
damp-proof course	✓	12. Visqueen Gas Membrane; gas membrane provides 100% coverage to building footprint.
service entries and seals	✓	13. 6 service entries on each plot. All service entries sealed with proprietary double/single sided tape.

Gas Protection Validation Record

Guide notes:

1	void former type	proprietary type - manufacturer and specification, in accordance with design?, installed properly without damage?
2	height of void space	height of proprietary former or constructed ventilation space below suspended floor - note any debris on void / obstructions to air flow, note formation surface soil type (e.g. crushed concrete/brick), any evidence of flooding
3	gravel type	gravel type, if used (limestone / granite etc.) and any specification (e.g. 6F2), typical particle dimensions (mm), apparent fines content (low/high), compaction (loose/dense), waterlogging / contamination by clay, organic matter, other debris
4	pipe size and spacing	diameter in mm; material type (e.g. PVC); slotted or perforated; positioning and spacing / separation and jointing as on design drawing - if not sketch arrangement - do pipes connect with external (telescopic / swan-neck) vents?
5	external wall airbricks	check numbers, size and positions as design drawing (if not shown, make sketch; check for blockage, e.g. by mortar, or soil / pavings etc.
6	internal sleeper walls	check for ventilation holes - e.g. honeycomb brickwork or pipe crossings - note size, spacing and location - in accordance with design?
7	external vent trenches / ducts	check whether located and constructed in accordance with design drawings; if open-topped gravel, note gravel type and presence of fines / contamination; if pipe or other vents - check positions and construction for functionality and absence of blockages - vents may be built over
8	membrane type	note manufacturer and product specification, including batch / roll numbers if present - in accordance with specification? check stock storage arrangements - protected from dirt and damage?
9	extent of coverage	if membrane is incomplete, further inspection will be required - note areas completed / incomplete - is membrane fully visible or have internal walls been constructed over membrane / screed placed?
10	slab/membrane condition	record presence of debris / rough surfaces, in particular sharp projections, below or above membrane; record locations of all punctures or repairs, note arrangements to protect membrane surface from traffic / tools and equipment / materials, and temporary weighting down of membrane, e.g. use of boards - record evidence of footprints / tracks on membrane surface, creases or water/wind damage
11	laps and joints	check the all joints are lapped and sealed in accordance with manufacturer's requirements / specification, particularly where creases/folds are present (usually minimum 150mm laps with double-sided tape between sheets, and single-sided tape on top surface; note size of sheets and frequency of edge seals
12	damp-proof course	record DPC manufacturer and product code - usually integrated with the membrane; measure the DPC projection from external wall in mm; check laps and seals between membrane and DPC - note any potential stress points and tension between the two; check for damage to DPC
13	service entries and seals	note number, position and diameter of service entries - check top hat seal arrangements in accordance with design / specification (laps and seals between top hat and floor membrane, pipe upstand is usually a minimum 150mm) check, with jubilee clips to secure top hat seal to pipe - note presence of clips and tightness of connections

Gas Protection Validation Record

This plot has PASSED inspection.

An additional inspection visit IS NOT required for this plot.

SGP Staff:	C McHugh	Signed:		05.02.24
SGP Member:	D Wayland BSc MSc AssocMCIWM MCIWEM C.WEM	Signed:		06.02.24

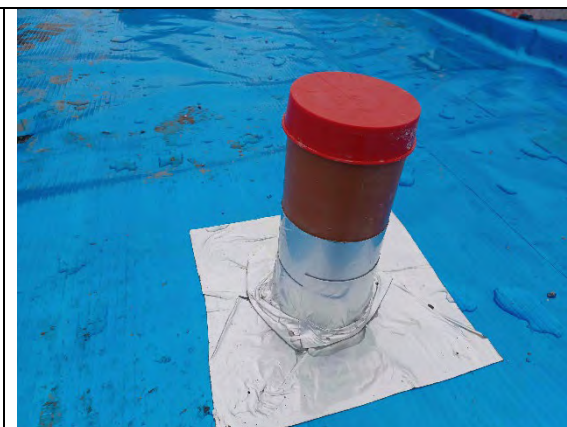
Gas Protection Validation Record



Plot 177: Membrane extends across plot footprint with all areas available for inspection. Standing water indicative of watertight seal achieved



Plot 177: Good detail on cornering using double and single sided tape.



Plot 177: Service entry sealed with double and single sided tape.



Plot 177: Good corner detailing with no stress points secured using double and single sided tape.

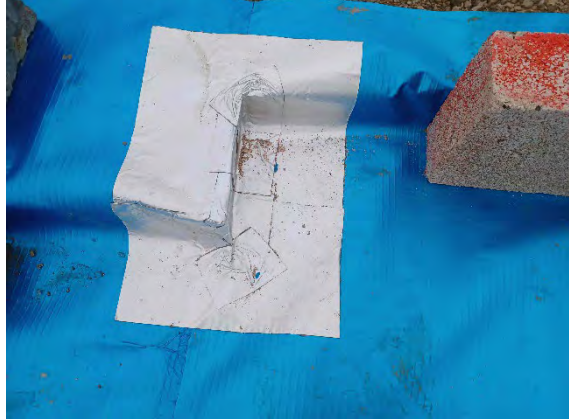


Plot 177: Membrane external wall, overlapping the membrane at the joints.



Plot 177: Airbricks installed were clear and free from any obstructions.

Gas Protection Validation Record

		
Plot 178: Membrane extends across plot footprint with all areas available for inspection. Standing water indicative of watertight seal achieved	Plot 178: Product used.	Plot 178: Service entry sealed with double and single sided tape.
		NO PHOTOGRAPH
Plot 178: Good detail on cornering using proprietary double and single sided tape, detailing strip to reduce stress points.	Plot 178: Airbricks installed were clear and free from any obstructions.	

Gas Protection Validation Record



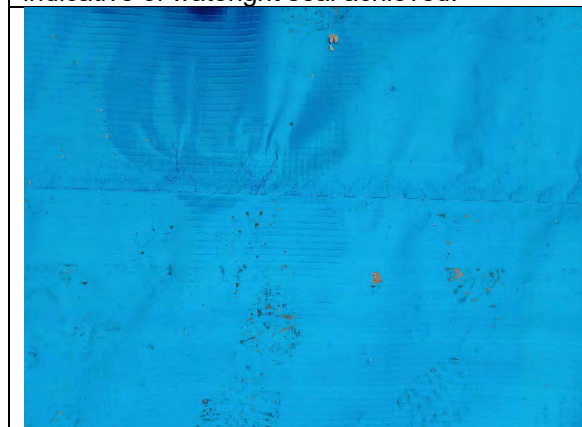
Plot 179: Membrane extends across plot footprint with all areas available for inspection. Standing water indicative of watertight seal achieved.



Plot 179: Good detail on cornering using proprietary double and single sided tape detailing strip to reduce stress points.



Plot 179: Service entry sealed with double and single sided tape.



Plot 179: Membrane sealed using heat seal joints; all in good condition.



Plot 179: Membrane external wall, overlapping the membrane at the joints.



Plot 179: Airbricks installed were clear and free from any obstructions.

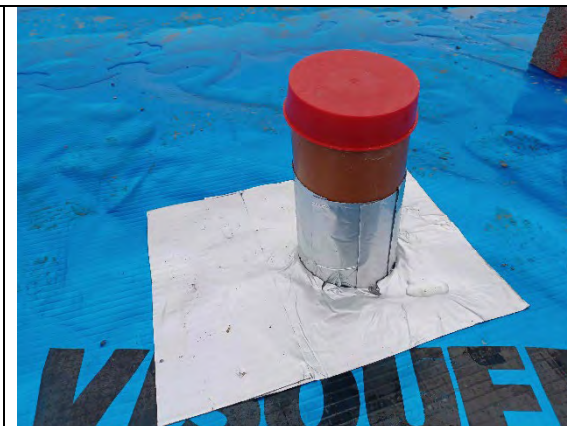
Gas Protection Validation Record



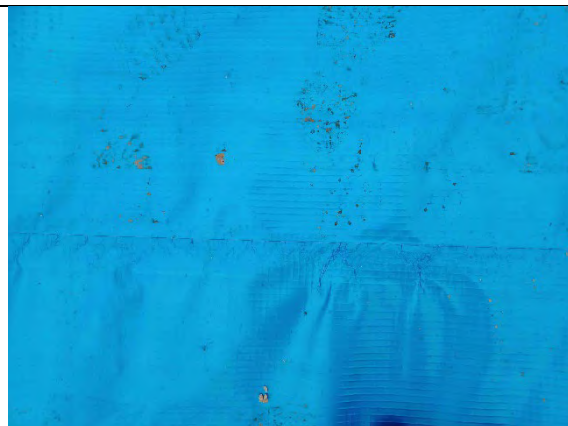
Plot 180 - Membrane extends across plot footprint with all areas available for inspection. Standing water indicative of watertight seal achieved.



Plot 180 - Good detail on cornering using proprietary double and single sided tape detailing strip to reduce stress points.



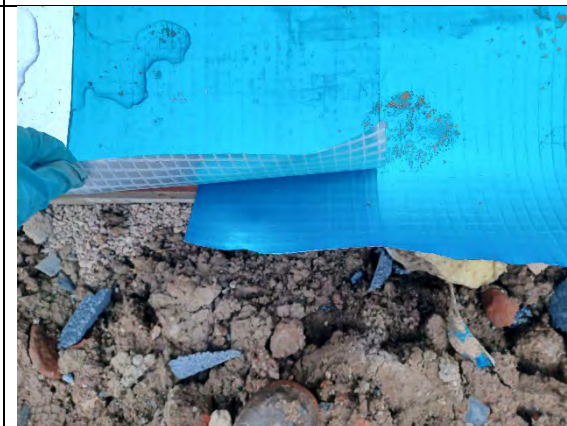
Plot 180 - Service entry sealed with double and single sided tape.



Plot 180 - Membrane sealed using heat seal joints; all in good condition.



Plot 180 - Airbricks installed were clear and free from any obstructions.



Plot 180 - Membrane external wall, overlapping the membrane at the joints.

Gas Protection Validation Record

job number	R2174	design source/ref:	R2174-R12-v2.pdf	specification source/ref:	R2174-R12-v2.pdf	other documents attached	✕
site name / location	Tetrosyl, Bury	building use:	residential	commercial	other (describe)		
plot number	159-160	building description:	no. of storeys =	2	detached	semi-detached	Terrace apartment block
compiled by:	SM	gas protection type:	active / passive	foundation type:	suspended floor	raft / other	

Ventilated sub-floor (if present)	inspection date/time:	21.08.23 (airbricks only)	inspected by:	SM	photographed:	✓
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void former type	✕	1. N/A
height of void space	✕	2. >150mm, not inspected, however building control minimum is confirmed by client and is on design detail
gravel type	✕	3. N/A (void clear)
pipe size and spacing	✕	4. N/A
external wall airbricks	✓	5. Plots 159 & 160: total 16 airbricks – 2 on the front of the building, 5 on each gable end and 4 to the rear. All clear and free from obstructions.
internal sleeper walls	✕	6. not inspected
external vent trenches / ducts	✕	7. N/A

Gas barrier	inspection date/time:	21.08.23	inspected by:	SM	photographed:	✓
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membrane type	✓	8. Visqueen Gas Barrier installed by specialist membrane installer PRS Manchester
extent of coverage	✓	9. Full coverage, membrane checked throughout.
slab/membrane condition	✓	10. Membrane in good condition; no rips or tears.
laps and joints	✓	11. Some laps <150mm, however all sealed using heat sealed joints. Good seals achieved throughout.
damp-proof course	✓	12. Gas membrane provides 100% coverage to building footprint, including to external walls.
service entries and seals	✓	13. 6 service entries on each plot. All service entries sealed with proprietary self-adhesive membrane patches.

Gas Protection Validation Record

Guide notes:

1	void former type	proprietary type - manufacturer and specification, in accordance with design?, installed properly without damage?
2	height of void space	height of proprietary former or constructed ventilation space below suspended floor - note any debris on void / obstructions to air flow, note formation surface soil type (e.g. crushed concrete/brick), any evidence of flooding
3	gravel type	gravel type, if used (limestone / granite etc.) and any specification (e.g. 6F2), typical particle dimensions (mm), apparent fines content (low/high), compaction (loose/dense), waterlogging / contamination by clay, organic matter, other debris
4	pipe size and spacing	diameter in mm; material type (e.g. PVC); slotted or perforated; positioning and spacing / separation and jointing as on design drawing - if not sketch arrangement - do pipes connect with external (telescopic / swan-neck) vents?
5	external wall airbricks	check numbers, size and positions as design drawing (if not shown, make sketch; check for blockage, e.g. by mortar, or soil / pavings etc.
6	internal sleeper walls	check for ventilation holes - e.g. honeycomb brickwork or pipe crossings - note size, spacing and location - in accordance with design?
7	external vent trenches / ducts	check whether located and constructed in accordance with design drawings; if open-topped gravel, note gravel type and presence of fines / contamination; if pipe or other vents - check positions and construction for functionality and absence of blockages - vents may be built over
8	membrane type	note manufacturer and product specification, including batch / roll numbers if present - in accordance with specification? check stock storage arrangements - protected from dirt and damage?
9	extent of coverage	if membrane is incomplete, further inspection will be required - note areas completed / incomplete - is membrane fully visible or have internal walls been constructed over membrane / screed placed?
10	slab/membrane condition	record presence of debris / rough surfaces, in particular sharp projections, below or above membrane; record locations of all punctures or repairs, note arrangements to protect membrane surface from traffic / tools and equipment / materials, and temporary weighting down of membrane, e.g. use of boards - record evidence of footprints / tracks on membrane surface, creases or water/wind damage
11	laps and joints	check the all joints are lapped and sealed in accordance with manufacturer's requirements / specification, particularly where creases/folds are present (usually minimum 150mm laps with double-sided tape between sheets, and single-sided tape on top surface; note size of sheets and frequency of edge seals
12	damp-proof course	record DPC manufacturer and product code - usually integrated with the membrane; measure the DPC projection from external wall in mm; check laps and seals between membrane and DPC - note any potential stress points and tension between the two; check for damage to DPC
13	service entries and seals	note number, position and diameter of service entries - check top hat seal arrangements in accordance with design / specification (laps and seals between top hat and floor membrane, pipe upstand is usually a minimum 150mm) check, with jubilee clips to secure top hat seal to pipe - note presence of clips and tightness of connections

Gas Protection Validation Record

This plot has PASSED inspection.

An additional inspection visit IS NOT required for this plot.

SGP Staff:	S Miller BSc MCIWEM	Signed:		21.08.23
SGP Member:	D Wayland BSc MSc AssocMCIWM MCIWEM C.WEM	Signed:		21.08.23

Gas Protection Validation Record



Plots 159 & 160: Membrane extends across plot footprints with all areas available for inspection.



Plot 159: Good detail on cornering using self-adhesive membrane patches.



Plot 159: Service entries sealed with self-adhesive membrane patches.



Plot 159: Laps sealed using heat sealed joints



Plot 159: Airbricks installed were clear and free from any obstructions.



Plot 160: Good detail on cornering using self-adhesive membrane patches.

Gas Protection Validation Record



Plot 160: Laps sealed using heat sealed joints.



Plot 159: Service entry sealed with self-adhesive membrane patches.



Plot 160: Airbricks installed were clear and free from any obstructions.

Gas Protection Validation Record

job number	R2174	design source/ref:	R2174-R12-v2.pdf	specification source/ref:	R2174-R12-v2.pdf	other documents attached	✖
site name / location	Waldmer's Wood – Phase 1b	building use:	residential	commercial	other (describe)		
plot number(s)	168-174	building description:	no. of storeys =	2	Detached (Plot 168)	semi-detached (Plots 169-174)	Terrace apartment block
compiled by:	MJ	gas protection type:	active / passive	foundation type:	suspended floor / raft / other		

Ventilated sub-floor (if present)		inspection date/time:	18.10.23 (airbricks only)	inspected by:	MJ	photographed:	✓
void former type	✖	1. N/A					
height of void space	✖	2. >150mm, not inspected, however building control minimum is confirmed by client and is on design detail					
gravel type	✖	3. N/A (void clear)					
pipe size and spacing	✖	4. N/A					
external wall airbricks	✓	5. Plots 168: 2 on the front, 4 to the rear, and 5 and 2 airbricks on either gable end, (all external walls); Plots 169-170: 3 to the rear of each plot, 2 on the front and 4 on each gable end (all external walls); Plots 171-172: 2 to the rear of each plot, 1 on the front, and 4 on each gable end; Plot 173: 2 to the rear of the plot, 1 on the front and 3 on the gable end; Plot 174: 3 to the rear of the plot, 2 on the front and 3 on the gable end – all clear and free from obstruction.					
internal sleeper walls	✖	6. not inspected					
external vent trenches / ducts	✖	7. N/A					

Gas barrier		inspection date/time:	18.10.23	inspected by:	MJ	photographed:	✓
membrane type	✓	8. Visqueen Gas Barrier installed by specialist membrane installer PRS Manchester					
extent of coverage	✓	9. Full coverage, membrane checked throughout.					
slab/membrane condition	✓	10. Membrane in good condition; 2 repairs made on plot 172, 1 each made on plots 170 and 169, and 1 made on plot 168. Repairs made during inspection.					
laps and joints	✓	11. All laps >150mm, all sealed using heat sealed joints. Good seals achieved throughout.					
damp-proof course	✓	12. Gas membrane provides 100% coverage to building footprint, including to external walls.					

Gas Protection Validation Record

service entries and seals	✓	13. 5-7 service entries on each plot – all service entries sealed with proprietary self-adhesive membrane patches.
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Guide notes:

1	void former type	proprietary type - manufacturer and specification, in accordance with design?, installed properly without damage?
2	height of void space	height of proprietary former or constructed ventilation space below suspended floor - note any debris on void / obstructions to air flow, note formation surface soil type (e.g. crushed concrete/brick), any evidence of flooding
3	gravel type	gravel type, if used (limestone / granite etc.) and any specification (e.g. 6F2), typical particle dimensions (mm), apparent fines content (low/high), compaction (loose/dense), waterlogging / contamination by clay, organic matter, other debris
4	pipe size and spacing	diameter in mm; material type (e.g. PVC); slotted or perforated; positioning and spacing / separation and jointing as on design drawing - if not sketch arrangement - do pipes connect with external (telescopic / swan-neck) vents?
5	external wall airbricks	check numbers, size and positions as design drawing (if not shown, make sketch; check for blockage, e.g. by mortar, or soil / pavings etc.
6	internal sleeper walls	check for ventilation holes - e.g. honeycomb brickwork or pipe crossings - note size, spacing and location - in accordance with design?
7	external vent trenches / ducts	check whether located and constructed in accordance with design drawings; if open-topped gravel, note gravel type and presence of fines / contamination; if pipe or other vents - check positions and construction for functionality and absence of blockages - vents may be built over
8	membrane type	note manufacturer and product specification, including batch / roll numbers if present - in accordance with specification? check stock storage arrangements - protected from dirt and damage?
9	extent of coverage	if membrane is incomplete, further inspection will be required - note areas completed / incomplete - is membrane fully visible or have internal walls been constructed over membrane / screed placed?
10	slab/membrane condition	record presence of debris / rough surfaces, in particular sharp projections, below or above membrane; record locations of all punctures or repairs, note arrangements to protect membrane surface from traffic / tools and equipment / materials, and temporary weighting down of membrane, e.g. use of boards - record evidence of footprints / tracks on membrane surface, creases or water/wind damage
11	laps and joints	check the all joints are lapped and sealed in accordance with manufacturer's requirements / specification, particularly where creases/folds are present (usually minimum 150mm laps with double-sided tape between sheets, and single-sided tape on top surface; note size of sheets and frequency of edge seals
12	damp-proof course	record DPC manufacturer and product code - usually integrated with the membrane; measure the DPC projection from external wall in mm; check laps and seals between membrane and DPC - note any potential stress points and tension between the two; check for damage to DPC
13	service entries and seals	note number, position and diameter of service entries - check top hat seal arrangements in accordance with design / specification (laps and seals between top hat and floor membrane, pipe upstand is usually a minimum 150mm) check, with jubilee clips to secure top hat seal to pipe - note presence of clips and tightness of connections



Gas Protection Validation Record

This plot has PASSED inspection.

An additional inspection visit IS NOT required for this plot.

SGP Staff:	M Jones BSc MSc AMIEnvSc	Signed:		23.10.23
SGP Member:	D Wayland BSc MSc AssocMCIWM MCIWEM C.WEM	Signed:		23.10.23

Gas Protection Validation Record



Plot 168: Membrane extends across plot footprint with all areas available for inspection.



Plot 168: Good detail on cornering using self-adhesive membrane patches.



Plot 168: Service entries sealed with self-adhesive membrane patches.



Plot 168: Membrane neatly spans internal wall



Plot 168: Airbricks installed were clear and free from any obstructions.



Plot 168: Patch repair made during inspection

Gas Protection Validation Record



Plot 169: Membrane extends across plot footprints with all areas available for inspection.



Plot 169: Good detail on cornering using self-adhesive membrane patches.



Plot 169: Service entries sealed with self-adhesive membrane patches.



Plot 169: Membrane joins heat welded and >150mm



Plot 169: Joint requiring repair



Plot 169: Patch repair made during inspection

Gas Protection Validation Record



Plot 170: Membrane extends across plot footprints with all areas available for inspection.



Plot 170: Good detail on cornering using self-adhesive membrane patches.



Plot 170: Service entries sealed with self-adhesive membrane patches.



Plot 170: Membrane spans beneath internal wall



Plot 170: Airbricks installed were clear and free from any obstructions.



Plot 170: Membrane joins heat welded and >150mm

Gas Protection Validation Record



Plot 171: Membrane extends across plot footprints with all areas available for inspection.



Plot 171: Good detail on cornering using self-adhesive membrane patches.



Plot 171: Service entries sealed with self-adhesive membrane patches.



Plot 171: Membrane spans beneath internal wall



Plot 171: Airbricks installed were clear and free from any obstructions.



Plot 171: Membrane joins heat welded

Gas Protection Validation Record



Plot 172: Membrane extends across plot footprints with all areas available for inspection.



Plot 172: Good detail on cornering using self-adhesive membrane patches.



Plot 172: Service entries sealed with self-adhesive membrane patches.



Plot 172: Membrane joins heat welded and >150mm



Plot 172: Airbricks installed were clear and free from any obstructions.



Plot 172: Patch repair made during inspection

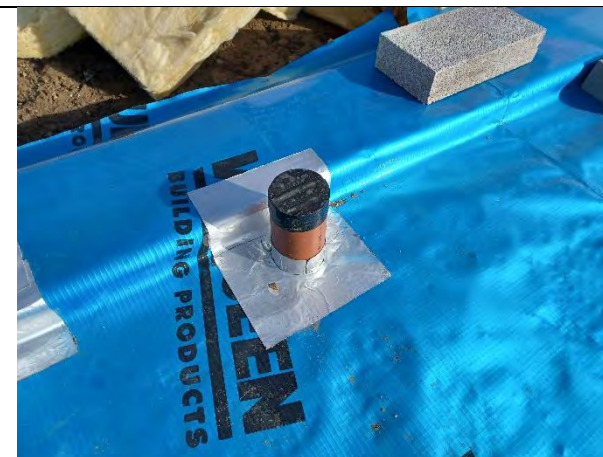
Gas Protection Validation Record



Plot 173: Membrane extends across plot footprints with all areas available for inspection.



Plot 173: Good detail on cornering using self-adhesive membrane patches.



Plot 173: Service entries sealed with self-adhesive membrane patches.



Plot 173: Membrane joins heat welded



Plot 173: Airbricks installed were clear and free from any obstructions.



Plot 173: Heat welded joins between membrane sheets

Gas Protection Validation Record



Plot 174: Membrane extends across plot footprints with all areas available for inspection.



Plot 174: Good detail on cornering using self-adhesive membrane patches.



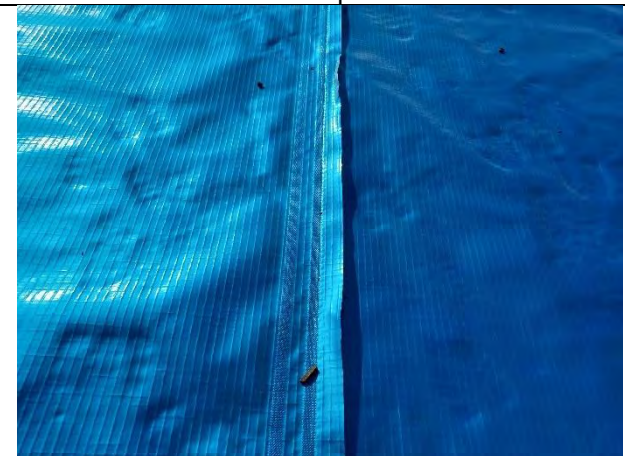
Plot 174: Service entries sealed with self-adhesive membrane patches.



Plot 174: Membrane joins heat welded and >150mm



Plot 174: Airbricks installed were clear and free from any obstructions.



Plot 174: Heat welded joins between membrane sheets

Gas Protection Validation Record

job number	R2174	design source/ref:	R2174-R12-v2.pdf	specification source/ref:	R2174-R12-v2.pdf	other documents attached	✕
site name / location	Waldmer's Wood – Phase 1b	building use:	residential	commercial	other (describe)		
plot number(s)	181-186	building description:	no. of storeys =	2	Detached (Plot 184)	semi-detached (Plots 185-186)	Terrace (Plots 181-183) apartment block
compiled by:	SM	gas protection type:	active / passive		foundation type:	suspended floor / raft / other	

Ventilated sub-floor (if present)		inspection date/time:	05.09.23 (airbricks only)	inspected by:	SM	photographed:	✓
void former type	✕	1. N/A					
height of void space	✕	2. >150mm, not inspected, however building control minimum is confirmed by client and is on design detail					
gravel type	✕	3. N/A (void clear)					
pipe size and spacing	✕	4. N/A					
external wall airbricks	✓	5. Plots 181-183: 18 airbricks (all external walls); Plot 184: 13 airbricks (all external walls); Plots 185-186: 18 airbricks (all external walls) – all clear and free from obstruction.					
internal sleeper walls	✕	6. not inspected					
external vent trenches / ducts	✕	7. N/A					

Gas barrier		inspection date/time:	05.09.23	inspected by:	SM	photographed:	✓
membrane type	✓	8. Visqueen Gas Barrier installed by specialist membrane installer PRS Manchester					
extent of coverage	✓	9. Full coverage, membrane checked throughout.					
slab/membrane condition	✓	10. Membrane in good condition; no rips or tears.					
laps and joints	✓	11. Some laps <150mm, however all sealed using heat sealed joints. Good seals achieved throughout.					
damp-proof course	✓	12. Gas membrane provides 100% coverage to building footprint, including to external walls.					
service entries and seals	✓	13. 6 service entries on each plot except Plot 184 (7 no.) – all service entries sealed with proprietary self-adhesive membrane patches.					

Gas Protection Validation Record

Guide notes:

1	void former type	proprietary type - manufacturer and specification, in accordance with design?, installed properly without damage?
2	height of void space	height of proprietary former or constructed ventilation space below suspended floor - note any debris on void / obstructions to air flow, note formation surface soil type (e.g. crushed concrete/brick), any evidence of flooding
3	gravel type	gravel type, if used (limestone / granite etc.) and any specification (e.g. 6F2), typical particle dimensions (mm), apparent fines content (low/high), compaction (loose/dense), waterlogging / contamination by clay, organic matter, other debris
4	pipe size and spacing	diameter in mm; material type (e.g. PVC); slotted or perforated; positioning and spacing / separation and jointing as on design drawing - if not sketch arrangement - do pipes connect with external (telescopic / swan-neck) vents?
5	external wall airbricks	check numbers, size and positions as design drawing (if not shown, make sketch; check for blockage, e.g. by mortar, or soil / pavings etc.
6	internal sleeper walls	check for ventilation holes - e.g. honeycomb brickwork or pipe crossings - note size, spacing and location - in accordance with design?
7	external vent trenches / ducts	check whether located and constructed in accordance with design drawings; if open-topped gravel, note gravel type and presence of fines / contamination; if pipe or other vents - check positions and construction for functionality and absence of blockages - vents may be built over
8	membrane type	note manufacturer and product specification, including batch / roll numbers if present - in accordance with specification? check stock storage arrangements - protected from dirt and damage?
9	extent of coverage	if membrane is incomplete, further inspection will be required - note areas completed / incomplete - is membrane fully visible or have internal walls been constructed over membrane / screed placed?
10	slab/membrane condition	record presence of debris / rough surfaces, in particular sharp projections, below or above membrane; record locations of all punctures or repairs, note arrangements to protect membrane surface from traffic / tools and equipment / materials, and temporary weighting down of membrane, e.g. use of boards - record evidence of footprints / tracks on membrane surface, creases or water/wind damage
11	laps and joints	check the all joints are lapped and sealed in accordance with manufacturer's requirements / specification, particularly where creases/folds are present (usually minimum 150mm laps with double-sided tape between sheets, and single-sided tape on top surface; note size of sheets and frequency of edge seals
12	damp-proof course	record DPC manufacturer and product code - usually integrated with the membrane; measure the DPC projection from external wall in mm; check laps and seals between membrane and DPC - note any potential stress points and tension between the two; check for damage to DPC
13	service entries and seals	note number, position and diameter of service entries - check top hat seal arrangements in accordance with design / specification (laps and seals between top hat and floor membrane, pipe upstand is usually a minimum 150mm) check, with jubilee clips to secure top hat seal to pipe - note presence of clips and tightness of connections

Gas Protection Validation Record

This plot has PASSED inspection.

An additional inspection visit IS NOT required for this plot.

SGP Staff:	S Miller BSc MCIWEM	Signed:		06.09.23
SGP Member:	D Wayland BSc MSc AssocMCIWM MCIWEM C.WEM	Signed:		06.09.23

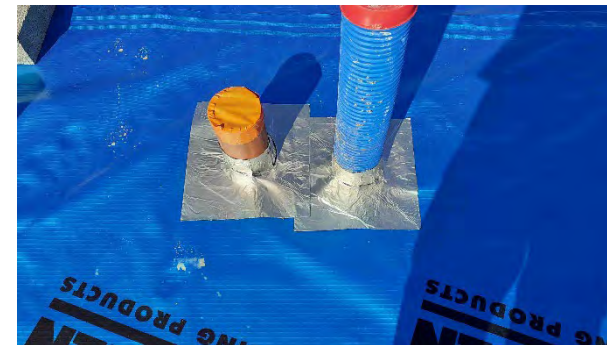
Gas Protection Validation Record



Plot 181: Membrane extends across plot footprints with all areas available for inspection.



Plot 181: Good detail on cornering using self-adhesive membrane patches.



Plot 181: Service entries sealed with self-adhesive membrane patches.



Plot 181: Laps sealed using heat sealed joints



Plot 181: Airbricks installed were clear and free from any obstructions.



Plot 182: Membrane extends across plot footprints with all areas available for inspection.

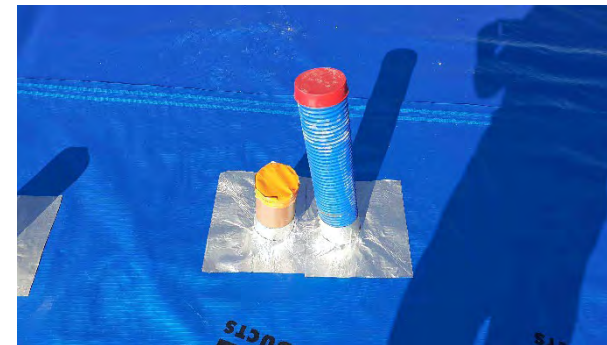
Gas Protection Validation Record



Plot 182: Airbricks installed were clear and free from any obstructions.



Plot 182: Good detail on cornering using self-adhesive membrane patches.



Plot 182: Service entries sealed with self-adhesive membrane patches.



Plot 182: Laps sealed using heat sealed joints



Plot 183: Membrane extends across plot footprints with all areas available for inspection.



Plot 183: Laps sealed using heat sealed joints

Gas Protection Validation Record



Plot 183: Good detail on cornering using self-adhesive membrane patches.



Plot 183: Service entries sealed with self-adhesive membrane patches.



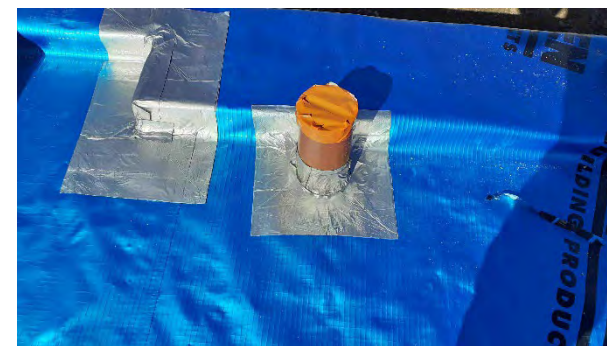
Plot 184: Membrane extends across plot footprints with all areas available for inspection.



Plot 184: Laps sealed using heat sealed joints



Plot 184: Good detail on cornering using self-adhesive membrane patches.



Plot 184: Service entries sealed with self-adhesive membrane patches.

Gas Protection Validation Record



Plot 184: Airbricks installed were clear and free from any obstructions.



Plot 185: Membrane extends across plot footprints with all areas available for inspection.



Plot 185: Laps sealed using heat sealed joints



Plot 185: Good detail on cornering using self-adhesive membrane patches.

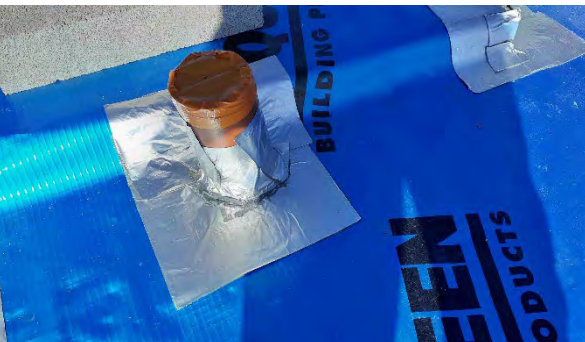


Plot 185: Service entries sealed with self-adhesive membrane patches.



Plot 186: Membrane extends across plot footprints with all areas available for inspection.

Gas Protection Validation Record

 Plot 186: Laps sealed using heat sealed joints	 Plot 186: Good detail on cornering using self-adhesive membrane patches.	 Plot 186: Service entries sealed with self-adhesive membrane patches.
 Plot 186: Airbricks installed were clear and free from any obstructions.	NO PHOTOGRAPH	NO PHOTOGRAPH

Gas Protection Validation Record

job number	R2174	design source/ref:	R2174-R12-v2.pdf	specification source/ref:	R2174-R12-v2.pdf	other documents attached	✖
site name / location	Waldmer's Wood – Phase 1b	building use:	residential	commercial	other (describe)		
plot number(s)	187-189	building description:	no. of storeys =	2	Detached (Plot 189)	semi-detached (Plots 187-188)	Terrace apartment block
compiled by:	MJ	gas protection type:	active / passive	foundation type:	suspended floor / raft / other		

Ventilated sub-floor (if present)		inspection date/time:	15.09.23 (airbricks only)	inspected by:	MJ	photographed:	✓
void former type	✖	1. N/A					
height of void space	✖	2. >150mm, not inspected, however building control minimum is confirmed by client and is on design detail					
gravel type	✖	3. N/A (void clear)					
pipe size and spacing	✖	4. N/A					
external wall airbricks	✓	5. Plots 189: 2 airbricks to the rear of the plot and 5 on each gable end (all external walls); Plot 187-188: 2 to the rear of each plots and 4 on each gable end (all external walls) – all clear and free from obstruction.					
internal sleeper walls	✖	6. not inspected					
external vent trenches / ducts	✖	7. N/A					

Gas barrier		inspection date/time:	15.09.23	inspected by:	MJ	photographed:	✓
membrane type	✓	8. Visqueen Gas Barrier installed by specialist membrane installer PRS Manchester					
extent of coverage	✓	9. Full coverage, membrane checked throughout.					
slab/membrane condition	✓	10. Membrane in good condition; 1 repair made on plot 189, 2 made on plot 187, and 2 made on plot 188.					
laps and joints	✓	11. Some laps <150mm, however all sealed using heat sealed joints. Good seals achieved throughout.					
damp-proof course	✓	12. Gas membrane provides 100% coverage to building footprint, including to external walls.					
service entries and seals	✓	13. 5 service entries on each plot – all service entries sealed with proprietary self-adhesive membrane patches.					

Gas Protection Validation Record

Guide notes:

1	void former type	proprietary type - manufacturer and specification, in accordance with design?, installed properly without damage?
2	height of void space	height of proprietary former or constructed ventilation space below suspended floor - note any debris on void / obstructions to air flow, note formation surface soil type (e.g. crushed concrete/brick), any evidence of flooding
3	gravel type	gravel type, if used (limestone / granite etc.) and any specification (e.g. 6F2), typical particle dimensions (mm), apparent fines content (low/high), compaction (loose/dense), waterlogging / contamination by clay, organic matter, other debris
4	pipe size and spacing	diameter in mm; material type (e.g. PVC); slotted or perforated; positioning and spacing / separation and jointing as on design drawing - if not sketch arrangement - do pipes connect with external (telescopic / swan-neck) vents?
5	external wall airbricks	check numbers, size and positions as design drawing (if not shown, make sketch; check for blockage, e.g. by mortar, or soil / pavings etc.
6	internal sleeper walls	check for ventilation holes - e.g. honeycomb brickwork or pipe crossings - note size, spacing and location - in accordance with design?
7	external vent trenches / ducts	check whether located and constructed in accordance with design drawings; if open-topped gravel, note gravel type and presence of fines / contamination; if pipe or other vents - check positions and construction for functionality and absence of blockages - vents may be built over
8	membrane type	note manufacturer and product specification, including batch / roll numbers if present - in accordance with specification? check stock storage arrangements - protected from dirt and damage?
9	extent of coverage	if membrane is incomplete, further inspection will be required - note areas completed / incomplete - is membrane fully visible or have internal walls been constructed over membrane / screed placed?
10	slab/membrane condition	record presence of debris / rough surfaces, in particular sharp projections, below or above membrane; record locations of all punctures or repairs, note arrangements to protect membrane surface from traffic / tools and equipment / materials, and temporary weighting down of membrane, e.g. use of boards - record evidence of footprints / tracks on membrane surface, creases or water/wind damage
11	laps and joints	check the all joints are lapped and sealed in accordance with manufacturer's requirements / specification, particularly where creases/folds are present (usually minimum 150mm laps with double-sided tape between sheets, and single-sided tape on top surface; note size of sheets and frequency of edge seals
12	damp-proof course	record DPC manufacturer and product code - usually integrated with the membrane; measure the DPC projection from external wall in mm; check laps and seals between membrane and DPC - note any potential stress points and tension between the two; check for damage to DPC
13	service entries and seals	note number, position and diameter of service entries - check top hat seal arrangements in accordance with design / specification (laps and seals between top hat and floor membrane, pipe upstand is usually a minimum 150mm) check, with jubilee clips to secure top hat seal to pipe - note presence of clips and tightness of connections



Gas Protection Validation Record

This plot has PASSED inspection.

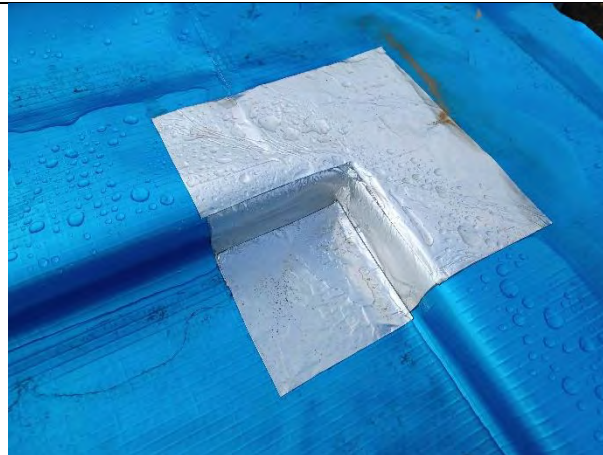
An additional inspection visit IS NOT required for this plot.

SGP Staff:	M Jones BSc MSc AMIEnvSc	Signed:		18.09.23
SGP Member:	D Wayland BSc MSc AssocMCIWM MCIWEM C.WEM	Signed:		18.09.23

Gas Protection Validation Record



Plot 189: Membrane extends across plot footprints with all areas available for inspection.



Plot 189: Good detail on cornering using self-adhesive membrane patches.



Plot 189: Service entries sealed with self-adhesive membrane patches.



Plot 189: Laps sealed using heat sealed joints



Plot 189: Airbricks installed were clear and free from any obstructions.



Plot 189: Patch repair made during inspection

Gas Protection Validation Record



Plot 188: Airbricks installed were clear and free from any obstructions.



Plot 188: Good detail on cornering using self-adhesive membrane patches.



Plot 188: Service entries sealed with self-adhesive membrane patches.



Plot 188: Laps sealed using heat sealed joints >150mm



Plot 188: Membrane extends across plot footprints with all areas available for inspection.



Plot 188: Patch repair made during inspection

Gas Protection Validation Record



Plot 187: Good detail on cornering using self-adhesive membrane patches.



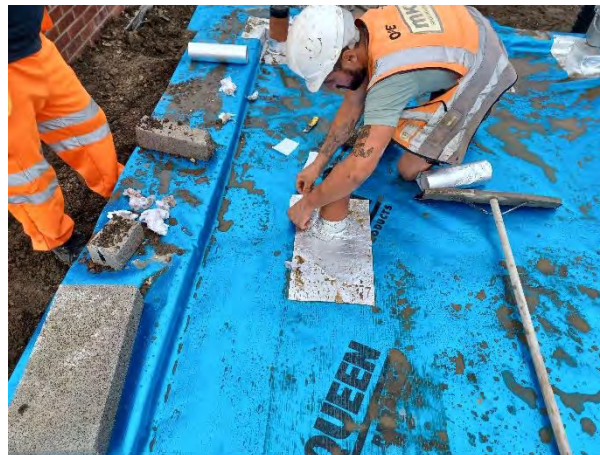
Plot 187: Service entries sealed with self-adhesive membrane patches.



Plot 187: Membrane extends across plot footprints with all areas available for inspection.



Plot 187: Laps sealed using heat sealed joints



Plot 187: Patch repair being made during inspection



Plot 187: Patch repair made during inspection

APPENDIX B

Soil Depth Validation Certificates

Topsoil Validation Record

Job number	R2174	Depth ref:	R2174-R12-v2 Final			Quality ref:		R2174-R12-v2 Final			Other documents attached		✓	
Date	28.11.23	Area use:	Garden			landscaped			stockpile			other		
Site name / location	Waldmers Wood, Bury	Size area (m):	6 x 8 (Av.)	Approx. Area (m²):	144	Approx. Depth Top (m):	0.9	Approx. Volume Top (m³):	130	Approx. Depth Sub (m):	n/a	Approx. Volume Sub (m³):	n/a	
Plot/ location:	Plots 154-156													
Compiled by:	SM	Number depth entries required			3 (1 per plot); 3 entries provided.		Number samples required:			3 TS (1 per 250m³ TS, minimum 3 samples per source); 6 TS samples provided.				

Quality Validation		Inspection date/time:	15.06.23 & 09.08.23	Inspected by:	CM	Photographed:	✓
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Source Topsoil	1.	✓	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site): stockpile 'T2'.
Description Topsoil	2.	✓	Blackish brown slightly gravelly sandy clayey topsoil with grass roots.
Sample Topsoil	3.	✓	3 samples collected from stockpile at source site (Eurofins Lab ref: 23-20765; samples: T2-S1 to S3) and a further 3 samples collected from stockpile at destination site (Eurofins Lab ref: 23-50455-1).
Source Subsoil	4.	x	Not used
Description Subsoil	5.	x	n/a
Sample Subsoil	6.	x	n/a

Topsoil Validation Record



Topsoil Results Summary – Rossendale Road

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NAD	NAD	Yes
Arsenic	37	1.8-20	Yes
Cadmium	11	<0.1-1.2	Yes
Chromium (total)	910	5.0-54	Yes
Chromium VI	6	<1.2	Yes
Copper	2,400	8.1-76	Yes
Lead	200	16-190	Yes
Mercury	40	<0.05-0.40	Yes
Nickel	180	2.8-15	Yes
Zinc	3,700	17-210	Yes
Naphthalene	2.3	0.57-2.9	Yes*
Acenaphthene	210	0.92-3.8	Yes
Acenaphthylene	170	0.11-2.0	Yes
Fluorene	170	0.68-3.4	Yes
Phenanthrene	95	5.9-21	Yes
Anthracene	2,400	1.5-7.0	Yes
Fluoranthene	280	8.2-26	Yes
Pyrene	620	8.2-26	Yes
Benzo(a)anthracene	7.2	3.8-14	Yes*
Chrysene	15	5.7-13	Yes
Benzo(b)fluoranthene	2.6	4.5-13	Yes*
Benzo(k)fluoranthene	77	2.8-4.8	Yes
Benzo(a)pyrene	2.2	4.1-10	Yes*
Indeno(123cd) pyrene	27	2.7-6.8	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Dibenzo(ah) anthracene	0.24	0.89-1.9	Yes*
Benzo(ghi) perylene	320	2.3-6.1	Yes
Aliphatic C5-C6	42	<0.1	Yes
Aliphatic C6-C8	100	<0.1	Yes
Aliphatic C8-C10	27	<0.1	Yes
Aliphatic C10-C12	130	<1	Yes
Aliphatic C12-C16	1,100	<2	Yes
Aliphatic C16-C21	65,000	<8	Yes
Aliphatic C21-C35	65,000	<1-20	Yes
Aromatic C6-C7	70	<1	Yes
Aromatic C7-C8	130	<1	Yes
Aromatic C8-C10	34	<1	Yes
Aromatic C10-C12	74	<1-1.5	Yes
Aromatic C12-C16	140	<1-7.8	Yes
Aromatic C16-C21	260	25-130	Yes
Aromatic C21-C35	1,100	49-250	Yes
Benzene	0.08	<0.005	Yes
Toluene	130	<0.005	Yes
Ethyl-benzene	47	<0.005	Yes
m/p-xylene	56	<0.005	Yes
o-xylene	60	<0.005	Yes
*See Summary section			

Topsoil Validation Record

Depth Validation	Inspection date/time:	28.11.23	Inspected by:	SM	Photographed:	✓
Plot 154	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site): stockpile 'T2'.					
Source Subsoil	n/a					
Soil profile/description	0.0-0.6m	Blackish brown slightly gravelly sandy clayey topsoil with grass roots.				
	0.6m	Base (same material) – Terram placement shown on developer provided photograph below				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record

Depth Validation	Inspection date/time:	28.11.23	Inspected by:	SM	Photographed:	✓
Plot 155	Required Depth (mm)	600	Measured Depth (mm)	650	PASS	
Source Topsoil	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site): stockpile 'T2'.					
Source Subsoil	n/a					
Soil profile/description	0.0-0.65m	Blackish brown slightly gravelly sandy clayey topsoil with grass roots.				
	0.65m	Base (same material) – Terram placement shown on developer provided photograph below				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record

Depth Validation	Inspection date/time:	28.11.23	Inspected by:	SM	Photographed:	✓
Plot 157	Required Depth (mm)	600	Measured Depth (mm)	900	PASS	
Source Topsoil	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site): stockpile 'T2'.					
Source Subsoil	n/a					
Soil profile/description	0.0-0.9m	Blackish brown slightly gravelly sandy clayey topsoil with grass roots.				
	0.9m	Base (Terram) – Terram placement shown on developer provided photograph below				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record

Developer photo showing placement of terram (combination of black woven and white fabric) in garden of Plot 154 extending to Plot 156.



Topsoil Validation Record

**Summary**

Exceedances of the adopted residential soils screening criteria have been detected for a number of PAHs: Naphthalene (3 no.), Benz(a)anthracene (5 no.), Benzo(b)fluoranthene (6 no.), Benzo(a)pyrene (6 no.) and Dibenzo(ah)anthracene (6 no.). However, as summarised in the 'Rossendale Road, Burnley: Stockpile Validation & Assessment' letter (ref: R2688-L01, dated 27th June 2023 – attached), these exceedances have been attributed to the inclusion of coal within the soils considering the undeveloped nature of the source site, the absence of any other identifiable sources, as well as the descriptions of coal gravel within the soils. The overall risk to human health from PAHs within fragments of coal is associated with the bioavailability of the PAHs which is considered to be limited due to the sequestration of PAHs within a carbon or vitrified matrix; the soils were therefore considered suitable for reuse as topsoil in garden areas which was agreed by the Bury Council's Environmental Protection Officer in letter 'CL584.120623.1' (6th July 2023). The supplementary onsite testing confirmed concentrations of the exceeding determinants to be below, or within the range of, the testing results from the source site therefore the conclusions of the assessment letter remain unchanged.

An additional inspection visit IS NOT required.

SGP Staff:	S D Miller BSc MCIWEM	Signed:		28.11.23
SGP Member:	D Wayland BSc MSC AssocMCIWM MCIWEM C.WEM	Signed:		28.11.23

Guide notes:

1.	Source Topsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
2.	Description Topsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
3.	Sample Topsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number
4.	Source Subsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
5.	Description Subsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
6.	Sample Subsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number



2183

Final Report

Report No.: 23-20765-1

Initial Date of Issue: 23-Jun-2023

Re-Issue Details:

Client Smith Grant LLP

Client Address: Bryn Estyn Business Centre
Bryn Estyn Road
Wrexham
LL13 9TY

Contact(s): Caitlin McHugh
Megan Jones

Project R2688 Brun Lea, Rossendale, Burnley

Quotation No.: **Date Received:** 19-Jun-2023

Order No.: **Date Instructed:** 19-Jun-2023

No. of Samples: 12

Turnaround (Wkdays): 5 **Results Due:** 23-Jun-2023

Date Approved: 23-Jun-2023

Approved By:



Details: Stuart Henderson, Technical
Manager

Results - Soil

Project: R2688 Brun Lea, Rossendale, Burnley

Client: Smith Grant LLP	Chemtest Job No.:				23-20765	23-20765	23-20765	23-20765	23-20765	23-20765	23-20765	23-20765	23-20765
Quotation No.:	Chemtest Sample ID.:				1660264	1660265	1660266	1660267	1660268	1660269	1660270	1660271	1660272
Order No.:	Client Sample Ref.:				T1	T1	T1	T2	T2	T2	T3	T3	T3
	Client Sample ID.:				S1	S2	S3	S1	S2	S3	S1	S2	S3
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023
	Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	2.8	7.2	4.5	2.4	3.0	1.3	5.6	6.0	11
pH	U	2010		4.0	7.4	7.3	7.4	7.2	7.6	6.5	6.3	6.1	6.1
Arsenic	U	2455	mg/kg	0.5	10	16	15	20	12	1.8	9.7	9.3	8.1
Cadmium	U	2455	mg/kg	0.10	0.17	0.26	0.23	1.2	0.45	< 0.10	0.38	0.38	0.29
Chromium	U	2455	mg/kg	0.5	17	26	27	54	36	5.0	30	28	23
Copper	U	2455	mg/kg	0.50	31	47	43	76	39	8.1	36	34	26
Mercury	U	2455	mg/kg	0.05	0.17	0.31	0.25	0.37	0.19	< 0.05	0.17	0.13	0.13
Nickel	U	2455	mg/kg	0.50	13	21	21	28	22	2.8	18	18	13
Lead	U	2455	mg/kg	0.50	64	110	92	190	84	16	76	72	63
Selenium	U	2455	mg/kg	0.25	0.66	0.99	0.93	2.0	1.2	< 0.25	0.86	0.83	0.62
Zinc	U	2455	mg/kg	0.50	58	86	79	210	110	17	93	91	73
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	5.8	16	9.6	8.7	6.7	1.8	4.7	9.9	6.8
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	N	2680	mg/kg	1.0	< 1.0	5.3	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	N	2680	mg/kg	1.0	< 1.0	3.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	N	2680	mg/kg	1.0	5.7	34	< 1.0	30	130	25	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0	4.7	180	< 1.0	94	250	84	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	10	220	< 5.0	120	380	110	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	10	220	< 10	120	380	110	< 10	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	2.2	1.1	2.4	2.9	2.7	2.7	1.7	1.7
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	2.2	1.1	2.0	0.71	0.47	0.27	1.2	0.76
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	2.6	0.95	3.8	0.92	2.5	1.7	2.3	1.1
Fluorene	U	2700	mg/kg	0.10	< 0.10	2.5	0.80	3.4	0.68	1.9	1.3	1.9	1.1

Results - Soil

Project: R2688 Brun Lea, Rossendale, Burnley

Client: Smith Grant LLP	Chemtest Job No.:				23-20765	23-20765	23-20765	23-20765	23-20765	23-20765	23-20765	23-20765	23-20765
Quotation No.:	Chemtest Sample ID.:				1660264	1660265	1660266	1660267	1660268	1660269	1660270	1660271	1660272
Order No.:	Client Sample Ref.:				T1	T1	T1	T2	T2	T2	T3	T3	T3
	Client Sample ID.:				S1	S2	S3	S1	S2	S3	S1	S2	S3
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023
	Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD									
Phenanthrene	U	2700	mg/kg	0.10	9.8	9.7	5.7	21	5.9	15	10	14	7.4
Anthracene	U	2700	mg/kg	0.10	3.9	2.8	1.5	7.0	1.5	3.8	2.3	3.3	1.9
Fluoranthene	U	2700	mg/kg	0.10	6.8	8.9	6.8	26	8.2	19	12	18	10
Pyrene	U	2700	mg/kg	0.10	7.2	9.1	7.3	26	8.2	19	12	18	10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	12	6.5	14	3.8	8.9	7.1	11	7.4
Chrysene	U	2700	mg/kg	0.10	< 0.10	9.3	4.4	13	5.7	13	9.4	9.3	6.1
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	13	5.6	13	4.5	9.9	6.6	11	6.4
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	5.9	1.8	4.8	2.3	4.6	3.9	4.0	2.2
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	4.2	3.8	10	4.1	7.8	4.9	7.8	4.5
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	6.8	2.7	5.6	< 0.10	5.7	4.0
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	1.9	1.3	1.7	< 0.10	1.3	0.84
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	6.1	2.3	4.4	< 0.10	5.1	8.3
Total Of 16 PAH's	U	2700	mg/kg	2.0	28	84	47	160	56	120	74	120	74
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: R2688 Brun Lea, Rossendale, Burnley

Client: Smith Grant LLP	Chemtest Job No.:				23-20765	23-20765	23-20765
Quotation No.:	Chemtest Sample ID.:				1660273	1660274	1660275
Order No.:	Client Sample Ref.:				T6	T6	T6
	Client Sample ID.:				S1	S2	S3
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				15-Jun-2023	15-Jun-2023	15-Jun-2023
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	8.5	1.8	12
pH	U	2010		4.0	6.3	6.5	7.6
Arsenic	U	2455	mg/kg	0.5	9.4	1.9	8.3
Cadmium	U	2455	mg/kg	0.10	0.33	< 0.10	0.20
Chromium	U	2455	mg/kg	0.5	26	5.6	15
Copper	U	2455	mg/kg	0.50	29	6.1	37
Mercury	U	2455	mg/kg	0.05	0.14	< 0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	13	4.2	27
Lead	U	2455	mg/kg	0.50	79	14	100
Selenium	U	2455	mg/kg	0.25	0.84	< 0.25	0.70
Zinc	U	2455	mg/kg	0.50	82	17	72
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	2.3	4.0	6.5
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	N	2680	mg/kg	1.0	< 1.0	97	18
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	97	18
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	N	2680	mg/kg	1.0	13	4.3	11
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0	58	89	120
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	71	94	130
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	71	190	140
Naphthalene	U	2700	mg/kg	0.10	2.8	4.3	6.6
Acenaphthylene	U	2700	mg/kg	0.10	0.35	0.59	0.84
Acenaphthene	U	2700	mg/kg	0.10	3.7	8.4	3.7
Fluorene	U	2700	mg/kg	0.10	2.2	5.4	3.0

Results - Soil

Project: R2688 Brun Lea, Rossendale, Burnley

Client: Smith Grant LLP	Chemtest Job No.:				23-20765	23-20765	23-20765
Quotation No.:	Chemtest Sample ID.:				1660273	1660274	1660275
Order No.:	Client Sample Ref.:				T6	T6	T6
	Client Sample ID.:				S1	S2	S3
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				15-Jun-2023	15-Jun-2023	15-Jun-2023
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
Phenanthrene	U	2700	mg/kg	0.10	17	34	19
Anthracene	U	2700	mg/kg	0.10	3.6	8.7	5.5
Fluoranthene	U	2700	mg/kg	0.10	20	35	22
Pyrene	U	2700	mg/kg	0.10	20	34	22
Benzo[a]anthracene	U	2700	mg/kg	0.10	9.1	16	10
Chrysene	U	2700	mg/kg	0.10	12	20	14
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	9.8	17	11
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	4.8	7.6	5.8
Benzo[a]pyrene	U	2700	mg/kg	0.10	8.2	15	9.6
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	7.9	12	9.8
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	2.0	3.1	3.2
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	4.4	7.7	5.3
Total Of 16 PAH's	U	2700	mg/kg	2.0	130	230	150
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
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.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenzo[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
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.

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

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

All Asbestos testing is performed at the indicated laboratory

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

Sample Deviation Codes

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

Sample Retention and Disposal

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

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

Charges may apply to extended sample storage

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

customerservices@chemtest.com



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Analytical Report Number : 23-50455

Project / Site name:	Tetrosyl, Bury	Samples received on:	11/08/2023
Your job number:	R2174	Samples instructed on/ Analysis started on:	11/08/2023
Your order number:		Analysis completed by:	21/08/2023
Report Issue Number:	1	Report issued on:	21/08/2023
Samples Analysed:	3 soil samples		

Signed: _____

Joanna Wawrzeczko
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

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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.

Analytical Report Number: 23-50455
Project / Site name: Tetrosyl, Bury

Lab Sample Number	2778430			2778431	2778432
Sample Reference	TS-S1			TS-S2	TS-S3
Sample Number	RR Bury			RR Bury	RR Bury
Depth (m)	None Supplied			None Supplied	None Supplied
Date Sampled	09/08/2023			09/08/2023	09/08/2023
Time Taken	None Supplied			None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	37	35
Total mass of sample received	kg	0.001	NONE	0.8	0.8

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSA	DSA	DSA

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.6	6.6	6.8
Organic Matter	%	0.1	MCERTS	-	13	-
Organic Matter (automated)	%	0.1	MCERTS	12	-	11

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.91	0.57	1.2
Acenaphthylene	mg/kg	0.05	MCERTS	0.11	0.14	0.2
Acenaphthene	mg/kg	0.05	MCERTS	2.2	2	2
Fluorene	mg/kg	0.05	MCERTS	1.6	1.4	1.5
Phenanthrene	mg/kg	0.05	MCERTS	14	13	13
Anthracene	mg/kg	0.05	MCERTS	3.1	3.1	3.1
Fluoranthene	mg/kg	0.05	MCERTS	17	17	17
Pyrene	mg/kg	0.05	MCERTS	15	16	15
Benzo(a)anthracene	mg/kg	0.05	MCERTS	7.3	7.4	7.7
Chrysene	mg/kg	0.05	MCERTS	7.3	8.1	7.6
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	8.3	7.9	9.2
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	2.8	4.1	3.1
Benzo(a)pyrene	mg/kg	0.05	MCERTS	6.7	7.2	7.7
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3.5	3.7	4.1
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.89	0.94	1
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.8	4	4.4

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	95.4	96.8	98.9
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	14	14
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.8	0.9	0.8
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	28	31	29
Copper (aqua regia extractable)	mg/kg	1	MCERTS	40	45	48
Lead (aqua regia extractable)	mg/kg	1	MCERTS	99	120	100
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.4	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	14	14	15
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	100	110	100

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0

Analytical Report Number: 23-50455
Project / Site name: Tetrosyl, Bury

Lab Sample Number	2778430	2778431	2778432
Sample Reference	TS-S1	TS-S2	TS-S3
Sample Number	RR Bury	RR Bury	RR Bury
Depth (m)	None Supplied	None Supplied	None Supplied
Date Sampled	09/08/2023	09/08/2023	09/08/2023
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS 1D AL}	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC6 - EC8 _{HS 1D AL}	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC8 - EC10 _{HS 1D AL}	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC10 - EC12 _{EH CU 1D AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH CU 1D AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH CU 1D AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH CU 1D AL}	mg/kg	8	MCERTS	10	20	18
TPH-CWG - Aliphatic (EC5 - EC35) _{EH CU+HS 1D AL}	mg/kg	10	NONE	11	22	19

TPH-CWG - Aromatic >EC5 - EC7 _{HS 1D AR}	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC7 - EC8 _{HS 1D AR}	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC8 - EC10 _{HS 1D AR}	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC10 - EC12 _{EH CU 1D AR}	mg/kg	1	MCERTS	< 1.0	1.5	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH CU 1D AR}	mg/kg	2	MCERTS	5.4	7.8	4.6
TPH-CWG - Aromatic >EC16 - EC21 _{EH CU 1D AR}	mg/kg	10	MCERTS	26	43	30
TPH-CWG - Aromatic >EC21 - EC35 _{EH CU 1D AR}	mg/kg	10	MCERTS	49	77	62
TPH-CWG - Aromatic (EC5 - EC35) _{EH CU+HS 1D AR}	mg/kg	10	NONE	81	130	96

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



Analytical Report Number : 23-50455
Project / Site name: Tetrosyl, Bury

* 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 *
2778430	TS-S1	RR Bury	None Supplied	Brown loam and clay with gravel and vegetation.
2778431	TS-S2	RR Bury	None Supplied	Brown loam and clay with gravel and vegetation.
2778432	TS-S3	RR Bury	None Supplied	Brown loam and clay with gravel and vegetation.

Analytical Report Number : 23-50455
Project / Site name: Tetrosyl, Bury

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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.	L038-PL	D	MCERTS
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	A001-PL	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Organic matter in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L023-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
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.	L019-UK/PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS

Analytical Report Number : 23-50455
Project / Site name: Tetrosyl, Bury

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	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).

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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Our Ref: R2688-L01

27th June 2023

Barratt Homes Manchester
4 Brindley Road
City Park
Manchester
M16 9HQ

Dear Brad

Rossendale Road, Burnley: Stockpile Validation & Assessment

Barratt Homes Manchester (BHM) are carrying out preparatory earthworks at the Brun Lea, Rossendale Road site, Burnley to prepare for residential development. Preparatory works have included the recovery of circa 1,275m³ of topsoil which has been divided into several stockpiles on site. These are as follows:

- T1 (200m³)
- T2 (350m³)
- T3 (125m³)
- T6 (600m³)

BHM propose to export the above topsoil stockpiles to their Waldmers Wood development in Bury under an MMP for direct transfer to allow reuse as garden soils. To assess the suitability of the soils for this intended use prior to export, BHM have instructed Smith Grant LLP (SGP) to carry out validation testing.

SGP Consultant C McHugh attended site on 15.06.23 and collected 3 samples from each stockpile and submitted samples for chemical analysis in accordance with the Remediation Strategy for the receiving site. The testing undertaken achieves a minimum sampling frequency of 1 per 200m³ per stockpile or 1 per 106m³ for the full volume of soil.

Samples were couriered to Eurofins Chemtest Laboratories, Newmarket within 24 hours of collections. Samples were placed in appropriate containers as provided by the laboratory and stored in a chilled cool box. Chemical analysis was scheduled for a generic suite of urban contaminants (asbestos, metals, hydrocarbons and PAHs), the results of which have been compared against generic soil assessment criteria for use in residential gardens with plant uptake (LQM/CIEH Suitable 4 Use Levels (S4ULs) and Category 4 Screening Levels (C4SL) for lead and benzo(a)pyrene). Due to the high SOM content of the samples (average of 6.9%) soil screening criteria based on 6% have been adopted.

Stockpile Assessment

The results of each stockpile are presented in the sub-sections below and are compared to the adopted screening criteria. Where exceedances are present, additional risk assessment is provided. A copy of the laboratory test certificate (ref. 23-20766-0) is provided in Appendix A.



Stockpile TS1

Three samples (TS1-S1, TS1-S2 and TS1-S3) were collected from the stockpile. The results are summarised in the table below:

Table 1. Summary of Stockpile T1 (200m³ – Samples T1-S1, T1-S2, T1-S3) Results

Determinant	Range of Concentrations (mg/kg, unless specified)	Screening Criteria (mg/g, unless specified)	Exceedances
Asbestos (%)	NAD	NAD	None
Arsenic	10-15	LQM/CIEH S4UL 37	None
Cadmium	0.17-0.26	LQM/CIEH S4UL 11	None
Chromium	17-27	LQM/CIEH S4UL 910	None
Copper	31-47	LQM/CIEH S4UL 2400	None
Lead	64-110	LQM/CIEH S4UL 450	None
Mercury	0.17-0.31	LQM/CIEH S4UL 40	None
Nickel	13-21	LQM/CIEH S4UL 130	None
Zinc	58-86	LQM/CIEH S4UL 3700	None
Naphthalene	<0.10-2.2	LQM/CIEH S4UL 13	None
Acenaphthylene	<0.10-2.2	LQM/CIEH S4UL 920	None
Acenaphthene	<0.10-0.95	LQM/CIEH S4UL 1100	None
Fluorene	<0.10-2.5	LQM/CIEH S4UL 440	None
Phenanthrene	5.7-9.8	LQM/CIEH S4UL 440	None
Fluoranthene	6.8-8.9	LQM/CIEH S4UL 890	None
Anthracene	3.9-1.5	LQM/CIEH S4UL 11,000	None
Pyrene	7.2-9.1	LQM/CIEH S4UL 2000	None
Benzo(a)anthracene	<0.10-12	LQM/CIEH S4UL 13	(1): T1-S1
Chrysene	<0.10-9.3	LQM/CIEH S4UL 27	None
Benzo(b)fluoranthene	<0.10-13	LQM/CIEH S4UL 3.7	(2): T1-S2 & T1-S3
Benzo(k)fluoranthene	<0.10-5.9	LQM/CIEH S4UL 100	None
Benzo(a)pyrene	<0.10-4.2	C4SL 5	None
Indeno(123cd) pyrene	<0.10	S4UL 41	None
Dibenzo(ah)anthracene	<0.10	LQM/CIEH S4UL 0.3	None
Benzo(ghi)perylene	<0.10	LQM/CIEH S4UL 350	None
aliphatic >C5-C7	<1.0	LQM/CIEH S4UL 42	None
aliphatic >C7-C8	<1.0	LQM/CIEH S4UL 100	None
aliphatic >C8-C10	<1.0	LQM/CIEH S4UL 27	None
aliphatic >C10-C12	<1.0	LQM/CIEH S4UL 130	None
aliphatic >C12-C16	<1.0	LQM/CIEH S4UL 1100	None
aliphatic >C16-C21	<1.0	LQM/CIEH S4UL 5000	None
aliphatic >C21-C35	<1.0	LQM/CIEH S4UL 5000	None
aromatic >C5-C7	<1.0	LQM/CIEH S4UL 70	None
aromatic >C7-C8	<1.0	LQM/CIEH S4UL 130	None
aromatic >C8-C10	<1.0	LQM/CIEH S4UL 34	None
aromatic >C10-C12	<1.0	LQM/CIEH S4UL 74	None
aromatic >C12-C16	<1.0-3.0	LQM/CIEH S4UL 140	None
aromatic >C16-C21	<1.0-34	LQM/CIEH S4UL 260	None



Determinant	Range of Concentrations (mg/kg, unless specified)	Screening Criteria (mg/g, unless specified)	Exceedances
aromatic >C21-C35	<1.0-180	LQM/CIEH S4UL 1100	None
Benzene	<1.0	LQM/CIEH S4UL 0.087	None
Toluene	<1.0	LQM/CIEH S4UL 130	None
Ethylbenzene	<1.0	LQM/CIEH S4UL 47	None
Xylenes	<1.0	LQM/CIEH S4UL 59	None

A single minor benzo(a)anthracene exceedance was recorded with a concentration of 12 mg/kg (sample: T1-S2), slightly above the assessment criteria of 13 mg/kg. Two Benzo(b)fluoranthene exceedances were recorded with a concentration of 13 mg/kg (sample: T1-S2) and 5.6 mg/kg (sample: T1-S3) both slightly above the assessment criteria of 3.7 mg/kg.

To assess the potential source of the PAHs a ratio-cross plot has been undertaken, a copy of the plot is presented in Appendix B. All three results indicate a possible coal-tar signature although it is noted that the results are close to the boundary in which a coal signature may be considered.

Stockpile TS2

Three samples (TS2-S1, TS2-S2 and TS2-S3) were collected from the stockpile. The results are summarised in the table below:

Table 2. Summary of Stockpile T2 (350m³ – Samples T2-S1, T2-S2, T2-S3) Results

Determinant	Range of Concentrations (mg/kg, unless specified)	Screening Criteria (mg/g, unless specified)	Exceedances
Asbestos (%)	NAD	NAD	None
Arsenic	1.8-20	LQM/CIEH S4UL 37	None
Cadmium	<0.10-1.2	LQM/CIEH S4UL 11	None
Chromium	5-54	LQM/CIEH S4UL 910	None
Copper	8.1-76	LQM/CIEH S4UL 2400	None
Lead	16-190	LQM/CIEH S4UL 450	None
Mercury	<0.05-0.37	LQM/CIEH S4UL 40	None
Nickel	2.8-28	LQM/CIEH S4UL 130	None
Zinc	17-210	LQM/CIEH S4UL 3700	None
Naphthalene	2.4-2.9	LQM/CIEH S4UL 13	None
Acenaphthylene	0.47-2.0	LQM/CIEH S4UL 920	None
Acenaphthene	0.92-3.8	LQM/CIEH S4UL 1100	None
Fluorene	0.68-3.4	LQM/CIEH S4UL 440	None
Phenanthrene	5.9-21	LQM/CIEH S4UL 440	None
Fluoranthene	8.2-26	LQM/CIEH S4UL 890	None
Anthracene	1.5-7.0	LQM/CIEH S4UL 11,000	None
Pyrene	8.2-26	LQM/CIEH S4UL 2000	None
Benzo(a)anthracene	3.8-14	LQM/CIEH S4UL 13	(1): T2-S1



Determinant	Range of Concentrations (mg/kg, unless specified)	Screening Criteria (mg/g, unless specified)	Exceedances
Chrysene	5.7-13	LQM/CIEH S4UL 27	None
Benzo(b)fluoranthene	4.5-13	LQM/CIEH S4UL 3.7	(3): T2-S1, T2-S2, T2-S3
Benzo(k)fluoranthene	2.3-4.8	LQM/CIEH S4UL 100	None
Benzo(a)pyrene	4.1-10	C4SL's 5	(2): T2-S1 & T2-S3
Indeno(123cd) pyrene	2.7-6.8	S4UL 41	None
Dibenzo(ah)anthracene	1.3-1.9	LQM/CIEH S4UL 0.3	(3): T2-S1, T2-S2, T2-S3
Benzo(ghi)perylene	2.3-6.1	LQM/CIEH S4UL 350	None
aliphatic >C5-C7	<1.0	LQM/CIEH S4UL 42	None
aliphatic >C7-C8	<1.0	LQM/CIEH S4UL 100	None
aliphatic >C8-C10	<1.0	LQM/CIEH S4UL 27	None
aliphatic >C10-C12	<1.0	LQM/CIEH S4UL 130	None
aliphatic >C12-C16	<1.0	LQM/CIEH S4UL 1100	None
aliphatic >C16-C21	<1.0	LQM/CIEH S4UL 5000	None
aliphatic >C21-C35	<1.0	LQM/CIEH S4UL 5000	None
aromatic >C5-C7	<1.0	LQM/CIEH S4UL 70	None
aromatic >C7-C8	<1.0	LQM/CIEH S4UL 130	None
aromatic >C8-C10	<1.0	LQM/CIEH S4UL 34	None
aromatic >C10-C12	<1.0	LQM/CIEH S4UL 74	None
aromatic >C12-C16	<1.0	LQM/CIEH S4UL 140	None
aromatic >C16-C21	25-130	LQM/CIEH S4UL 260	None
aromatic >C21-C35	84-250	LQM/CIEH S4UL 1100	None
Benzene	<1.0	LQM/CIEH S4UL 0.087	None
Toluene	<1.0	LQM/CIEH S4UL 130	None
Ethylbenzene	<1.0	LQM/CIEH S4UL 47	None
Xylenes	<1.0	LQM/CIEH S4UL 59	None

A single benzo(a)anthracene exceedance was recorded with a concentration of 14 mg/kg (sample: T2-S1), slightly above the assessment criteria of 13 mg/kg.

Three benzo(b)fluoranthene exceedances were recorded with a concentration of 13 mg/kg (sample: T2-S1), 4.5 mg/kg (sample T2-S2) and 9.9 mg/kg (sample T2-S3), all above the assessment criteria of 3.7 mg/kg.

Two benzo(a)pyrene exceedances were recorded with a concentration of 10 mg/kg (sample: T2-S1) and 7.8 mg/kg (sample: T2-S3), above the assessment criteria of 5 (C4SL).

Three dibenzo(ah)anthracene exceedances were recorded with a concentration of 1.9 mg/kg (sample T2-S1), 1.3 mg/kg, and 1.7 mg/kg (sample: T2-S3), all above the assessment criteria of 0.3 mg/kg.

To assess the potential source of the PAHs a ratio-cross plot has been undertaken, a copy of the plot is presented in Appendix B. All three results indicate a possible coal/coal-tar signature coal-tar signature.



Stockpile TS3

Three samples (TS3-S1, TS3-S2 and TS3-S3) were collected from the stockpile. The results are summarised in the table below:

Table 3. Summary of Stockpile T3 (125m³ – Samples T3-S1, T3-S2, T3-S3) Results

Determinant	Range of Concentrations (mg/kg, unless specified)	Screening Criteria (mg/g, unless specified)	Exceedances
Asbestos (%)	NAD	NAD	None
Arsenic	8.1-9.7	LQM/CIEH S4UL 37	None
Cadmium	0.29-0.38	LQM/CIEH S4UL 11	None
Chromium	23-30	LQM/CIEH S4UL 910	None
Copper	26-36	LQM/CIEH S4UL 2400	None
Lead	63-76	LQM/CIEH S4UL 450	None
Mercury	0.13-0.17	LQM/CIEH S4UL 40	None
Nickel	13-18	LQM/CIEH S4UL 130	None
Zinc	73-93	LQM/CIEH S4UL 3700	None
Naphthalene	1.7-2.7	LQM/CIEH S4UL 13	None
Acenaphthylene	0.27-1.2	LQM/CIEH S4UL 920	None
Acenaphthene	1.1-2.3	LQM/CIEH S4UL 1100	None
Fluorene	1.1-1.9	LQM/CIEH S4UL 440	None
Phenanthrene	7.4-14	LQM/CIEH S4UL 440	None
Fluoranthene	10-18	LQM/CIEH S4UL 890	None
Anthracene	1.9-3.3	LQM/CIEH S4UL 11,000	None
Pyrene	10-18	LQM/CIEH S4UL 2000	None
Benzo(a)anthracene	7.1-11	LQM/CIEH S4UL 13	None
Chrysene	9.4-6.1	LQM/CIEH S4UL 27	None
Benzo(b)fluoranthene	6.4-11	LQM/CIEH S4UL 3.7	(3): T3-S1, T3-S2, T3-S3
Benzo(k)fluoranthene	2.2-4.0	LQM/CIEH S4UL 100	None
Benzo(a)pyrene	4.5-7.8	C4SL 5	(1): T3-S2
Indeno(123cd) pyrene	<0.10-5.7	S4UL 41	None
Dibenzo(ah)anthracene	<0.10-1.3	LQM/CIEH S4UL 0.3	(2): T3-S2, T3-S3
Benzo(ghi)perylene	<0.10-8.3	LQM/CIEH S4UL 350	None
aliphatic >C5-C7	<1.0	LQM/CIEH S4UL 42	None
aliphatic >C7-C8	<1.0	LQM/CIEH S4UL 100	None
aliphatic >C8-C10	<1.0	LQM/CIEH S4UL 27	None
aliphatic >C10-C12	<1.0	LQM/CIEH S4UL 130	None
aliphatic >C12-C16	<1.0	LQM/CIEH S4UL 1100	None
aliphatic >C16-C21	<1.0	LQM/CIEH S4UL 5000	None
aliphatic >C21-C35	<1.0	LQM/CIEH S4UL 5000	None
aromatic >C5-C7	<1.0	LQM/CIEH S4UL 70	None
aromatic >C7-C8	<1.0	LQM/CIEH S4UL 130	None
aromatic >C8-C10	<1.0	LQM/CIEH S4UL 34	None
aromatic >C10-C12	<1.0	LQM/CIEH S4UL 74	None
aromatic >C12-C16	<1.0	LQM/CIEH S4UL 140	None



Determinant	Range of Concentrations (mg/kg, unless specified)	Screening Criteria (mg/g, unless specified)	Exceedances
aromatic >C16-C21	<1.0	LQM/CIEH S4UL 260	None
aromatic >C21-C35	<1.0	LQM/CIEH S4UL 1100	None
Benzene	<1.0	LQM/CIEH S4UL 0.087	None
Toluene	<1.0	LQM/CIEH S4UL 130	None
Ethylbenzene	<1.0	LQM/CIEH S4UL 47	None
Xylenes	<1.0	LQM/CIEH S4UL 59	None

A single benzo(a)pyrene exceedance was recorded with a concentration of 7.8 mg/kg (sample: T3-S2), slightly above the assessment criteria (C4SL's) of 5 mg/kg.

Three benzo(b)fluoranthene exceedances were recorded with a concentration of 6.6 mg/kg (sample: T3-S1), 11 mg/kg (sample T3-S2) and 6.4 mg/kg (sample T3-S3), all above the assessment criteria of 3.7 mg/kg.

Two dibenzo(ah)anthracene exceedances were recorded with a concentration of 1.3 mg/kg (sample: T3-S2) and 0.84 mg/kg (sample: T3-S3), above the assessment criteria 0.3 mg/kg.

To assess the potential source of the PAHs a ratio-cross plot has been undertaken, a copy of the plot is presented in Appendix B. All three results indicate a possible coal/coal-tar signature coal-tar signature.

Stockpile TS6

Three samples (TS6-S1, TS6-S2 and TS6-S3) were collected from the stockpile. The results are summarised in the table below:

Table 4. Summary of Stockpile T6 (600m³ – Samples T6-S1, T6-S2, T6-S3) Results

Determinant	Range of Concentrations (mg/kg, unless specified)	Screening Criteria (mg/g, unless specified)	Exceedances
Asbestos (%)	NAD	NAD	None
Arsenic	1.9-9.4	LQM/CIEH S4UL 37	None
Cadmium	<0.10-0.33	LQM/CIEH S4UL 11	None
Chromium	5.6-26	LQM/CIEH S4UL 910	None
Copper	6.1-29	LQM/CIEH S4UL 2400	None
Lead	14-100	LQM/CIEH S4UL 450	None
Mercury	<0.05-0.14	LQM/CIEH S4UL 40	None
Nickel	4.2-27	LQM/CIEH S4UL 130	None
Zinc	17-82	LQM/CIEH S4UL 3700	None
Naphthalene	2.8-6.6	LQM/CIEH S4UL 13	None
Acenaphthylene	0.35-0.84	LQM/CIEH S4UL 920	None
Acenaphthene	3.7-8.4	LQM/CIEH S4UL 1100	None
Fluorene	2.2-5.4	LQM/CIEH S4UL 440	None
Phenanthrene	17-34	LQM/CIEH S4UL 440	None
Fluoranthene	20-35	LQM/CIEH S4UL 890	None



Determinant	Range of Concentrations (mg/kg, unless specified)	Screening Criteria (mg/g, unless specified)	Exceedances
Anthracene	3.6-8.7	LQM/CIEH S4UL 11,000	None
Pyrene	20-34	LQM/CIEH S4UL 2000	None
Benzo(a)anthracene	10-16	LQM/CIEH S4UL 13	(1): T6-S2
Chrysene	12-20	LQM/CIEH S4UL 27	None
Benzo(b)fluoranthene	9.8-17	LQM/CIEH S4UL 3.7	(3): T6-S1, T6-S2, T6-S3
Benzo(k)fluoranthene	4.8-7.6	LQM/CIEH S4UL 100	None
Benzo(a)pyrene	8.2-15	C4SL 5	(3): T6-S1, T6-S2, T6-S3
Indeno(123cd) pyrene	7.9-12	S4UL 41	None
Dibenzo(ah)anthracene	2.0-3.2	LQM/CIEH S4UL 0.3	(3): T6-S1, T6-S2, T6-S3
Benzo(ghi)perylene	4.4-7.7	LQM/CIEH S4UL 350	None
aliphatic >C5-C7	<1.0	LQM/CIEH S4UL 42	None
aliphatic >C7-C8	<1.0	LQM/CIEH S4UL 100	None
aliphatic >C8-C10	<1.0	LQM/CIEH S4UL 27	None
aliphatic >C10-C12	<1.0	LQM/CIEH S4UL 130	None
aliphatic >C12-C16	<1.0	LQM/CIEH S4UL 1100	None
aliphatic >C16-C21	<1.0	LQM/CIEH S4UL 5000	None
aliphatic >C21-C35	<1.0-97	LQM/CIEH S4UL 5000	None
aromatic >C5-C7	<1.0	LQM/CIEH S4UL 70	None
aromatic >C7-C8	<1.0	LQM/CIEH S4UL 130	None
aromatic >C8-C10	<1.0	LQM/CIEH S4UL 34	None
aromatic >C10-C12	<1.0	LQM/CIEH S4UL 74	None
aromatic >C12-C16	<1.0	LQM/CIEH S4UL 140	None
aromatic >C16-C21	4.3-13	LQM/CIEH S4UL 260	None
aromatic >C21-C35	58-120	LQM/CIEH S4UL 1100	None
Benzene	<1.0	LQM/CIEH S4UL 0.087	None
Toluene	<1.0	LQM/CIEH S4UL 130	None
Ethylbenzene	<1.0	LQM/CIEH S4UL 47	None
Xylenes	<1.0	LQM/CIEH S4UL 59	None

A single benzo(a)anthracene exceedance was recorded with a concentration of 16 mg/kg (sample: T6-S2), slightly above the assessment criteria 13 mg/kg.

Three benzo(b)fluoranthene exceedances were recorded with a concentration of 9.8 mg/kg (sample: T6-S1), 17 mg/kg (sample T6-S2) and 11 mg/kg (sample T6-S3), all above the assessment criteria of 3.7 mg/kg.

Three dibenzo(ah)anthracene exceedances were recorded with a concentration of 2.0 mg/kg (sample: T6-S1) and 3.1mg/kg (sample: T6-S2), and 3.2 mg/kg (sample: T6-S3) above the assessment criteria 0.3 mg/kg.

A single benzo(a)pyrene exceedance was recorded with concentrations of 8.2 mg/kg (sample T6-S1), 15 kg/mg (sample T6-S2), and 9.6 kg/mg (sample: T6-S3) above the assessment criteria of 5 (C4SL).

To assess the potential source of the PAHs a ratio-cross plot has been undertaken, a copy of the plot is presented in Appendix B. Two results indicate a possible coal/coal-tar signature coal-tar signature whilst present a coal signature.



Conclusions

SGP has carried out sampling of four stockpiles of site-generated topsoil which have produced generally similar concentrations. Elevated PAHs have been reported within each stockpile and have been limited to benzo(a)pyrene, dibenzo(ah)anthracene, benzo(b)fluoranthene and dibenzo(ah)anthracene when compared to residential land use with plant uptake criteria based on 6% SOM.

SGP has previously produced a Phase 1 and 2 Geo-Environmental Ground Investigation (ref. R2688-R01-v4) which confirmed through a detailed historical review that the site has remained undeveloped throughout its history. The report included a Coal Authority and Coal Mining Risk Assessment Report which confirmed there was the potential for shallow mineworkings to be present. A mining investigation was completed and identified the presence of three shafts (Shaft A, B and C) as well as the presence of grey shale with coal within 8 of the 14 mining entries extending from the surface.

As part of the SGP works trial-pitting was carried out across the site. No made ground deposits were encountered within the shallow geology typically consisting of gravelly sandy clayey topsoil overlying a gravelly clay with partings of sand and fine to medium coal. Samples of the shallow soil were also collected during this initial investigation and also reported exceedances of the same PAHs.

PAH ratio analysis has been undertaken to assess the probable source of the elevated PAHs; most ratios suggested a coal to coal tar signature with the exception of Stockpile TS1 where a coal tar signature was produced although it is acknowledged this was a marginal indicator which was close to the boundary of a coal signature.

Based on the review of information within R2688-R01-v1 there is no identifiable sources of coal tar present on the site. No made ground was present and no industrial works (other than coal mining) have taken place on the site. The presence of coal tars is therefore unlikely to have been present. It is considered that it is most likely attributed to inclusions of coal as is more clearly shown within the other corresponding ratio plots. This is more consistent with the history of the site and the recorded ground conditions where fine inclusions of coal have been recorded.

The overall risk to human health from PAHs within fragments of coal is with the bioavailability of the PAHs limited due to the sequestration of PAHs within a carbon or vitrified matrix. It is therefore considered that the topsoil within stockpiles TS1, TS2, TS3 and TS6 would be suitable for reuse as garden soils, however this will require approval by the Local Authority Contaminated Land Officer where the soil is proposed to be exported to.

Recommendations

No further testing is recommended; however, this assessment should be provided to the Local Authority Contaminated Land Officer at the proposed receiving site (Bury Council) to confirm whether they accept the assessment and conclusions made within this report. If approved, the Material Management Plan (MMP) for the receiving site should be updated to include Rossendale Road, Burnley as a donor site.

Yours sincerely
for: Smith Grant LLP

Caitlin McHugh BSc GradIEMA
Graduate Consultant



Attached

Laboratory Certificate: 23-20765
PAH ratio cross plot analysis



APPENDIX A

Laboratory Certificate



2183

Final Report

Report No.: 23-20765-1**Initial Date of Issue:** 23-Jun-2023**Re-Issue Details:****Client** Smith Grant LLP**Client Address:** Bryn Estyn Business Centre
Bryn Estyn Road
Wrexham
LL13 9TY**Contact(s):** Caitlin McHugh
Megan Jones**Project** R2688 Brun Lea, Rossendale, Burnley**Quotation No.:** **Date Received:** 19-Jun-2023**Order No.:** **Date Instructed:** 19-Jun-2023**No. of Samples:** 12**Turnaround (Wkdays):** 5 **Results Due:** 23-Jun-2023**Date Approved:** 23-Jun-2023**Approved By:****Details:** Stuart Henderson, Technical
Manager

Results - Soil

Project: R2688 Brun Lea, Rossendale, Burnley

Client: Smith Grant LLP	Chemtest Job No.:				23-20765	23-20765	23-20765	23-20765	23-20765	23-20765	23-20765	23-20765	23-20765
Quotation No.:	Chemtest Sample ID.:				1660264	1660265	1660266	1660267	1660268	1660269	1660270	1660271	1660272
Order No.:	Client Sample Ref.:				T1	T1	T1	T2	T2	T2	T3	T3	T3
	Client Sample ID.:				S1	S2	S3	S1	S2	S3	S1	S2	S3
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023
	Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	2.8	7.2	4.5	2.4	3.0	1.3	5.6	6.0	11
pH	U	2010		4.0	7.4	7.3	7.4	7.2	7.6	6.5	6.3	6.1	6.1
Arsenic	U	2455	mg/kg	0.5	10	16	15	20	12	1.8	9.7	9.3	8.1
Cadmium	U	2455	mg/kg	0.10	0.17	0.26	0.23	1.2	0.45	< 0.10	0.38	0.38	0.29
Chromium	U	2455	mg/kg	0.5	17	26	27	54	36	5.0	30	28	23
Copper	U	2455	mg/kg	0.50	31	47	43	76	39	8.1	36	34	26
Mercury	U	2455	mg/kg	0.05	0.17	0.31	0.25	0.37	0.19	< 0.05	0.17	0.13	0.13
Nickel	U	2455	mg/kg	0.50	13	21	21	28	22	2.8	18	18	13
Lead	U	2455	mg/kg	0.50	64	110	92	190	84	16	76	72	63
Selenium	U	2455	mg/kg	0.25	0.66	0.99	0.93	2.0	1.2	< 0.25	0.86	0.83	0.62
Zinc	U	2455	mg/kg	0.50	58	86	79	210	110	17	93	91	73
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	5.8	16	9.6	8.7	6.7	1.8	4.7	9.9	6.8
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	N	2680	mg/kg	1.0	< 1.0	5.3	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	N	2680	mg/kg	1.0	< 1.0	3.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	N	2680	mg/kg	1.0	5.7	34	< 1.0	30	130	25	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0	4.7	180	< 1.0	94	250	84	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	10	220	< 5.0	120	380	110	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	10	220	< 10	120	380	110	< 10	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	2.2	1.1	2.4	2.9	2.7	2.7	1.7	1.7
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	2.2	1.1	2.0	0.71	0.47	0.27	1.2	0.76
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	2.6	0.95	3.8	0.92	2.5	1.7	2.3	1.1
Fluorene	U	2700	mg/kg	0.10	< 0.10	2.5	0.80	3.4	0.68	1.9	1.3	1.9	1.1

Results - Soil

Project: R2688 Brun Lea, Rossendale, Burnley

Client: Smith Grant LLP	Chemtest Job No.:				23-20765	23-20765	23-20765	23-20765	23-20765	23-20765	23-20765	23-20765	23-20765
Quotation No.:	Chemtest Sample ID.:				1660264	1660265	1660266	1660267	1660268	1660269	1660270	1660271	1660272
Order No.:	Client Sample Ref.:				T1	T1	T1	T2	T2	T2	T3	T3	T3
	Client Sample ID.:				S1	S2	S3	S1	S2	S3	S1	S2	S3
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023
	Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD									
Phenanthrene	U	2700	mg/kg	0.10	9.8	9.7	5.7	21	5.9	15	10	14	7.4
Anthracene	U	2700	mg/kg	0.10	3.9	2.8	1.5	7.0	1.5	3.8	2.3	3.3	1.9
Fluoranthene	U	2700	mg/kg	0.10	6.8	8.9	6.8	26	8.2	19	12	18	10
Pyrene	U	2700	mg/kg	0.10	7.2	9.1	7.3	26	8.2	19	12	18	10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	12	6.5	14	3.8	8.9	7.1	11	7.4
Chrysene	U	2700	mg/kg	0.10	< 0.10	9.3	4.4	13	5.7	13	9.4	9.3	6.1
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	13	5.6	13	4.5	9.9	6.6	11	6.4
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	5.9	1.8	4.8	2.3	4.6	3.9	4.0	2.2
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	4.2	3.8	10	4.1	7.8	4.9	7.8	4.5
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	6.8	2.7	5.6	< 0.10	5.7	4.0
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	1.9	1.3	1.7	< 0.10	1.3	0.84
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	6.1	2.3	4.4	< 0.10	5.1	8.3
Total Of 16 PAH's	U	2700	mg/kg	2.0	28	84	47	160	56	120	74	120	74
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: R2688 Brun Lea, Rossendale, Burnley

Client: Smith Grant LLP	Chemtest Job No.:				23-20765	23-20765	23-20765
Quotation No.:	Chemtest Sample ID.:				1660273	1660274	1660275
Order No.:	Client Sample Ref.:				T6	T6	T6
	Client Sample ID.:				S1	S2	S3
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				15-Jun-2023	15-Jun-2023	15-Jun-2023
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	8.5	1.8	12
pH	U	2010		4.0	6.3	6.5	7.6
Arsenic	U	2455	mg/kg	0.5	9.4	1.9	8.3
Cadmium	U	2455	mg/kg	0.10	0.33	< 0.10	0.20
Chromium	U	2455	mg/kg	0.5	26	5.6	15
Copper	U	2455	mg/kg	0.50	29	6.1	37
Mercury	U	2455	mg/kg	0.05	0.14	< 0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	13	4.2	27
Lead	U	2455	mg/kg	0.50	79	14	100
Selenium	U	2455	mg/kg	0.25	0.84	< 0.25	0.70
Zinc	U	2455	mg/kg	0.50	82	17	72
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	2.3	4.0	6.5
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	N	2680	mg/kg	1.0	< 1.0	97	18
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	97	18
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	N	2680	mg/kg	1.0	13	4.3	11
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0	58	89	120
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	71	94	130
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	71	190	140
Naphthalene	U	2700	mg/kg	0.10	2.8	4.3	6.6
Acenaphthylene	U	2700	mg/kg	0.10	0.35	0.59	0.84
Acenaphthene	U	2700	mg/kg	0.10	3.7	8.4	3.7
Fluorene	U	2700	mg/kg	0.10	2.2	5.4	3.0

Results - Soil

Project: R2688 Brun Lea, Rossendale, Burnley

Client: Smith Grant LLP	Chemtest Job No.:				23-20765	23-20765	23-20765
Quotation No.:	Chemtest Sample ID.:				1660273	1660274	1660275
Order No.:	Client Sample Ref.:				T6	T6	T6
	Client Sample ID.:				S1	S2	S3
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				15-Jun-2023	15-Jun-2023	15-Jun-2023
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
Phenanthrene	U	2700	mg/kg	0.10	17	34	19
Anthracene	U	2700	mg/kg	0.10	3.6	8.7	5.5
Fluoranthene	U	2700	mg/kg	0.10	20	35	22
Pyrene	U	2700	mg/kg	0.10	20	34	22
Benzo[a]anthracene	U	2700	mg/kg	0.10	9.1	16	10
Chrysene	U	2700	mg/kg	0.10	12	20	14
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	9.8	17	11
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	4.8	7.6	5.8
Benzo[a]pyrene	U	2700	mg/kg	0.10	8.2	15	9.6
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	7.9	12	9.8
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	2.0	3.1	3.2
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	4.4	7.7	5.3
Total Of 16 PAH's	U	2700	mg/kg	2.0	130	230	150
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
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.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	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-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
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.

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

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

All Asbestos testing is performed at the indicated laboratory

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

Sample Deviation Codes

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

Sample Retention and Disposal

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

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

Charges may apply to extended sample storage

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

customerservices@chemtest.com



APPENDIX B

PAH Ratio Cross Plot Analysis

Job name	Rossendale Road
Job no.	r2688
Date:	28.06.23
Author:	CM
Laboratory:	Chemest
Lab. Reference:	23-20765



PAH concentrations

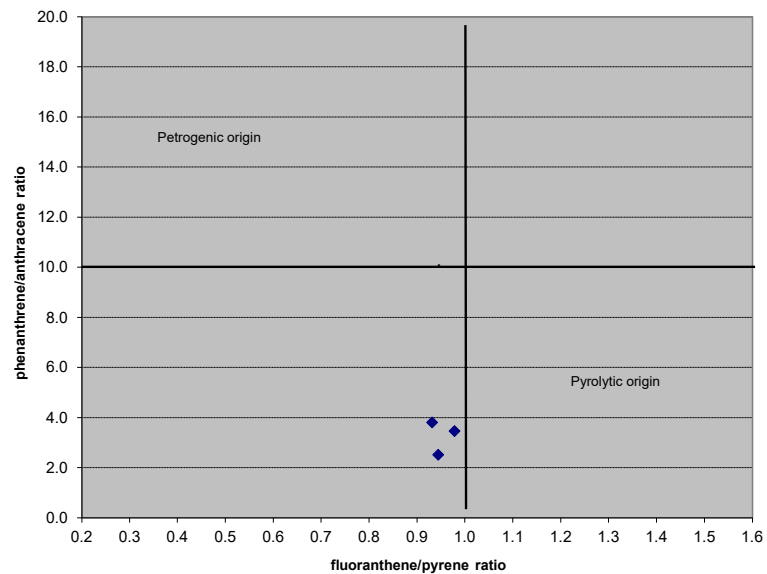
sample identity	T1-S1	T1-S2	T1-S3																	
phenanthrene	9.8	9.7	5.7																	
anthracene	3.9	2.8	1.5																	
fluoranthene	6.8	8.9	6.8																	
pyrene	7.2	9.1	7.3																	
benz(a)anthracene	0.1	12	6.5																	
chrysene	0.1	9.3	4.4																	

PAH units	mg/kg
-----------	-------

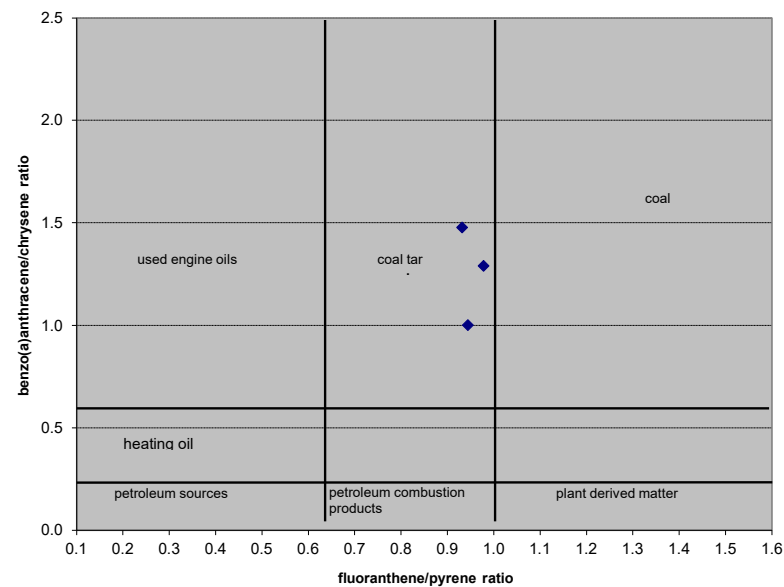
PAH ratios

phe/ant	2.513	3.464	3.800																	
flu/pyr	0.944	0.978	0.932																	
baa/chr	1.000	1.290	1.477																	

PAH source diagnosis



PAH source diagnosis



Job name	Rossendale Road
Job no.	R2688
Date:	28.06.23
Author:	CM
Laboratory:	Chemtest
Lab. Reference:	23-20765



PAH concentrations

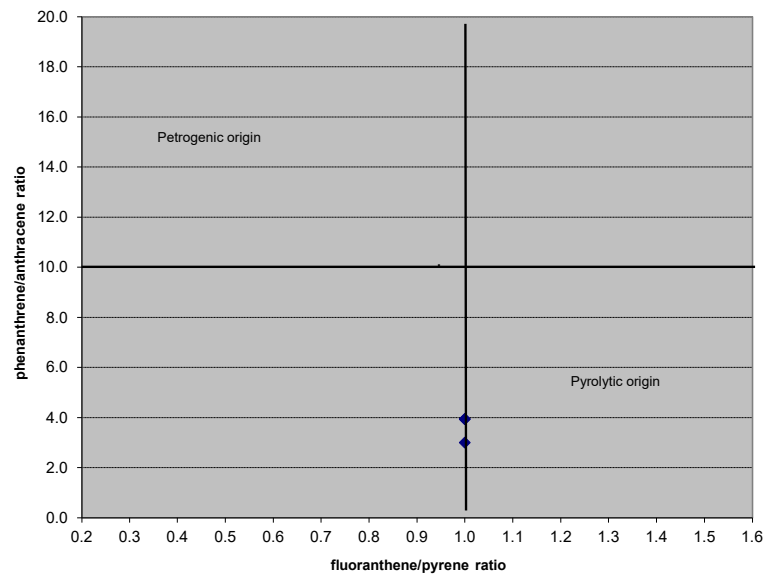
sample identity	T2-S1	T2-S2	T2-S3																
phenanthrene	21	5.9	15																
anthracene	7	1.5	3.8																
fluoranthene	26	8.2	19																
pyrene	26	8.2	19																
benz(a)anthracene	14	3.8	8.9																
chrysene	13	5.7	13																

PAH units	mg/kg
-----------	-------

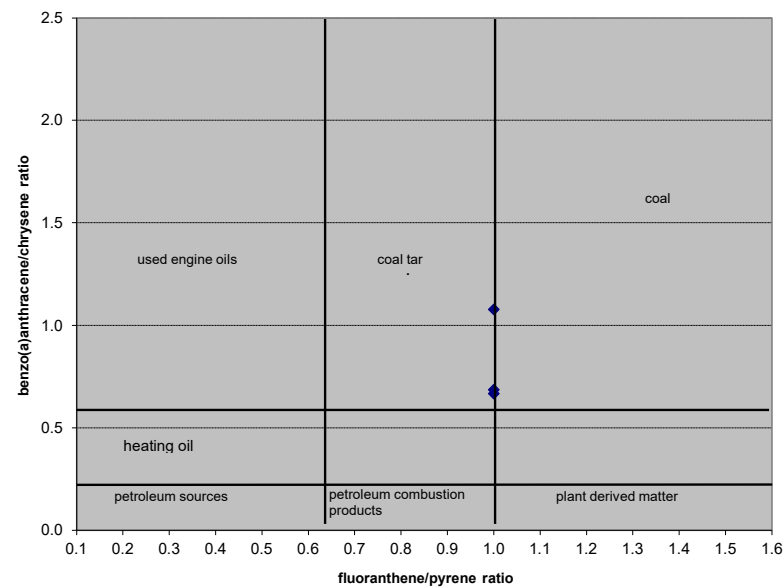
PAH ratios

phe/ant	3.000	3.933	3.947																
flu/pyr	1.000	1.000	1.000																
baa/chr	1.077	0.667	0.685																

PAH source diagnosis



PAH source diagnosis



Job name	Rossendale Road
Job no.	R2688
Date:	28.06.23
Author:	CM
Laboratory:	Chemtest
Lab. Reference:	23-70265



PAH concentrations

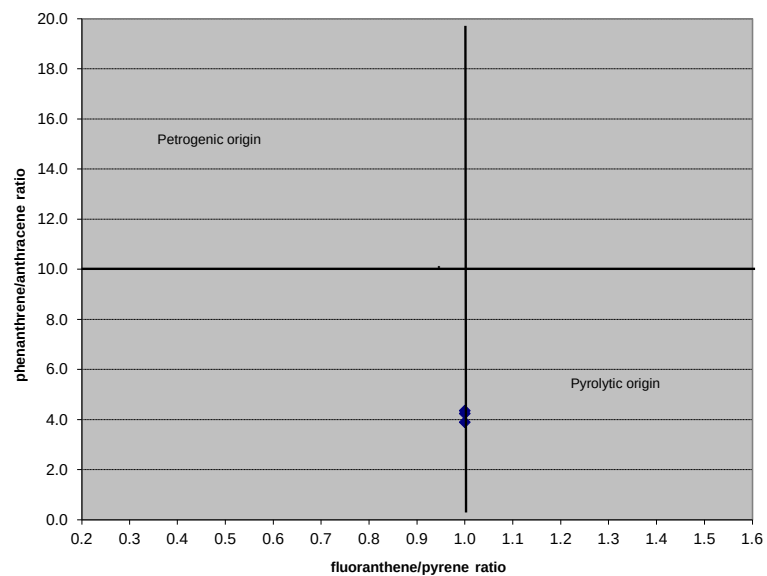
sample identity	T3-S1	T3-S2	T3-S3																
phenanthrene	10	14	7.4																
anthracene	2.3	3.3	1.9																
fluoranthene	12	18	10																
pyrene	12	18	10																
benz(a)anthracene	7.1	11	7.4																
chrysene	9.4	9.3	6.1																

PAH units	mg/kg
-----------	-------

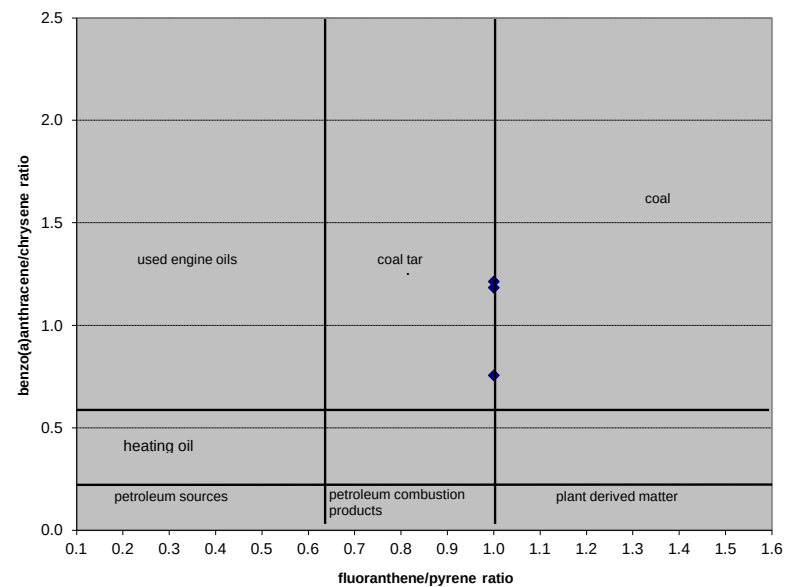
PAH ratios

phe/ant	4.348	4.242	3.895																
flu/pyr	1.000	1.000	1.000																
baa/chr	0.755	1.183	1.213																

PAH source diagnosis



PAH source diagnosis



Job name	Rossendale Road
Job no.	R2688
Date:	28.06.23
Author:	CM
Laboratory:	Chemtest
Lab. Reference:	23-20765



PAH concentrations

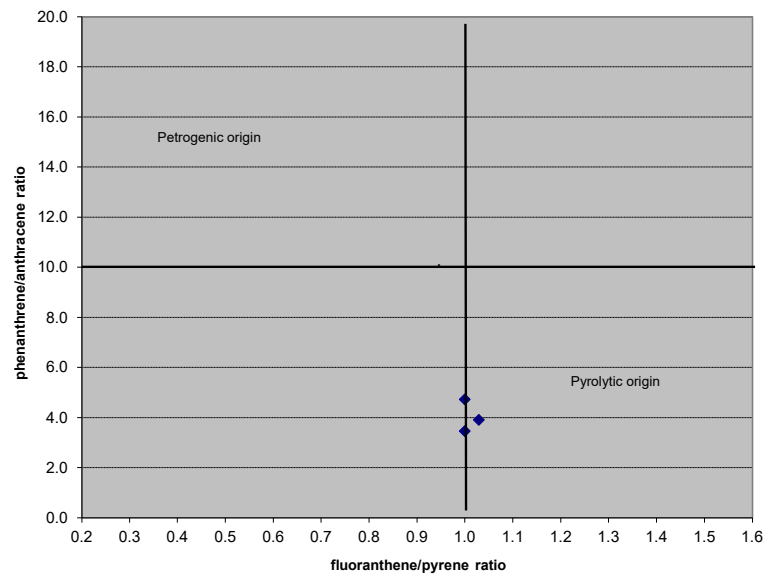
sample identity	T6-S1	T6-S2	T6-S3																
phenanthrene	17	34	19																
anthracene	3.6	8.7	5.5																
fluoranthene	20	35	22																
pyrene	20	34	22																
benz(a)anthracene	9.1	16	10																
chrysene	12	20	14																

PAH units	mg/kg
-----------	-------

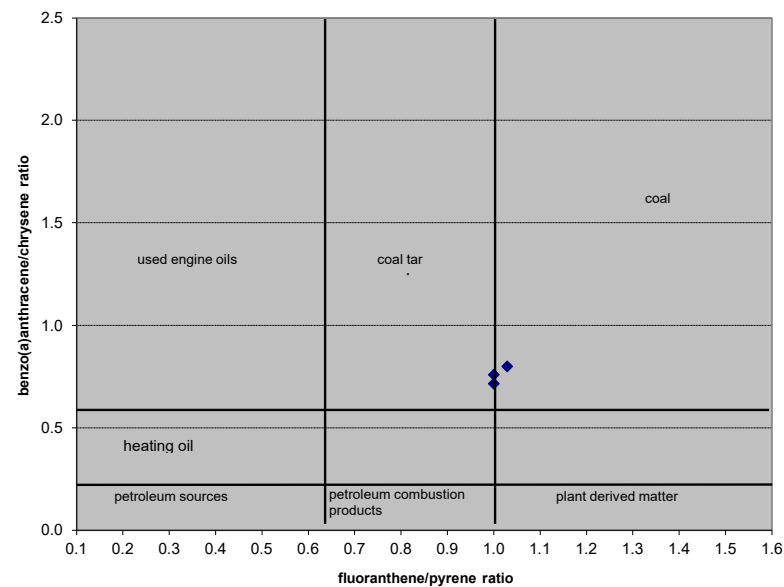
PAH ratios

phe/ant	4.722	3.908	3.455																
flu/pyr	1.000	1.029	1.000																
baa/chr	0.758	0.800	0.714																

PAH source diagnosis



PAH source diagnosis



Topsoil Validation Record

Job number	R2174	Depth ref:	R2174-R12-v2 Final		Quality ref:		R2174-R12-v2 Final			Other documents attached		✓		
Date	13.03.24	Area use:	Garden			landscaped			stockpile			other		
Site name / location	Waldmers Wood, Bury	Size area (m):	5x6 (Av.)	Approx. Area (m²):	60m²	Approx. Depth Top (m):	0.6m	Approx. Volume Top (m³):	36m³	Approx. Depth Sub (m):	n/a	Approx. Volume Sub (m³):	n/a	
Plot/ location:	Plots 157 + 166	Number depth entries required		3 (1 per plot); 2 entries provided.			Number samples required:			3 TS (1 per 250m³ TS, minimum 3 samples per source); 22 TS samples provided.				
Compiled by:	CM													

Quality Validation		Inspection date/time:	15.06.23 & 09.08.23 & 12.03.24	Inspected by:	CM	Photographed:	✓
---------------------------	--	-----------------------	--------------------------------	---------------	----	---------------	---

Source Topsoil	1.	✓	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site): stockpile 'A'.
Description Topsoil	2.	✓	Dark brown clayey loam, with frequent rootlets. Rare inclusions of gravel; fine to coarse of mixed lithology.
Sample Topsoil	3.	✓	20 samples collected from stockpile by SGP on 08.11.23 (Lab ref: 23-68007; samples: TS-S1 – TS-S20) (Attached ref: R2688A – Topsoil Validation Certificate Final). A further 2 samples were collected in stockpile prior to placement at the destination site following import. A summary of the results following on-site testing are presented in the table below (Lab ref: 24-008772).
Source Subsoil	4.	x	Not used
Description Subsoil	5.	x	n/a
Sample Subsoil	6.	x	n/a

Topsoil Validation Record



Topsoil Results Summary – Rossendale Road (24-008772)

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NAD	NAD	Yes
Arsenic	37	8.1-18	Yes
Cadmium	11	<1-0.7	Yes
Chromium (total)	910	24-53	Yes
Chromium VI	6	<1	Yes
Copper	2,400	22-63	Yes
Lead	200	42-110	Yes
Mercury	40	<1-0.5	Yes
Nickel	180	15-24	Yes
Zinc	3,700	53-140	Yes
Naphthalene	2.3	<1-0.75	Yes
Acenaphthene	210	<1	Yes
Acenaphthylene	170	<1-1.2	Yes
Fluorene	170	<1-0.78	Yes
Phenanthrene	95	0.38-6.5	Yes
Anthracene	2,400	0.1-1.6	Yes
Fluoranthene	280	0.69-7.7	Yes
Pyrene	620	0.64-6.7	Yes
Benzo(a)anthracene	7.2	0.34-3	Yes
Chrysene	15	0.38-3.1	Yes
Benzo(b)fluoranthene	2.6	0.42-3.3	Yes
Benzo(k)fluoranthene	77	0.14-1.3	Yes
Benzo(a)pyrene	2.2	0.33-2.6	Yes
Indeno(123cd) pyrene	27	<1-1.3	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Dibenzo(ah) anthracene	0.24	<1-0.37	Yes*
Benzo(ghi) perylene	320	<1-1.6	Yes
Aliphatic C5-C6	42	<1	Yes
Aliphatic C6-C8	100	<1	Yes
Aliphatic C8-C10	27	<1	Yes
Aliphatic C10-C12	130	<1	Yes
Aliphatic C12-C16	1,100	<1	Yes
Aliphatic C16-C21	65,000	<1	Yes
Aliphatic C21-C35	65,000	<1-8.2	Yes
Aromatic C6-C7	70	<1	Yes
Aromatic C7-C8	130	,1	Yes
Aromatic C8-C10	34	<1	Yes
Aromatic C10-C12	74	<1	Yes
Aromatic C12-C16	140	<1-4	Yes
Aromatic C16-C21	260	<1-17	Yes
Aromatic C21-C35	1,100	<1-22	Yes
Benzene	0.08	<1	Yes
Toluene	130	<1	Yes
Ethyl-benzene	47	<1	Yes
m/p-xylene	56	<1	Yes
o-xylene	60	<1	Yes

Soil Standards are primarily adopted from the published LQM/CIEH Suitable 4 Use Levels (S4ULs); the C4SL criteria for lead has also been adopted.

The appropriate land use is residential (1% SOM initially assumed for conservative assessment unless stated otherwise).

*One exceedance of Dibenzo(ah)anthracene further assessment was undertaken using a PAH Cross Plot ratio (see attached). *See summary.

Topsoil Validation Record



Further Assessment

One minor exceedance of the adopted garden soil cover screening criteria has been reported. Further discussion and risk assessment is provided below.

Dibenzo(ah)anthracene

A single exceedance for dibenzo(ah)anthracene were reported within the topsoil sample collected from TS-SP-S1 (0.37 mg/kg) when compared to the S4UL criterion (6% SOM value) of 0.3 mg/kg. The GAC value of 6% SOM content was considered applicable for use because the average organic matter of the samples collected was 5.95%.

The results are consistent with those reported within the supporting stockpile certificate with test results at the donor site prior to export where minor elevated PAHs were reported. Further assessment was undertaken (see R2688A-Topsoil Stockpile A Validation Certificate – Rossendale Road) which concluded that the PAHs were attributed to minor inclusions with coal and that the risk to human health was low.

Further to this, topsoil from this donor site (Rossendale Road) has been imported to site previously (albeit a different stockpile of site-won topsoil). This again had similar PAH exceedances which were again attributed to inclusions of coal. Given the donor site is an undeveloped field underlain by coal workings this is not surprising. It is also acknowledged that it was approved by the regulators that the use of soil from this soil would be acceptable on this site on the basis of the risk assessment undertaken.

To establish the source of the PAHs and confirm they are typical to those of soils previously imported from Rossendale Road, a PAH Ratio Plot has been undertaken (a copy of the plot is appended to this certificate). The assessment concludes that the PAHs are attributed to a coal signature within the topsoil.

Conclusion

It is concluded that the minor exceedances of dibenzo(ah)anthracene within the sample TS-SP-S1 does not present an unacceptable risk to human health with the PAHs associated with fine inclusions of coal as determined through the PAH ratio plot. PAHs bound within this form present a low bioavailability and a low risk to human health.

Topsoil Validation Record

Depth Validation	Inspection date/time:	12.03.24	Inspected by:	CM	Photographed:	✓
Plot 157	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site): stockpile 'A'.					
Source Subsoil	n/a					
Soil profile/description	0.0-0.6m	Dark brown clayey loam, with frequent rootlets. Rare inclusions of gravel; fine to coarse of mixed lithology.				
	0.6m	Base (same material)				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



Depth Validation	Inspection date/time:	12.03.24	Inspected by:	CM	Photographed:	✓
Plot 166	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site): stockpile 'A'.					
Source Subsoil	n/a					
Soil profile/description	0.0-0.65m	Dark brown clayey loam, with frequent rootlets. Rare inclusions of gravel; fine to coarse of mixed lithology.				
	0.65m	Base (same material) – Terram placement shown on photograph during previous SGP validation visit.				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record

SGP photograph showing placement of terram (due to difficult digging conditions unable to confirm) See picture below confirming placement of terram at Plot 166.



Topsoil Validation Record

**Summary**

Initial testing at the source site, Rossendale Road Burnley, recorded exceedances of the adopted residential soils screening criteria detected for a number of PAHs: Naphthalene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(a)pyrene, and Dibenzo(ah) anthracene. However, as summarised in the R2688A – Topsoil Validation Certificate Final (dated 17th November 2023 – attached), these exceedances have been attributed to the inclusion of coal within the soils considering the undeveloped nature of the source site, the absence of any other identifiable sources, as well as the consistency of the results with previous reporting and assessment of site-won topsoil stockpiles. The overall risk to human health from PAHs within fragments of coal is associated with the bioavailability of the PAHs which is considered to be limited due to the sequestration of PAHs within a carbon or vitrified matrix.

It is also acknowledged that topsoil imported from this donor site has been imported and used as garden soils on this site previously. Similar exceedances of PAHs reported, and an identical risk assessment was undertaken which was approved by the regulator confirming the soil was suitable for use, this soil is considered no different.

It is therefore concluded that the topsoil is suitable for reuse as garden soils.

An additional inspection visit IS NOT required.

SGP Staff:	C McHugh BSc GradIEMA	Signed:		25.03.24
SGP Member:	D Wayland BSc MSC AssocMCIWM MCIWEM C.WEM	Signed:		21.03.24

Guide notes:

1.	Source Topsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
2.	Description Topsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
3.	Sample Topsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number
4.	Source Subsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
5.	Description Subsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?

Topsoil Validation Record



6.	Sample Subsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number
----	----------------	---

Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL146DL

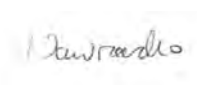
i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
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Watford,
Herts,
WD18 8YS

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

e: Caitlin.McHugh@smithgrant.co.uk

Analytical Report Number : 24-008772

Project / Site name:	Waldners Wood, Bury	Samples received on:	14/03/2024
Your job number:	R2174	Samples instructed on / Analysis started on:	14/03/2024
Your order number:		Analysis completed by:	19/03/2024
Report Issue Number:	1	Report issued on:	20/03/2024
Samples Analysed:	2 soil samples		


Signed:

Joanna Wawrzeczko
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

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

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.

Analytical Report Number: 24-008772
Project / Site name: Waldners Wood, Bury

Lab Sample Number	144107	144108
Sample Reference	TS-SP-S1	TS-SP-S2
Sample Number	RR	RR
Depth (m)	None Supplied	None Supplied
Date Sampled	12/03/2024	12/03/2024
Time Taken	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection
		Accreditation Status

Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	32	20
Total mass of sample received	kg	0.1	NONE	1.1	1.1

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SCA	SCA

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.3	7
Organic Matter (automated)	%	0.1	MCERTS	7.8	4

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.75	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	1.2	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.78	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	6.5	0.38
Anthracene	mg/kg	0.05	MCERTS	1.6	0.1
Fluoranthene	mg/kg	0.05	MCERTS	7.7	0.69
Pyrene	mg/kg	0.05	MCERTS	6.7	0.64
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3	0.34
Chrysene	mg/kg	0.05	MCERTS	3.1	0.38
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	3.3	0.42
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	1.3	0.14
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.6	0.33
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.3	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.37	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.6	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	41.8	3.42
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	18	8.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7	< 0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	53	24
Copper (aqua regia extractable)	mg/kg	1	MCERTS	63	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	43
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.5	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24	15
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	140	53

Analytical Report Number: 24-008772
Project / Site name: Waldners Wood, Bury

Lab Sample Number	144107	144108
Sample Reference	TS-SP-S1	TS-SP-S2
Sample Number	RR	RR
Depth (m)	None Supplied	None Supplied
Date Sampled	12/03/2024	12/03/2024
Time Taken	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection Accreditation Status

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	< 1.0
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	< 2.0
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	8.2	< 8.0
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	< 10

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	4	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	17	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	22	< 10
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	43	< 10

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0

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

Analytical Report Number : 24-008772

Project / Site name: Waldners Wood, Bury

* 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 *
144107	TS-SP-S1	RR	None Supplied	Brown loam and clay with gravel and vegetation
144108	TS-SP-S2	RR	None Supplied	Brown loam and clay with gravel and vegetation

Analytical Report Number : 24-008772
Project / Site name: Waldners Wood, Bury

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
Speciated EPA-16 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	D/W	MCERTS
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

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 30°C.

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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted

Analytical Report Number : 24-008772
Project / Site name: Waldners Wood, Bury

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
#2	EH_2D_Total but with fatty acids mathematically subtracted				
-	Operator - understore to separate acronyms (exception for +)				
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total				

Job name	Waldmers Wood, Tetrosyl
Job no.	R2174
Date:	21.03.24
Author:	CM
Laboratory:	i2 Analytical
Lab. Reference:	24-008772



PAH concentrations

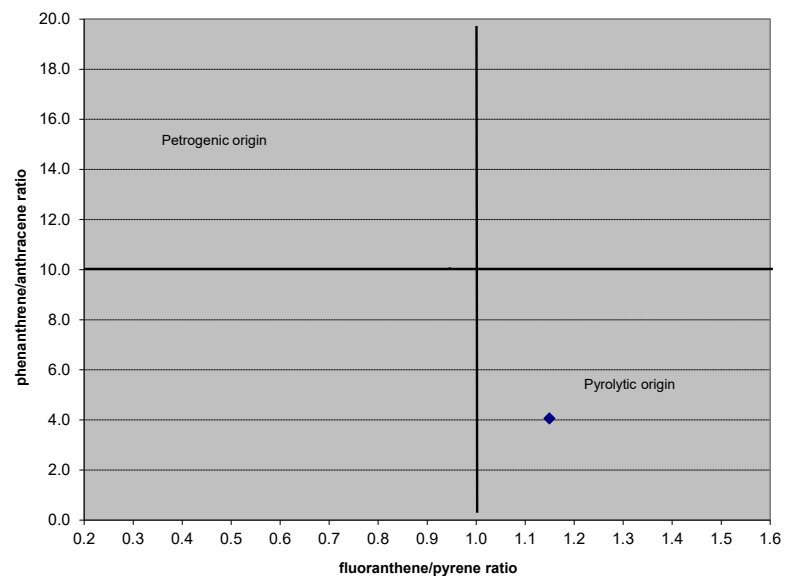
sample identity	TS-SP-S1																			
phenanthrene	6.5																			
anthracene	1.6																			
fluoranthene	7.7																			
pyrene	6.7																			
benz(a)anthracene	3																			
chrysene	3.1																			

PAH units	mg/kg
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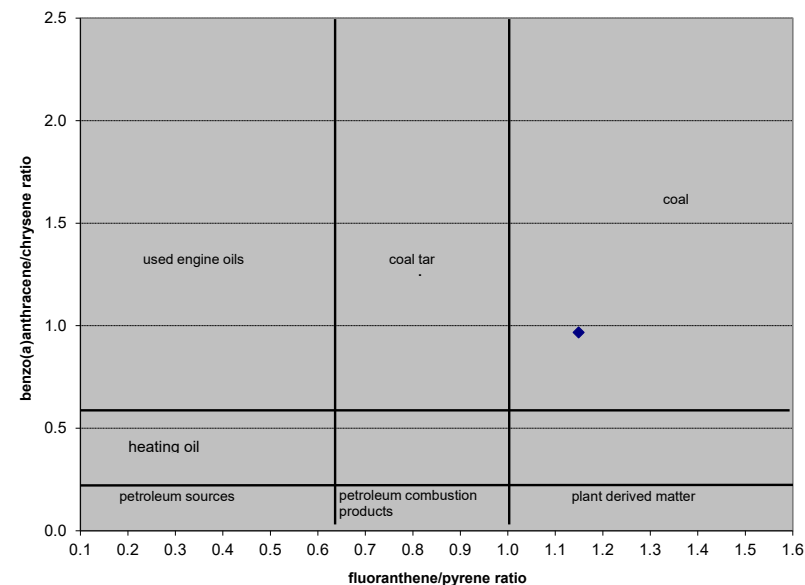
PAH ratios

phe/ant	4.063																			
flu/pyr	1.149																			
baa/chr	0.968																			

PAH source diagnosis



PAH source diagnosis



Topsoil Validation Record

Job number	R2688A	Quality ref:	30267-4 (ALM Consult)				Other documents attached				✓		
Date	17.11.23	Area use:	Garden		landscaped		Stockpile		other				
Site name / location	Rossendale Road, Burnley	Size area (m):	n/a	Approx. Area (m ²):	n/a	Approx. Depth Top (m):	n/a	Approx. Volume Top (m ³):	1,000 m ³	Approx. Depth Sub (m):	n/a	Approx. Volume Sub (m ³):	n/a
Stockpile ref:	Stockpile A	Number depth entries required		n/a		Number samples required:		20 (1 per 50m ³ for site-recovered topsoil, minimum 3 samples per source), 20 provided.					
Compiled by:	CM												

Quality Validation		Inspection date/time:	08.11.23	Inspected by:	CM	Photographed:	✓
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Source Topsoil	1.	✓	Site recovered.
Description Topsoil	2.	✓	Dark brown clayey loam, with frequent rootlets. Rare inclusions of gravel; fine to coarse of mixed lithology.
Sample Topsoil	3.	✓	20 samples collected from stockpile by SGP on 08.11.23 (Lab ref: 23-68007; samples: TS-S1 – TS-S20).
Source Subsoil	4.	x	n/a
Description Subsoil	5.	x	n/a
Sample Subsoil	6.	x	n/a

Topsoil Validation Record



Topsoil Results Summary (23-68007-1)

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NAD	NAD	Yes
Arsenic	37	6-19	Yes
Cadmium	11	0.5-0.7	Yes
Chromium	910	28-120	Yes
Chromium VI	6	<1	Yes
Copper	2,400	15-64	Yes
Lead	200	35-190	Yes
Mercury	40	0.5	Yes
Nickel	130	9.7-20	Yes
Zinc	3,700	50-120	Yes
Naphthalene	2.3 (1% SOM) 13 (SOM 6%)	0.1-3.1	Yes*
Acenaphthene	210	0.1-0.3	Yes
Acenaphthylene	170	0.2-3.9	Yes
Fluorene	170	0.1-2.4	Yes
Phenanthrene	95	0.4-20	Yes
Anthracene	2400	0.1-4.7	Yes
Fluoranthene	280	0.6-24	Yes
Pyrene	620	0.6-21	Yes
Benzo(a) anthracene	7.2 (1% SOM) 13 (6% SOM)	0.3-9.7	Yes*
Chrysene	15	0.3-9.8	Yes
Benzo(b) fluoranthene	2.6 (1% SOM) 3.7% (6% SOM)	0.3-10	Yes*
Benzo(k) fluoranthene	77	0.1-4.4	Yes
Benzo(a) pyrene	2.2 (1% SOM) 3 (6% SOM)	0.3-8.6	Yes*

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	0.2-4.2	Yes
Dibenzo(ah) anthracene	0.3 (6% SOM)	0.1-1.2	Yes*
Benzo(ghi) perylene	320	0.2-4.9	Yes
Aliphatic C5-C6	42	<1	Yes
Aliphatic C6-C8	100	<1	Yes
Aliphatic C8-C10	27	<1	Yes
Aliphatic C10-C12	130	<1-1.6	Yes
Aliphatic C12-C16	1,100	2.2-12	Yes
Aliphatic C16-C21	5,000	9.7-14	Yes
Aliphatic C21-C35	5,000	9.3-55	Yes
Aromatic C6-C7	70	<1	Yes
Aromatic C7-C8	130	<1-0.3	Yes
Aromatic C8-C10	34	<1	Yes
Aromatic C10-C12	74	<1-3.9	Yes
Aromatic C12-C16	140	3.3-20	Yes
Aromatic C16-C21	260	13-84	Yes
Aromatic C21-C35	1,100	13-110	Yes
Organic matter (%)	9.5% (Av.)	7.8 (Av.)	-

Soil Standards are primarily adopted from the published LQM/CIEH Sutable 4 Use Levels (S4ULs); the C4SL criteria for lead has also been adopted.

The appropriate land use is residential (1% SOM initially assumed for conservative assessment unless stated otherwise)

*See summary

Further Assessment of PAH Exceedance

As presented in the table above, several exceedances of the adopted screening criteria has been reported for the PAHs Naphthalene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(a)pyrene, and Dibenzo(ah) anthracene (samples@ TS-S2 - TS-S4 & TS-S9 – TS-S11 & TS-S14 – TS-S19; Further assessment of the significance of the exceedance was therefore carried out to determine whether the material is suitable for its proposed use (see 'Screening Criteria Exceedance Significance' summary below) which indicates that it is, but this is subject to approval by Local Authority as this is a deviation from the approved Remediation Strategy.

SOM Content

The assessment criteria for PAH is based on an SOM content of 1%, however the average SOM content of the topsoil is 7.8%, it is therefore considered appropriate to base the PAH assessment criteria on this. This results in the following increase in the criteria:

- Naphthalene: 2.2 mg/kg increased to: 13 mg/kg = no exceedances
- Benzo(a)anthracene: 7.2 mg/kg increased to 13 mg/kg = no exceedances
- Benzo(b)fluoranthene: 2.6 mg/kg increased to 3.7 mg/kg = **13 exceedances**
- Benzo(a)pyrene: 2.2 mg/kg increased to 3 mg/kg (appropriate to use C4SL of 5 mg/kg in planning scenario) = **4 exceedances**
- Dibenzo(ah)anthracene: 0.24 mg/kg increased to 0.3 mg/kg = **13 exceedances**

Taking into account the SOM, the number of exceedances reduces to samples: TS-S2, -S3, -S4, -S8, -S9, -S10, -S11, -S14, -S15, -S16, -S17, -S18, -S19, -S20 (14 Samples)

Sources Analysis

To assess the potential source of the PAHs, a PAH ratio-cross plot has been undertaken (appended to this certificate). The analysis suggests a coal signature which is consistent with the sampling and assessment undertaken during the initial site investigation works by SGP (R2688-R01-v4) and more recent stockpile assessments (R2688-L01; 29.06.23) where near identical results were obtained. As part of the previous site investigation works and reporting a detailed historical review confirmed that the site has remained undeveloped throughout its history. The report (R2688-R01-v4) included a Coal Authority and Coal Mining Risk Assessment Report which confirmed there was the potential for shallow mineworkings to be present. A mining investigation was completed and identified the presence of three shafts (Shaft A, B and C) as well as the presence of grey shale with coal within 8 of the 14 mining entries extending from the surface.

As part of the SGP works trial-pitting was carried out across the site. No made ground deposits were encountered within the shallow geology typically consisting of gravelly sandy clayey topsoil overlying a gravelly clay with partings of sand and fine to medium coal. Samples of the shallow soil were also collected during this initial investigation and also reported exceedances of the same PAHs.

Based on the review of information within R2688-R01-v1 there is no identifiable sources of coal tar present on the site. No made ground was present and no industrial works (other than coal mining) have taken place on the site. The presence of coal tars is therefore unlikely to have been present. It is considered that it is most likely attributed to inclusions of coal as is more clearly shown within the other corresponding ratio plots. This is more consistent with the history of the site and the recorded ground conditions where fine inclusions of coal have been recorded.

Risk Assessment Conclusion

The overall risk to human health from PAHs within fine fragments of coal is very low due to the sequestration of PAHs within a carbon or vitrified matrix which results in a low bioavailability. It is also important to acknowledge that previous assessments of site-won topsoil have been completed as per that outlined within this certificate and which have received regulatory approval. It is concluded that the soil is suitable for reuse as garden soils, however it is recommended that regulatory approval is received.

Topsoil Validation Record

Topsoil Validation	Inspection date/time:	08.11.23	Inspected by:	CM	Photographed:	✓
Source Topsoil	Site recovered.					
Source Subsoil	n/a					
Soil description	Dark brown clayey loam, with frequent rootlets. Rare inclusions of gravel; fine to coarse of mixed lithology.					

Photograph (Topsoil Stockpile A)



Topsoil Validation Record

Summary

Minor elevated PAH exceedances were recorded within the stockpiled topsoil following the use of criteria (based on 6% SOM) appropriate to the average SOM content of the soil. Further assessment has been undertaken to establish the source of the PAHs which has been confirmed as coal. This is consistent with previous reporting during the initial site investigation and during more recent sampling and assessment of site-won topsoil stockpiles. The overall risk to human health due to the presence of minor elevated PAHs due to the presence of coal fragments is considered to be very low given the low bioavailability of PAHs which are sequestered within a carbon or vitrified matrix.

It is therefore concluded that the topsoil within Stockpile A is suitable for reuse as garden soils on the site or for export under an MMP for reuse on other developments. It is however recommended that this assessment is provided to the Local Authority Contaminated Land Officer for the receiving site to confirm that they agree.

SGP Staff:	C McHugh BSc GradIEMA	Signed:		17.11.23
SGP Staff:	D Wayland BSc MSc AssocCIWM MCIWEM C.WEM	Signed:		17.11.23

Guide notes:

1.	Source Topsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
2.	Description Topsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
3.	Sample Topsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number
4.	Source Subsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
5.	Description Subsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
6.	Sample Subsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number



CHILDREN'S PLAY SPACE
SHOULD INCLUDE A LEAP & LAP
EQUIPMENT

Job name	Rossendale Road
Job no.	R2688A
Date:	03.11.23
Author:	CM
Laboratory:	I2 Analytical
Lab. Reference:	23-64512



PAH concentrations

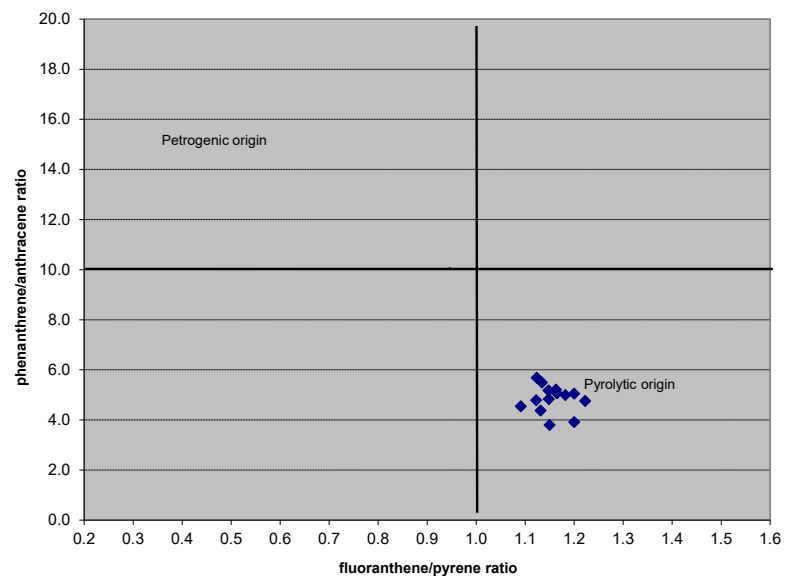
sample identity	TS-S2	TS-S3	TS-S4	TS-S8	TS-S9	TS-S10	TS-S11	TS-S14	TS-S15	TS-S16	TS-S17	TS-S18	TS-S19	TS-S20					
phenanthrene	9.1	9.1	7.6	4.4	7.3	11	20	12	5.7	9.4	9.1	10	7	19					
anthracene	1.9	1.6	1.5	0.91	1.4	2	4.2	2.4	1.1	2.4	1.8	2.2	1.6	5					
fluoranthene	11	10	9.2	6.2	10	11	22	13	7	12	12	12	8.6	23					
pyrene	9.8	8.9	7.9	5.4	8.6	9.7	18	11	6.1	10	10	11	7.6	20					
benz(a)anthracene	4.9	4.7	4.3	2.8	4.4	4.7	9.2	5.7	3.4	5.1	5.3	5.2	3.8	10					
chrysene	4.4	4.3	3.7	2.8	4.2	4.4	8.2	5.3	3.1	4.8	4.6	5.2	3.8	9.7					

PAH units	mg/kg
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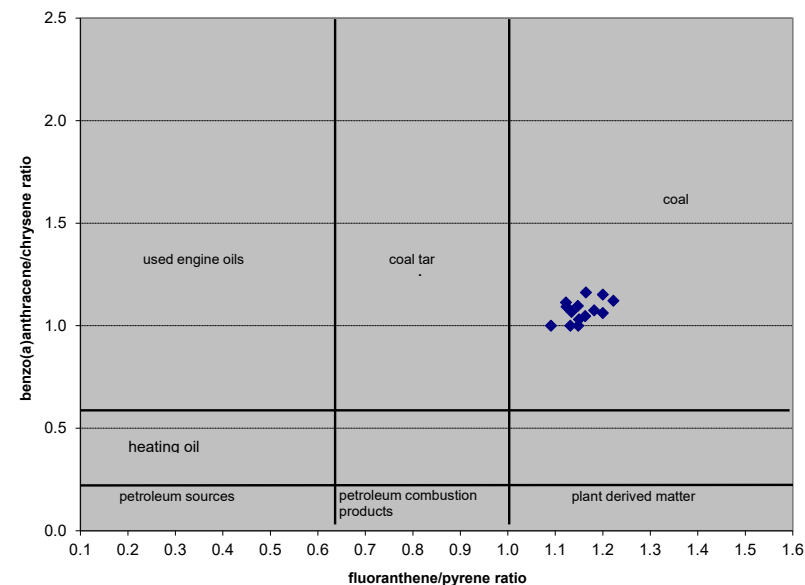
PAH ratios

phe/ant	4.789	5.688	5.067	4.835	5.214	5.500	4.762	5.000	5.182	3.917	5.056	4.545	4.375	3.800					
flu/pyr	1.122	1.124	1.165	1.148	1.163	1.134	1.222	1.182	1.148	1.200	1.200	1.091	1.132	1.150					
baa/chr	1.114	1.093	1.162	1.000	1.048	1.068	1.122	1.075	1.097	1.063	1.152	1.000	1.000	1.031					

PAH source diagnosis



PAH source diagnosis





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e: caitlin.mchugh@smithgrant.co.uk

Analytical Report Number : 23-68007

Project / Site name:	Rossendale Road	Samples received on:	10/11/2023
Your job number:	R2688A	Samples instructed on / Analysis started on:	10/11/2023
Your order number:		Analysis completed by:	21/11/2023
Report Issue Number:	1	Report issued on:	21/11/2023
Samples Analysed:	20 soil samples		

Signed: _____

Anna Goc
PL Head of Reporting Team
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

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

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.

Analytical Report Number: 23-68007
Project / Site name: Rossendale Road

Lab Sample Number				2873899	2873900	2873901	2873902	2873903
Sample Reference				TS-S1	TS-S2	TS-S3	TS-S4	TS-S5
Sample Number				Surface	Surface	Surface	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	0.30	0.50
Date Sampled				08/11/2023	08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	21	38	41	38	30
Total mass of sample received	kg	0.001	NONE	0.9	1	0.9	1.1	1.1

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSO	DSO	DSO	DSO	DSO

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.9	6.6	7.3	7.2	6.8
Organic Matter (automated)	%	0.1	MCERTS	5.4	8.8	10	9.3	4.7

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.15	1.4	0.41	0.49	0.36
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.08	< 0.05	0.06	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.4	2.8	1.4	1.2	0.47
Fluorene	mg/kg	0.05	MCERTS	0.23	1.9	0.83	0.79	0.3
Phenanthrene	mg/kg	0.05	MCERTS	2.5	15	7.6	7.1	2.5
Anthracene	mg/kg	0.05	MCERTS	0.53	3.3	1.4	1.3	0.5
Fluoranthene	mg/kg	0.05	MCERTS	2.9	18	9.9	9.2	3.1
Pyrene	mg/kg	0.05	MCERTS	2.6	15	8.7	7.9	2.7
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.3	8.1	4.5	4.1	1.5
Chrysene	mg/kg	0.05	MCERTS	1.5	8.2	4.6	4.2	1.6
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.7	9.1	5.7	5.6	1.8
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.48	3.7	1.8	1.4	0.74
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.4	8.5	4.8	4.6	1.6
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.65	3.4	2	1.9	0.76
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.17	0.82	0.52	0.49	0.19
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.84	3.6	2.2	2.1	0.86

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	17.3	102	56.3	52.4	18.8
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	19	13	10	12	9.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.1	0.5	0.5	0.5	< 0.2
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	120	34	29	30	38
Copper (aqua regia extractable)	mg/kg	1	MCERTS	64	62	33	39	26
Lead (aqua regia extractable)	mg/kg	1	MCERTS	140	83	78	90	48
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.5	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	20	13	12	13	14
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	92	81	110	65

Monoaromatics & Oxygenates

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	79
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Analytical Report Number: 23-68007
Project / Site name: Rossendale Road

Lab Sample Number	2873899	2873900	2873901	2873902	2873903
Sample Reference	TS-S1	TS-S2	TS-S3	TS-S4	TS-S5
Sample Number	Surface	Surface	Surface	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied	0.30	0.50
Date Sampled	08/11/2023	08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS 1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS 1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS 1D_AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU 1D_AL}	mg/kg	1	MCERTS	< 1.0	1.6	< 1.0	< 1.0	1.1
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU 1D_AL}	mg/kg	2	MCERTS	< 2.0	5.8	6.4	12	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU 1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	14	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU 1D_AL}	mg/kg	8	MCERTS	11	19	37	52	11
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS 1D_AL}	mg/kg	10	NONE	13	27	46	78	15

TPH-CWG - Aromatic >EC5 - EC7 _{HS 1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS 1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	0.074
TPH-CWG - Aromatic >EC8 - EC10 _{HS 1D_AR}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU 1D_AR}	mg/kg	1	MCERTS	< 1.0	2.1	3	1.1	2.2
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU 1D_AR}	mg/kg	2	MCERTS	3.9	9.8	11	9.2	6
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU 1D_AR}	mg/kg	10	MCERTS	15	30	29	43	13
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU 1D_AR}	mg/kg	10	MCERTS	28	38	40	60	13
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS 1D_AR}	mg/kg	10	NONE	47	80	83	110	34

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

Analytical Report Number: 23-68007
Project / Site name: Rossendale Road

Lab Sample Number	2873904				2873905	2873906	2873907	2873908
Sample Reference	TS-S6				TS-S7	TS-S8	TS-S9	TS-S10
Sample Number	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	1.00				1.50	1.00	2.00	2.50
Date Sampled	08/11/2023				08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	28	29	31	36	34
Total mass of sample received	kg	0.001	NONE	1.1	1	0.9	1	1

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSO	DSO	DSO	DSO	DSO

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.9	6.7	6.8	6.9	6.2
Organic Matter (automated)	%	0.1	MCERTS	5.7	3.6	8.2	8.6	6.1

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.23	0.07	0.15	3.1	1.5
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.26	0.09
Acenaphthene	mg/kg	0.05	MCERTS	0.62	0.2	0.7	1	2.9
Fluorene	mg/kg	0.05	MCERTS	0.4	0.13	0.43	0.76	1.9
Phenanthrene	mg/kg	0.05	MCERTS	3.7	1.3	4.3	5.3	15
Anthracene	mg/kg	0.05	MCERTS	0.63	0.25	0.81	1	2.9
Fluoranthene	mg/kg	0.05	MCERTS	4.8	1.6	5.9	7	16
Pyrene	mg/kg	0.05	MCERTS	4.1	1.5	5.2	6.1	14
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.2	0.79	2.7	3.2	6.8
Chrysene	mg/kg	0.05	MCERTS	2.2	0.89	2.8	3.2	6.9
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	2.6	0.99	3.3	3.9	8
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.76	0.29	1.1	1.4	2.7
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.3	0.76	2.9	3.3	6.8
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.95	0.34	1.3	1.5	3
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.22	0.08	0.34	0.35	0.67
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.1	0.44	1.5	1.7	3.2

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	26.7	9.6	33.2	43.1	93.1
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.6	6	14	12	12
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35	41	33	38	31
Copper (aqua regia extractable)	mg/kg	1	MCERTS	29	19	41	38	36
Lead (aqua regia extractable)	mg/kg	1	MCERTS	55	37	70	76	190
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	16	11	20	15	12
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	73	50	95	92	84

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	72	51	100
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Analytical Report Number: 23-68007
Project / Site name: Rossendale Road

Lab Sample Number				2873904	2873905	2873906	2873907	2873908
Sample Reference				TS-S6	TS-S7	TS-S8	TS-S9	TS-S10
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	1.50	1.00	2.00	2.50
Date Sampled				08/11/2023	08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	1.3	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	6.1	2.7
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	16	26	9.7
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	< 10	18	38	15
TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}				< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}				< 0.010	< 0.010	0.07	0.045	0.097
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}				< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}				< 1.0	< 1.0	1.2	3.9	1.7
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}				3.3	< 2.0	6.1	12	12
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}				15	< 10	18	24	45
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}				21	< 10	20	35	51
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}				40	14	46	74	110

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

Analytical Report Number: 23-68007
Project / Site name: Rossendale Road

Lab Sample Number	2873909				2873910	2873911	2873912	2873913
Sample Reference	TS-S11				TS-S12	TS-S13	TS-S14	TS-S15
Sample Number	None Supplied				None Supplied	None Supplied	None Supplied	Surface
Depth (m)	0.50				1.00	3.00	0.50	None Supplied
Date Sampled	08/11/2023				08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	35	30	27	33	37
Total mass of sample received	kg	0.001	NONE	1	0.9	0.6	1.1	1

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EWS	EWS	EWS	EWS	EWS

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.8	6.8	7.1	7.1	6.6
Organic Matter (automated)	%	0.1	MCERTS	11	7.9	4.4	8.7	10

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.8	0.59	< 0.05	1.1	0.55
Acenaphthylene	mg/kg	0.05	MCERTS	0.07	0.05	< 0.05	0.12	0.07
Acenaphthene	mg/kg	0.05	MCERTS	1.9	1.5	< 0.05	2.9	1.2
Fluorene	mg/kg	0.05	MCERTS	1.2	1	< 0.05	2.1	0.8
Phenanthrene	mg/kg	0.05	MCERTS	9.9	7.8	0.43	18	7.1
Anthracene	mg/kg	0.05	MCERTS	1.8	1.7	0.09	3.8	1.3
Fluoranthene	mg/kg	0.05	MCERTS	12	8.7	0.62	20	9.3
Pyrene	mg/kg	0.05	MCERTS	9.8	7.5	0.57	17	8.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	4.6	3.9	0.3	8	4.2
Chrysene	mg/kg	0.05	MCERTS	4.8	4.1	0.32	8.1	4.3
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	5.6	4.4	0.4	8.2	5.2
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	2.1	1.9	0.12	3.6	2.2
Benzo(a)pyrene	mg/kg	0.05	MCERTS	4.7	4.1	0.34	7.5	5
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2	1.5	0.16	3.1	2
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.53	0.38	< 0.05	0.85	0.5
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.3	1.8	0.2	3.4	2.2

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	63.7	50.9	3.55	107	54.1
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	12	6.6	12	13
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.6	0.5	< 0.2	0.5	0.5
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	36	28	31	36
Copper (aqua regia extractable)	mg/kg	1	MCERTS	42	32	15	37	38
Lead (aqua regia extractable)	mg/kg	1	MCERTS	90	77	35	90	92
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	13	14	9.7	13	14
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	97	86	55	93	100

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	320	< 5.0	< 5.0	37
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Analytical Report Number: 23-68007
Project / Site name: Rossendale Road

Lab Sample Number				2873909	2873910	2873911	2873912	2873913
Sample Reference				TS-S11	TS-S12	TS-S13	TS-S14	TS-S15
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	Surface
Depth (m)				0.50	1.00	3.00	0.50	None Supplied
Date Sampled				08/11/2023	08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	2.6	4.3
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	20	9.3	< 8.0	19	26
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	22	10	< 10	24	35
Aromatic								
TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	NONE	< 0.010	0.27	< 0.010	< 0.010	0.032
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	2.6	2.7	< 1.0	2.8	1
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	8.1	11	< 2.0	17	6.3
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	25	44	< 10	62	33
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	46	66	17	87	48
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	82	120	25	170	88

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

Analytical Report Number: 23-68007
Project / Site name: Rossendale Road

Lab Sample Number	2873914				2873915	2873916	2873917	2873918
Sample Reference	TS-S16				TS-S17	TS-S18	TS-S19	TS-S20
Sample Number	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	1.50				1.00	0.50	0.20	1.00
Date Sampled	08/11/2023				08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	34	37	40	36	31
Total mass of sample received	kg	0.001	NONE	0.9	0.9	0.9	1	1.1

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	ASE	ASE	ASE	ASE	ASE

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.7	6.8	7.3	6.5	7.5
Organic Matter (automated)	%	0.1	MCERTS	8.4	10	9.8	8.5	6.6

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.46	1.4	0.46	0.34	0.2
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.08	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	1	3.9	1.7	1.1	0.7
Fluorene	mg/kg	0.05	MCERTS	0.69	2.4	1	0.73	0.48
Phenanthrene	mg/kg	0.05	MCERTS	5.8	20	8.1	6.9	4.1
Anthracene	mg/kg	0.05	MCERTS	1.2	4.7	1.7	1.4	0.74
Fluoranthene	mg/kg	0.05	MCERTS	7.2	24	10	9.3	4.6
Pyrene	mg/kg	0.05	MCERTS	6.4	21	8.9	8.3	4
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.4	9.7	4.5	4.3	2
Chrysene	mg/kg	0.05	MCERTS	3.4	9.8	4.2	4	1.8
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	4.1	10	5.2	4.7	2
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	1.4	4.4	1.7	1.7	0.89
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.7	8.6	4.1	3.9	1.6
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.6	4.2	1.8	2.1	0.83
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.39	1.1	0.52	0.47	0.23
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.7	4.9	2.1	2.1	0.93

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	42.2	130	56.1	51.3	25.1
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	14	14	12	10
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	0.6	0.6	0.5	< 0.2
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	37	32	37	38	37
Copper (aqua regia extractable)	mg/kg	1	MCERTS	39	50	44	40	36
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	99	95	78	61
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	14	14	14	14	13
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	99	110	110	97	70

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	24	67	97	< 5.0	240
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Analytical Report Number: 23-68007
Project / Site name: Rossendale Road

Lab Sample Number				2873914	2873915	2873916	2873917	2873918
Sample Reference				TS-S16	TS-S17	TS-S18	TS-S19	TS-S20
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.50	1.00	0.50	0.20	1.00
Date Sampled				08/11/2023	08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 _{HS 1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS 1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS 1D_AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU 1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU 1D_AL}	mg/kg	2	MCERTS	< 2.0	5.1	2.2	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU 1D_AL}	mg/kg	8	MCERTS	< 8.0	9.7	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU 1D_AL}	mg/kg	8	MCERTS	24	55	24	23	39
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS 1D_AL}	mg/kg	10	NONE	29	70	29	26	40
TPH-CWG - Aromatic >EC5 - EC7 _{HS 1D_AR}				< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS 1D_AR}				0.021	0.056	0.087	< 0.010	0.24
TPH-CWG - Aromatic >EC8 - EC10 _{HS 1D_AR}				< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU 1D_AR}				1.5	2.7	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU 1D_AR}				7.3	20	6.4	8	6.6
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU 1D_AR}				31	84	40	38	17
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU 1D_AR}				47	110	69	72	44
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS 1D_AR}				87	220	120	120	68

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

Analytical Report Number : 23-68007

Project / Site name: Rossendale Road

* 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 *
2873899	TS-S1	Surface	None Supplied	Brown clay and sand with gravel and vegetation.
2873900	TS-S2	Surface	None Supplied	Brown clay and sand with gravel and vegetation.
2873901	TS-S3	Surface	None Supplied	Brown clay and loam with vegetation.
2873902	TS-S4	None Supplied	0.3	Brown clay and loam with vegetation.
2873903	TS-S5	None Supplied	0.5	Brown clay with vegetation.
2873904	TS-S6	None Supplied	1	Brown clay and loam with vegetation.
2873905	TS-S7	None Supplied	1.5	Brown clay and loam with vegetation.
2873906	TS-S8	None Supplied	1	Brown clay and loam with vegetation.
2873907	TS-S9	None Supplied	2	Brown clay and loam with vegetation.
2873908	TS-S10	None Supplied	2.5	Brown clay and loam with vegetation.
2873909	TS-S11	None Supplied	0.5	Brown clay and loam with vegetation.
2873910	TS-S12	None Supplied	1	Brown clay and loam with vegetation.
2873911	TS-S13	None Supplied	3	Brown clay with vegetation.
2873912	TS-S14	None Supplied	0.5	Brown clay with vegetation.
2873913	TS-S15	Surface	None Supplied	Brown clay and loam with vegetation.
2873914	TS-S16	None Supplied	1.5	Brown clay and loam with vegetation.
2873915	TS-S17	None Supplied	1	Brown clay and loam with vegetation.
2873916	TS-S18	None Supplied	0.5	Brown clay and loam with vegetation.
2873917	TS-S19	None Supplied	0.2	Brown clay and loam with vegetation.
2873918	TS-S20	None Supplied	1	Brown clay and loam with vegetation.

Analytical Report Number : 23-68007
Project / Site name: Rossendale Road

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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.	L038-PL	D	MCERTS
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	A001-PL	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
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.	L019-UK/PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser.	L080-PL	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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted

Analytical Report Number : 23-68007
Project / Site name: Rossendale Road

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
#2	EH_2D_Total but with fatty acids mathematically subtracted				
-	Operator - understore to separate acronyms (exception for +)				
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total				

Topsoil Validation Record

Job number	R2174	Depth ref:	R2174-R12-v2 Final			Quality ref:		R2174-R12-v2 Final			Other documents attached		✓	
Date	26.03.24	Area use:	Garden			landscaped			stockpile			other		
Site name / location	Waldmers Wood, Bury	Size area (m):	6.5 x 7.5 (Plot 158)	Approx. Area (m²):	49m²	Approx. Depth Top (m):	0.6m	Approx. Volume Top (m³):	29m³	Approx. depth Sub (m):	n/a	Approx. Volume Sub (m³):	n/a	
Plot/ location:	Plots 158-160		12 x 9 (Plots 159 - 160)		108m²		0.6m		65m³					
Compiled by:	CM	Number depth entries required			3 (1 per plot); 3 entries provided.		Number samples required:			3 TS (1 per 250m³ TS, minimum 3 samples per source); 22 TS samples provided.				

Quality Validation		Inspection date/time:	15.06.23 & 09.08.23 & 12.03.24	Inspected by:	CM	Photographed:	✓
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Source Topsoil	1.	✓	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site): stockpile 'A'.
Description Topsoil	2.	✓	Dark brown clayey loam with frequent rootlets. Rare inclusions of gravel; fine to coarse of mixed lithology.
Sample Topsoil	3.	✓	20 samples collected from stockpile by SGP on 08.11.23 at source site (Lab ref: 23-68007; samples: TS-S1 – TS-S20) (Stockpile certificate ref: R2688A – Topsoil Validation Certificate Final – attached). A further 2 samples were collected in stockpile prior to placement at the destination site following import. A summary of the results following on-site testing are presented in the table below (Lab ref: 24-008772).
Source Subsoil	4.	x	Not used
Description Subsoil	5.	x	n/a
Sample Subsoil	6.	x	n/a

Topsoil Validation Record



Topsoil Results Summary – Rossendale Road (24-008772)

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NAD	NAD	Yes
Arsenic	37	8.1-18	Yes
Cadmium	11	<1-0.7	Yes
Chromium (total)	910	24-53	Yes
Chromium VI	6	<1	Yes
Copper	2,400	22-63	Yes
Lead	200	42-110	Yes
Mercury	40	<1-0.5	Yes
Nickel	180	15-24	Yes
Zinc	3,700	53-140	Yes
Naphthalene	2.3	<1-0.75	Yes
Acenaphthene	210	<1	Yes
Acenaphthylene	170	<1-1.2	Yes
Fluorene	170	<1-0.78	Yes
Phenanthrene	95	0.38-6.5	Yes
Anthracene	2,400	0.1-1.6	Yes
Fluoranthene	280	0.69-7.7	Yes
Pyrene	620	0.64-6.7	Yes
Benzo(a)anthracene	7.2	0.34-3	Yes
Chrysene	15	0.38-3.1	Yes
Benzo(b)fluoranthene	2.6	0.42-3.3	Yes
Benzo(k)fluoranthene	77	0.14-1.3	Yes
Benzo(a)pyrene	2.2	0.33-2.6	Yes
Indeno(123cd) pyrene	27	<1-1.3	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Dibenzo(ah) anthracene	0.24	<1-0.37	Yes*
Benzo(ghi) perylene	320	<1-1.6	Yes
Aliphatic C5-C6	42	<1	Yes
Aliphatic C6-C8	100	<1	Yes
Aliphatic C8-C10	27	<1	Yes
Aliphatic C10-C12	130	<1	Yes
Aliphatic C12-C16	1,100	<1	Yes
Aliphatic C16-C21	65,000	<1	Yes
Aliphatic C21-C35	65,000	<1-8.2	Yes
Aromatic C6-C7	70	<1	Yes
Aromatic C7-C8	130	,1	Yes
Aromatic C8-C10	34	<1	Yes
Aromatic C10-C12	74	<1	Yes
Aromatic C12-C16	140	<1-4	Yes
Aromatic C16-C21	260	<1-17	Yes
Aromatic C21-C35	1,100	<1-22	Yes
Benzene	0.08	<1	Yes
Toluene	130	<1	Yes
Ethyl-benzene	47	<1	Yes
m/p-xylene	56	<1	Yes
o-xylene	60	<1	Yes

Soil Standards are primarily adopted from the published LQM/CIEH Sutable 4 Use Levels (S4ULs); the C4SL criteria for lead has also been adopted. The appropriate land use is residential (1% SOM initially assumed for conservative assessment unless stated otherwise).
**One exceedance of Dibenzo(ah)anthracene further assessment was undertaken using a PAH Cross Plot ratio (see attached). *See summary.*

Topsoil Validation Record

Further Assessment

One minor exceedance of the adopted garden soil cover screening criteria has been reported. Further discussion and risk assessment is provided below.

Dibenzo(ah)anthracene

A single exceedance for dibenzo(ah)anthracene was reported within topsoil sample TS-SP-S1 (0.37 mg/kg) when compared to the S4UL criterion (6% SOM value) of 0.3 mg/kg. The GAC value of 6% SOM content was considered applicable for use because the average organic matter of the samples collected was 5.95%.

The results are consistent with those reported within the supporting stockpile certificate which contains the test results of the sampling carried out at the donor site prior to export where minor elevated PAHs were reported. Further assessment was undertaken (see R2688A-Topsoil Stockpile A Validation Certificate – Rossendale Road) which concluded that the PAHs were attributed to minor inclusions of coal and that the risk to human health was low.

Further to this, topsoil from this donor site (Rossendale Road) has been imported to the Waldmers Wood development previously (albeit a different stockpile of site-won topsoil). This again had similar PAH exceedances which were again attributed to inclusions of coal. Given the donor site is an undeveloped field underlain by coal workings this is not surprising. It is also acknowledged that the regulators approved use of soil from this source on the Waldmers Wood site on the basis of the risk assessment undertaken.

To establish the source of the PAHs and to confirm they are typical to those of the soils previously imported from Rossendale Road, a PAH Ratio Plot has been undertaken (a copy of the plot is appended to this certificate). The assessment concludes that the PAHs within the topsoil are attributed to a coal signature.

Conclusion

It is concluded that the minor exceedance of dibenzo(ah)anthracene within sample TS-SP-S1 does not present an unacceptable risk to human health with the PAHs associated with fine inclusions of coal as determined through the PAH ratio plot. PAHs bound within this form present a low bioavailability and a low risk to human health.

Topsoil Validation Record

Depth Validation	Inspection date/time:	26.03.24	Inspected by:	CM	Photographed:	✓
Plot 158	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site): stockpile 'A'.					
Source Subsoil	n/a					
Soil profile/description	0.0-0.6m	Dark brown clayey loam with frequent rootlets. Rare inclusions of gravel; fine to coarse of mixed lithology.				
	0.6m	Base (same material)				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record

Depth Validation	Inspection date/time:	26.03.24	Inspected by:	CM	Photographed:	✓
Plot 159	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site): stockpile 'A'.					
Source Subsoil	n/a					
Soil profile/description	0.0-0.6m	Dark brown clayey loam, with frequent rootlets. Rare inclusions of gravel; fine to coarse of mixed lithology.				
	0.6m	Base (same material)				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record

Depth Validation	Inspection date/time:	26.03.24	Inspected by:	CM	Photographed:	✓
Plot 160	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site): stockpile 'A'.					
Source Subsoil	n/a					
Soil profile/description	0.0-0.6m	Dark brown clayey loam, with frequent rootlets. Rare inclusions of gravel; fine to coarse of mixed lithology.				
	0.6m	Base (same material)				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record

Due to difficult digging conditions and saturated soils unable to confirm terram in Plots 158-160, however confirmed in adjacent Plot 166 during previous site visit – see picture below confirming placement of terram in Plot 166.



Topsoil Validation Record

**Summary**

Initial testing at the source site, Rossendale Road Burnley, recorded exceedances of the adopted residential soils screening criteria for a number of PAHs: Naphthalene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(a)pyrene, and Dibenzo(ah) anthracene. However, as summarised in the R2688A – Topsoil Validation Certificate Final (dated 17th November 2023 – attached), these exceedances have been attributed to the inclusion of coal within the soils. Considering the undeveloped nature of the source site, the absence of any other identifiable sources, as well as the consistency of the results with previous reporting and assessment of site-won topsoil stockpiles, the overall risk to human health from PAHs within coal is considered to be limited due to the sequestration of PAHs within a carbon or vitrified matrix resulting in low bioavailability.

It is also acknowledged that topsoil imported from this donor site has been imported and used as garden soils on this site previously. Similar exceedances of PAHs reported and an identical risk assessment was undertaken which was approved by the regulator confirming the soil was suitable for use; this soil is considered no different.

It is therefore concluded that the topsoil is suitable for reuse as garden soils.

An additional inspection visit IS NOT required.

SGP Staff:	C McHugh BSc GradIEMA	Signed:		27.03.24
SGP Staff: (Senior Consultant)	S D Miller BSc MCIWEM	Signed:		28.03.24

Guide notes:

1.	Source Topsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
2.	Description Topsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
3.	Sample Topsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number
4.	Source Subsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
5.	Description Subsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
6.	Sample Subsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number

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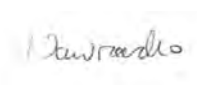
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Analytical Report Number : 24-008772

Project / Site name:	Waldners Wood, Bury	Samples received on:	14/03/2024
Your job number:	R2174	Samples instructed on / Analysis started on:	14/03/2024
Your order number:		Analysis completed by:	19/03/2024
Report Issue Number:	1	Report issued on:	20/03/2024
Samples Analysed:	2 soil samples		


Signed:

Joanna Wawrzeczko
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

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

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.

Analytical Report Number: 24-008772
Project / Site name: Waldners Wood, Bury

Lab Sample Number	144107	144108
Sample Reference	TS-SP-S1	TS-SP-S2
Sample Number	RR	RR
Depth (m)	None Supplied	None Supplied
Date Sampled	12/03/2024	12/03/2024
Time Taken	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection
		Accreditation Status

Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	32	20
Total mass of sample received	kg	0.1	NONE	1.1	1.1

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SCA	SCA

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.3	7
Organic Matter (automated)	%	0.1	MCERTS	7.8	4

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.75	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	1.2	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.78	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	6.5	0.38
Anthracene	mg/kg	0.05	MCERTS	1.6	0.1
Fluoranthene	mg/kg	0.05	MCERTS	7.7	0.69
Pyrene	mg/kg	0.05	MCERTS	6.7	0.64
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3	0.34
Chrysene	mg/kg	0.05	MCERTS	3.1	0.38
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	3.3	0.42
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	1.3	0.14
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.6	0.33
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.3	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.37	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.6	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	41.8	3.42
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	18	8.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7	< 0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	53	24
Copper (aqua regia extractable)	mg/kg	1	MCERTS	63	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	43
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.5	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24	15
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	140	53

Analytical Report Number: 24-008772
Project / Site name: Waldners Wood, Bury

Lab Sample Number	144107	144108
Sample Reference	TS-SP-S1	TS-SP-S2
Sample Number	RR	RR
Depth (m)	None Supplied	None Supplied
Date Sampled	12/03/2024	12/03/2024
Time Taken	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection Accreditation Status

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	< 1.0
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	< 2.0
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	8.2	< 8.0
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	< 10

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	4	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	17	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	22	< 10
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	43	< 10

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0

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

Analytical Report Number : 24-008772

Project / Site name: Waldners Wood, Bury

* 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 *
144107	TS-SP-S1	RR	None Supplied	Brown loam and clay with gravel and vegetation
144108	TS-SP-S2	RR	None Supplied	Brown loam and clay with gravel and vegetation

Analytical Report Number : 24-008772
Project / Site name: Waldners Wood, Bury

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
Speciated EPA-16 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	D/W	MCERTS
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

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 30°C.

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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted

Analytical Report Number : 24-008772
Project / Site name: Waldners Wood, Bury

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
#2	EH_2D_Total but with fatty acids mathematically subtracted				
-	Operator - understore to separate acronyms (exception for +)				
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total				

Topsoil Validation Record

Job number	R2688A	Quality ref:	30267-4 (ALM Consult)				Other documents attached				✓		
Date	17.11.23	Area use:	Garden		landscaped		Stockpile		other				
Site name / location	Rossendale Road, Burnley	Size area (m):	n/a	Approx. Area (m ²):	n/a	Approx. Depth Top (m):	n/a	Approx. Volume Top (m ³):	1,000 m ³	Approx. Depth Sub (m):	n/a	Approx. Volume Sub (m ³):	n/a
Stockpile ref:	Stockpile A	Number depth entries required		n/a		Number samples required:		20 (1 per 50m ³ for site-recovered topsoil, minimum 3 samples per source), 20 provided.					
Compiled by:	CM												

Quality Validation		Inspection date/time:	08.11.23	Inspected by:	CM	Photographed:	✓
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Source Topsoil	1.	✓	Site recovered.
Description Topsoil	2.	✓	Dark brown clayey loam, with frequent rootlets. Rare inclusions of gravel; fine to coarse of mixed lithology.
Sample Topsoil	3.	✓	20 samples collected from stockpile by SGP on 08.11.23 (Lab ref: 23-68007; samples: TS-S1 – TS-S20).
Source Subsoil	4.	x	n/a
Description Subsoil	5.	x	n/a
Sample Subsoil	6.	x	n/a

Topsoil Validation Record



Topsoil Results Summary (23-68007-1)

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NAD	NAD	Yes
Arsenic	37	6-19	Yes
Cadmium	11	0.5-0.7	Yes
Chromium	910	28-120	Yes
Chromium VI	6	<1	Yes
Copper	2,400	15-64	Yes
Lead	200	35-190	Yes
Mercury	40	0.5	Yes
Nickel	130	9.7-20	Yes
Zinc	3,700	50-120	Yes
Naphthalene	2.3 (1% SOM) 13 (SOM 6%)	0.1-3.1	Yes*
Acenaphthene	210	0.1-0.3	Yes
Acenaphthylene	170	0.2-3.9	Yes
Fluorene	170	0.1-2.4	Yes
Phenanthrene	95	0.4-20	Yes
Anthracene	2400	0.1-4.7	Yes
Fluoranthene	280	0.6-24	Yes
Pyrene	620	0.6-21	Yes
Benzo(a) anthracene	7.2 (1% SOM) 13 (6% SOM)	0.3-9.7	Yes*
Chrysene	15	0.3-9.8	Yes
Benzo(b) fluoranthene	2.6 (1% SOM) 3.7% (6% SOM)	0.3-10	Yes*
Benzo(k) fluoranthene	77	0.1-4.4	Yes
Benzo(a) pyrene	2.2 (1% SOM) 3 (6% SOM)	0.3-8.6	Yes*

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	0.2-4.2	Yes
Dibenzo(ah) anthracene	0.3 (6% SOM)	0.1-1.2	Yes*
Benzo(ghi) perylene	320	0.2-4.9	Yes
Aliphatic C5-C6	42	<1	Yes
Aliphatic C6-C8	100	<1	Yes
Aliphatic C8-C10	27	<1	Yes
Aliphatic C10-C12	130	<1-1.6	Yes
Aliphatic C12-C16	1,100	2.2-12	Yes
Aliphatic C16-C21	5,000	9.7-14	Yes
Aliphatic C21-C35	5,000	9.3-55	Yes
Aromatic C6-C7	70	<1	Yes
Aromatic C7-C8	130	<1-0.3	Yes
Aromatic C8-C10	34	<1	Yes
Aromatic C10-C12	74	<1-3.9	Yes
Aromatic C12-C16	140	3.3-20	Yes
Aromatic C16-C21	260	13-84	Yes
Aromatic C21-C35	1,100	13-110	Yes
Organic matter (%)	9.5% (Av.)	7.8 (Av.)	-

Soil Standards are primarily adopted from the published LQM/CIEH Sutable 4 Use Levels (S4ULs); the C4SL criteria for lead has also been adopted.

The appropriate land use is residential (1% SOM initially assumed for conservative assessment unless stated otherwise)

*See summary

Further Assessment of PAH Exceedance

As presented in the table above, several exceedances of the adopted screening criteria has been reported for the PAHs Naphthalene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(a)pyrene, and Dibenzo(ah) anthracene (samples@ TS-S2 - TS-S4 & TS-S9 – TS-S11 & TS-S14 – TS-S19; Further assessment of the significance of the exceedance was therefore carried out to determine whether the material is suitable for its proposed use (see 'Screening Criteria Exceedance Significance' summary below) which indicates that it is, but this is subject to approval by Local Authority as this is a deviation from the approved Remediation Strategy.

SOM Content

The assessment criteria for PAH is based on an SOM content of 1%, however the average SOM content of the topsoil is 7.8%, it is therefore considered appropriate to base the PAH assessment criteria on this. This results in the following increase in the criteria:

- Naphthalene: 2.2 mg/kg increased to: 13 mg/kg = no exceedances
- Benzo(a)anthracene: 7.2 mg/kg increased to 13 mg/kg = no exceedances
- Benzo(b)fluoranthene: 2.6 mg/kg increased to 3.7 mg/kg = **13 exceedances**
- Benzo(a)pyrene: 2.2 mg/kg increased to 3 mg/kg (appropriate to use C4SL of 5 mg/kg in planning scenario) = **4 exceedances**
- Dibenzo(ah)anthracene: 0.24 mg/kg increased to 0.3 mg/kg = **13 exceedances**

Taking into account the SOM, the number of exceedances reduces to samples: TS-S2, -S3, -S4, -S8, -S9, -S10, -S11, -S14, -S15, -S16, -S17, -S18, -S19, -S20 (14 Samples)

Sources Analysis

To assess the potential source of the PAHs, a PAH ratio-cross plot has been undertaken (appended to this certificate). The analysis suggests a coal signature which is consistent with the sampling and assessment undertaken during the initial site investigation works by SGP (R2688-R01-v4) and more recent stockpile assessments (R2688-L01; 29.06.23) where near identical results were obtained. As part of the previous site investigation works and reporting a detailed historical review confirmed that the site has remained undeveloped throughout its history. The report (R2688-R01-v4) included a Coal Authority and Coal Mining Risk Assessment Report which confirmed there was the potential for shallow mineworkings to be present. A mining investigation was completed and identified the presence of three shafts (Shaft A, B and C) as well as the presence of grey shale with coal within 8 of the 14 mining entries extending from the surface.

As part of the SGP works trial-pitting was carried out across the site. No made ground deposits were encountered within the shallow geology typically consisting of gravelly sandy clayey topsoil overlying a gravelly clay with partings of sand and fine to medium coal. Samples of the shallow soil were also collected during this initial investigation and also reported exceedances of the same PAHs.

Based on the review of information within R2688-R01-v1 there is no identifiable sources of coal tar present on the site. No made ground was present and no industrial works (other than coal mining) have taken place on the site. The presence of coal tars is therefore unlikely to have been present. It is considered that it is most likely attributed to inclusions of coal as is more clearly shown within the other corresponding ratio plots. This is more consistent with the history of the site and the recorded ground conditions where fine inclusions of coal have been recorded.

Risk Assessment Conclusion

The overall risk to human health from PAHs within fine fragments of coal is very low due to the sequestration of PAHs within a carbon or vitrified matrix which results in a low bioavailability. It is also important to acknowledge that previous assessments of site-won topsoil have been completed as per that outlined within this certificate and which have received regulatory approval. It is concluded that the soil is suitable for reuse as garden soils, however it is recommended that regulatory approval is received.

Topsoil Validation Record

Topsoil Validation	Inspection date/time:	08.11.23	Inspected by:	CM	Photographed:	✓
Source Topsoil	Site recovered.					
Source Subsoil	n/a					
Soil description	Dark brown clayey loam, with frequent rootlets. Rare inclusions of gravel; fine to coarse of mixed lithology.					

Photograph (Topsoil Stockpile A)



Topsoil Validation Record

Summary

Minor elevated PAH exceedances were recorded within the stockpiled topsoil following the use of criteria (based on 6% SOM) appropriate to the average SOM content of the soil. Further assessment has been undertaken to establish the source of the PAHs which has been confirmed as coal. This is consistent with previous reporting during the initial site investigation and during more recent sampling and assessment of site-won topsoil stockpiles. The overall risk to human health due to the presence of minor elevated PAHs due to the presence of coal fragments is considered to be very low given the low bioavailability of PAHs which are sequestered within a carbon or vitrified matrix.

It is therefore concluded that the topsoil within Stockpile A is suitable for reuse as garden soils on the site or for export under an MMP for reuse on other developments. It is however recommended that this assessment is provided to the Local Authority Contaminated Land Officer for the receiving site to confirm that they agree.

SGP Staff:	C McHugh BSc GradIEMA	Signed:		17.11.23
SGP Staff:	D Wayland BSc MSc AssocCIWM MCIWEM C.WEM	Signed:		17.11.23

Guide notes:

1.	Source Topsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
2.	Description Topsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
3.	Sample Topsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number
4.	Source Subsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
5.	Description Subsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
6.	Sample Subsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number



Job name	Rossendale Road
Job no.	R2688A
Date:	03.11.23
Author:	CM
Laboratory:	I2 Analytical
Lab. Reference:	23-64512



PAH concentrations

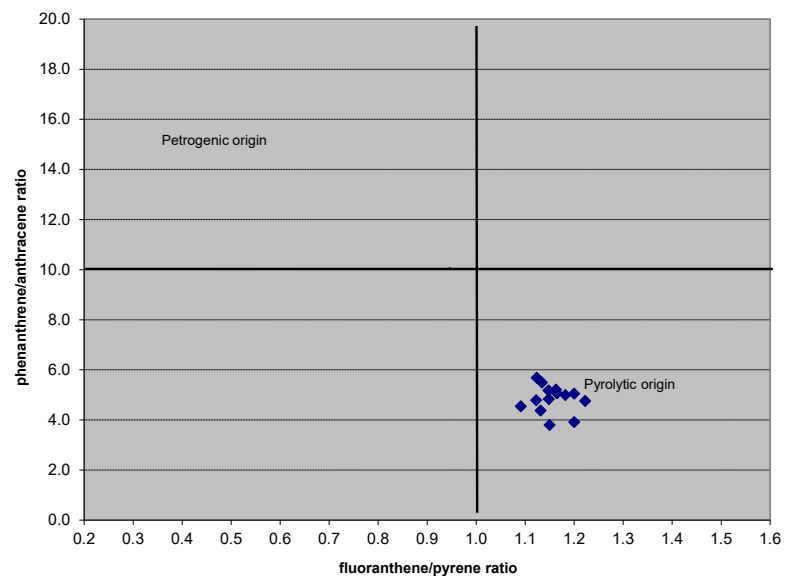
sample identity	TS-S2	TS-S3	TS-S4	TS-S8	TS-S9	TS-S10	TS-S11	TS-S14	TS-S15	TS-S16	TS-S17	TS-S18	TS-S19	TS-S20					
phenanthrene	9.1	9.1	7.6	4.4	7.3	11	20	12	5.7	9.4	9.1	10	7	19					
anthracene	1.9	1.6	1.5	0.91	1.4	2	4.2	2.4	1.1	2.4	1.8	2.2	1.6	5					
fluoranthene	11	10	9.2	6.2	10	11	22	13	7	12	12	12	8.6	23					
pyrene	9.8	8.9	7.9	5.4	8.6	9.7	18	11	6.1	10	10	11	7.6	20					
benz(a)anthracene	4.9	4.7	4.3	2.8	4.4	4.7	9.2	5.7	3.4	5.1	5.3	5.2	3.8	10					
chrysene	4.4	4.3	3.7	2.8	4.2	4.4	8.2	5.3	3.1	4.8	4.6	5.2	3.8	9.7					

PAH units	mg/kg
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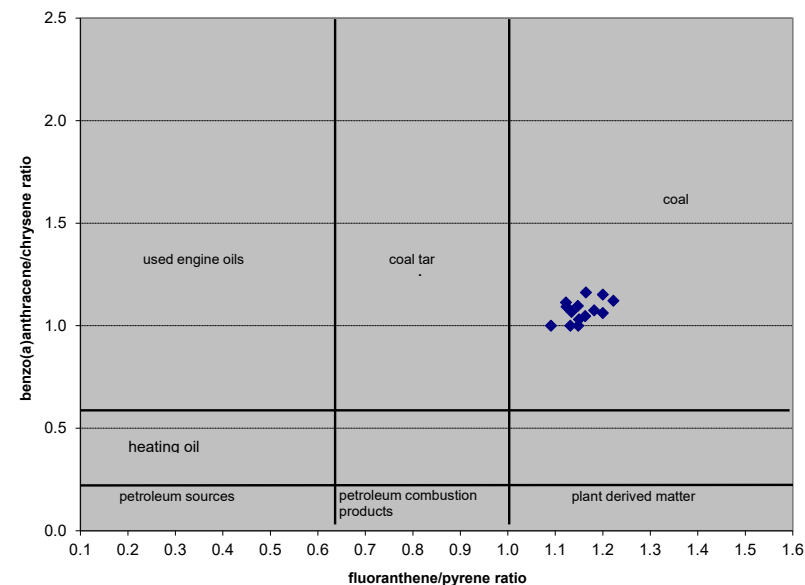
PAH ratios

phe/ant	4.789	5.688	5.067	4.835	5.214	5.500	4.762	5.000	5.182	3.917	5.056	4.545	4.375	3.800					
flu/pyr	1.122	1.124	1.165	1.148	1.163	1.134	1.222	1.182	1.148	1.200	1.200	1.091	1.132	1.150					
baa/chr	1.114	1.093	1.162	1.000	1.048	1.068	1.122	1.075	1.097	1.063	1.152	1.000	1.000	1.031					

PAH source diagnosis



PAH source diagnosis





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Analytical Report Number : 23-68007

Project / Site name:	Rossendale Road	Samples received on:	10/11/2023
Your job number:	R2688A	Samples instructed on / Analysis started on:	10/11/2023
Your order number:		Analysis completed by:	21/11/2023
Report Issue Number:	1	Report issued on:	21/11/2023
Samples Analysed:	20 soil samples		

Signed: _____

Anna Goc
PL Head of Reporting Team
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

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

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.

Analytical Report Number: 23-68007
Project / Site name: Rossendale Road

Lab Sample Number	2873899				2873900	2873901	2873902	2873903
Sample Reference	TS-S1				TS-S2	TS-S3	TS-S4	TS-S5
Sample Number	Surface				Surface	Surface	None Supplied	None Supplied
Depth (m)	None Supplied				None Supplied	None Supplied	0.30	0.50
Date Sampled	08/11/2023				08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	21	38	41	38	30
Total mass of sample received	kg	0.001	NONE	0.9	1	0.9	1.1	1.1

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSO	DSO	DSO	DSO	DSO

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.9	6.6	7.3	7.2	6.8
Organic Matter (automated)	%	0.1	MCERTS	5.4	8.8	10	9.3	4.7

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.15	1.4	0.41	0.49	0.36
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.08	< 0.05	0.06	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.4	2.8	1.4	1.2	0.47
Fluorene	mg/kg	0.05	MCERTS	0.23	1.9	0.83	0.79	0.3
Phenanthrene	mg/kg	0.05	MCERTS	2.5	15	7.6	7.1	2.5
Anthracene	mg/kg	0.05	MCERTS	0.53	3.3	1.4	1.3	0.5
Fluoranthene	mg/kg	0.05	MCERTS	2.9	18	9.9	9.2	3.1
Pyrene	mg/kg	0.05	MCERTS	2.6	15	8.7	7.9	2.7
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.3	8.1	4.5	4.1	1.5
Chrysene	mg/kg	0.05	MCERTS	1.5	8.2	4.6	4.2	1.6
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.7	9.1	5.7	5.6	1.8
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.48	3.7	1.8	1.4	0.74
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.4	8.5	4.8	4.6	1.6
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.65	3.4	2	1.9	0.76
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.17	0.82	0.52	0.49	0.19
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.84	3.6	2.2	2.1	0.86

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	17.3	102	56.3	52.4	18.8
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	19	13	10	12	9.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.1	0.5	0.5	0.5	< 0.2
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	120	34	29	30	38
Copper (aqua regia extractable)	mg/kg	1	MCERTS	64	62	33	39	26
Lead (aqua regia extractable)	mg/kg	1	MCERTS	140	83	78	90	48
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.5	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	20	13	12	13	14
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	92	81	110	65

Monoaromatics & Oxygenates

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	79
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Analytical Report Number: 23-68007
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Lab Sample Number	2873899	2873900	2873901	2873902	2873903
Sample Reference	TS-S1	TS-S2	TS-S3	TS-S4	TS-S5
Sample Number	Surface	Surface	Surface	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied	0.30	0.50
Date Sampled	08/11/2023	08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS 1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS 1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS 1D_AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU 1D_AL}	mg/kg	1	MCERTS	< 1.0	1.6	< 1.0	< 1.0	1.1
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU 1D_AL}	mg/kg	2	MCERTS	< 2.0	5.8	6.4	12	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU 1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	14	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU 1D_AL}	mg/kg	8	MCERTS	11	19	37	52	11
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS 1D_AL}	mg/kg	10	NONE	13	27	46	78	15

TPH-CWG - Aromatic >EC5 - EC7 _{HS 1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS 1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	0.074
TPH-CWG - Aromatic >EC8 - EC10 _{HS 1D_AR}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU 1D_AR}	mg/kg	1	MCERTS	< 1.0	2.1	3	1.1	2.2
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU 1D_AR}	mg/kg	2	MCERTS	3.9	9.8	11	9.2	6
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU 1D_AR}	mg/kg	10	MCERTS	15	30	29	43	13
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU 1D_AR}	mg/kg	10	MCERTS	28	38	40	60	13
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS 1D_AR}	mg/kg	10	NONE	47	80	83	110	34

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

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Project / Site name: Rossendale Road

Lab Sample Number				2873904	2873905	2873906	2873907	2873908
Sample Reference				TS-S6	TS-S7	TS-S8	TS-S9	TS-S10
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	1.50	1.00	2.00	2.50
Date Sampled				08/11/2023	08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	28	29	31	36	34
Total mass of sample received	kg	0.001	NONE	1.1	1	0.9	1	1

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSO	DSO	DSO	DSO	DSO

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.9	6.7	6.8	6.9	6.2
Organic Matter (automated)	%	0.1	MCERTS	5.7	3.6	8.2	8.6	6.1

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.23	0.07	0.15	3.1	1.5
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.26	0.09
Acenaphthene	mg/kg	0.05	MCERTS	0.62	0.2	0.7	1	2.9
Fluorene	mg/kg	0.05	MCERTS	0.4	0.13	0.43	0.76	1.9
Phenanthrene	mg/kg	0.05	MCERTS	3.7	1.3	4.3	5.3	15
Anthracene	mg/kg	0.05	MCERTS	0.63	0.25	0.81	1	2.9
Fluoranthene	mg/kg	0.05	MCERTS	4.8	1.6	5.9	7	16
Pyrene	mg/kg	0.05	MCERTS	4.1	1.5	5.2	6.1	14
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.2	0.79	2.7	3.2	6.8
Chrysene	mg/kg	0.05	MCERTS	2.2	0.89	2.8	3.2	6.9
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	2.6	0.99	3.3	3.9	8
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.76	0.29	1.1	1.4	2.7
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.3	0.76	2.9	3.3	6.8
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.95	0.34	1.3	1.5	3
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.22	0.08	0.34	0.35	0.67
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.1	0.44	1.5	1.7	3.2

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	26.7	9.6	33.2	43.1	93.1
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.6	6	14	12	12
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35	41	33	38	31
Copper (aqua regia extractable)	mg/kg	1	MCERTS	29	19	41	38	36
Lead (aqua regia extractable)	mg/kg	1	MCERTS	55	37	70	76	190
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	16	11	20	15	12
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	73	50	95	92	84

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	72	51	100
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

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Lab Sample Number				2873904	2873905	2873906	2873907	2873908
Sample Reference				TS-S6	TS-S7	TS-S8	TS-S9	TS-S10
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	1.50	1.00	2.00	2.50
Date Sampled				08/11/2023	08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	1.3	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	6.1	2.7
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	16	26	9.7
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	< 10	18	38	15
TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}				< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}				< 0.010	< 0.010	0.07	0.045	0.097
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}				< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}				< 1.0	< 1.0	1.2	3.9	1.7
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}				3.3	< 2.0	6.1	12	12
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}				15	< 10	18	24	45
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}				21	< 10	20	35	51
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}				40	14	46	74	110

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

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Project / Site name: Rossendale Road

Lab Sample Number	2873909				2873910	2873911	2873912	2873913
Sample Reference	TS-S11				TS-S12	TS-S13	TS-S14	TS-S15
Sample Number	None Supplied				None Supplied	None Supplied	None Supplied	Surface
Depth (m)	0.50				1.00	3.00	0.50	None Supplied
Date Sampled	08/11/2023				08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	35	30	27	33	37
Total mass of sample received	kg	0.001	NONE	1	0.9	0.6	1.1	1

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EWS	EWS	EWS	EWS	EWS

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.8	6.8	7.1	7.1	6.6
Organic Matter (automated)	%	0.1	MCERTS	11	7.9	4.4	8.7	10

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.8	0.59	< 0.05	1.1	0.55
Acenaphthylene	mg/kg	0.05	MCERTS	0.07	0.05	< 0.05	0.12	0.07
Acenaphthene	mg/kg	0.05	MCERTS	1.9	1.5	< 0.05	2.9	1.2
Fluorene	mg/kg	0.05	MCERTS	1.2	1	< 0.05	2.1	0.8
Phenanthrene	mg/kg	0.05	MCERTS	9.9	7.8	0.43	18	7.1
Anthracene	mg/kg	0.05	MCERTS	1.8	1.7	0.09	3.8	1.3
Fluoranthene	mg/kg	0.05	MCERTS	12	8.7	0.62	20	9.3
Pyrene	mg/kg	0.05	MCERTS	9.8	7.5	0.57	17	8.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	4.6	3.9	0.3	8	4.2
Chrysene	mg/kg	0.05	MCERTS	4.8	4.1	0.32	8.1	4.3
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	5.6	4.4	0.4	8.2	5.2
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	2.1	1.9	0.12	3.6	2.2
Benzo(a)pyrene	mg/kg	0.05	MCERTS	4.7	4.1	0.34	7.5	5
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2	1.5	0.16	3.1	2
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.53	0.38	< 0.05	0.85	0.5
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.3	1.8	0.2	3.4	2.2

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	63.7	50.9	3.55	107	54.1
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	12	6.6	12	13
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.6	0.5	< 0.2	0.5	0.5
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	36	28	31	36
Copper (aqua regia extractable)	mg/kg	1	MCERTS	42	32	15	37	38
Lead (aqua regia extractable)	mg/kg	1	MCERTS	90	77	35	90	92
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	13	14	9.7	13	14
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	97	86	55	93	100

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	320	< 5.0	< 5.0	37
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

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Lab Sample Number				2873909	2873910	2873911	2873912	2873913
Sample Reference				TS-S11	TS-S12	TS-S13	TS-S14	TS-S15
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	Surface
Depth (m)				0.50	1.00	3.00	0.50	None Supplied
Date Sampled				08/11/2023	08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	2.6	4.3
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	20	9.3	< 8.0	19	26
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	22	10	< 10	24	35
TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}				< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}				< 0.010	0.27	< 0.010	< 0.010	0.032
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}				< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}				2.6	2.7	< 1.0	2.8	1
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}				8.1	11	< 2.0	17	6.3
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}				25	44	< 10	62	33
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}				46	66	17	87	48
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}				82	120	25	170	88

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

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Project / Site name: Rossendale Road

Lab Sample Number	2873914				2873915	2873916	2873917	2873918
Sample Reference	TS-S16				TS-S17	TS-S18	TS-S19	TS-S20
Sample Number	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	1.50				1.00	0.50	0.20	1.00
Date Sampled	08/11/2023				08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	34	37	40	36	31
Total mass of sample received	kg	0.001	NONE	0.9	0.9	0.9	1	1.1

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	ASE	ASE	ASE	ASE	ASE

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.7	6.8	7.3	6.5	7.5
Organic Matter (automated)	%	0.1	MCERTS	8.4	10	9.8	8.5	6.6

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.46	1.4	0.46	0.34	0.2
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.08	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	1	3.9	1.7	1.1	0.7
Fluorene	mg/kg	0.05	MCERTS	0.69	2.4	1	0.73	0.48
Phenanthrene	mg/kg	0.05	MCERTS	5.8	20	8.1	6.9	4.1
Anthracene	mg/kg	0.05	MCERTS	1.2	4.7	1.7	1.4	0.74
Fluoranthene	mg/kg	0.05	MCERTS	7.2	24	10	9.3	4.6
Pyrene	mg/kg	0.05	MCERTS	6.4	21	8.9	8.3	4
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.4	9.7	4.5	4.3	2
Chrysene	mg/kg	0.05	MCERTS	3.4	9.8	4.2	4	1.8
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	4.1	10	5.2	4.7	2
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	1.4	4.4	1.7	1.7	0.89
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.7	8.6	4.1	3.9	1.6
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.6	4.2	1.8	2.1	0.83
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.39	1.1	0.52	0.47	0.23
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.7	4.9	2.1	2.1	0.93

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	42.2	130	56.1	51.3	25.1
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	14	14	12	10
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	0.6	0.6	0.5	< 0.2
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	37	32	37	38	37
Copper (aqua regia extractable)	mg/kg	1	MCERTS	39	50	44	40	36
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	99	95	78	61
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	14	14	14	14	13
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	99	110	110	97	70

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	24	67	97	< 5.0	240
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Analytical Report Number: 23-68007
Project / Site name: Rossendale Road

Lab Sample Number				2873914	2873915	2873916	2873917	2873918
Sample Reference				TS-S16	TS-S17	TS-S18	TS-S19	TS-S20
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.50	1.00	0.50	0.20	1.00
Date Sampled				08/11/2023	08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	5.1	2.2	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	9.7	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	24	55	24	23	39
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	29	70	29	26	40
TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}				< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}				0.021	0.056	0.087	< 0.010	0.24
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}				< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}				1.5	2.7	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}				7.3	20	6.4	8	6.6
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}				31	84	40	38	17
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}				47	110	69	72	44
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}				87	220	120	120	68

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

Analytical Report Number : 23-68007

Project / Site name: Rossendale Road

* 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 *
2873899	TS-S1	Surface	None Supplied	Brown clay and sand with gravel and vegetation.
2873900	TS-S2	Surface	None Supplied	Brown clay and sand with gravel and vegetation.
2873901	TS-S3	Surface	None Supplied	Brown clay and loam with vegetation.
2873902	TS-S4	None Supplied	0.3	Brown clay and loam with vegetation.
2873903	TS-S5	None Supplied	0.5	Brown clay with vegetation.
2873904	TS-S6	None Supplied	1	Brown clay and loam with vegetation.
2873905	TS-S7	None Supplied	1.5	Brown clay and loam with vegetation.
2873906	TS-S8	None Supplied	1	Brown clay and loam with vegetation.
2873907	TS-S9	None Supplied	2	Brown clay and loam with vegetation.
2873908	TS-S10	None Supplied	2.5	Brown clay and loam with vegetation.
2873909	TS-S11	None Supplied	0.5	Brown clay and loam with vegetation.
2873910	TS-S12	None Supplied	1	Brown clay and loam with vegetation.
2873911	TS-S13	None Supplied	3	Brown clay with vegetation.
2873912	TS-S14	None Supplied	0.5	Brown clay with vegetation.
2873913	TS-S15	Surface	None Supplied	Brown clay and loam with vegetation.
2873914	TS-S16	None Supplied	1.5	Brown clay and loam with vegetation.
2873915	TS-S17	None Supplied	1	Brown clay and loam with vegetation.
2873916	TS-S18	None Supplied	0.5	Brown clay and loam with vegetation.
2873917	TS-S19	None Supplied	0.2	Brown clay and loam with vegetation.
2873918	TS-S20	None Supplied	1	Brown clay and loam with vegetation.

Analytical Report Number : 23-68007
Project / Site name: Rossendale Road

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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.	L038-PL	D	MCERTS
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	A001-PL	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
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.	L019-UK/PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser.	L080-PL	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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted

Analytical Report Number : 23-68007
Project / Site name: Rossendale Road

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
#2	EH_2D_Total but with fatty acids mathematically subtracted				
-	Operator - understore to separate acronyms (exception for +)				
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total				

Topsoil Validation Record

Job number	R2174	Depth ref:	R2174-R12-v2 Final			Quality ref:		R2174-R12-v2 Final			Other documents attached		✓	
Date	28.11.23	Area use:	Garden			landscaped			stockpile			other		
Site name / location	Waldmers Wood, Bury	Size area (m):	6 x 8 (Av.)	Approx. Area (m²):	144	Approx. Depth Top (m):	0.9	Approx. Volume Top (m³):	130	Approx. Depth Sub (m):	n/a	Approx. Volume Sub (m³):	n/a	
Plot/ location:	Plots 164													
Compiled by:	CM	Number depth entries required			1 (1 per plot); 1 entry provided.		Number samples required:			3 TS (1 per 250m³ TS, minimum 3 samples per source); 6 TS samples provided.				

Quality Validation		Inspection date/time:	15.06.23 & 09.08.23	Inspected by:	CM	Photographed:	✓
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Source Topsoil	1.	✓	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site).
Description Topsoil	2.	✓	Blackish brown slightly gravelly sandy clayey topsoil with grass roots.
Sample Topsoil	3.	✓	2 samples taken at stockpile on site on 23.11.23 (i2 Analytical Lab ref: 23-71343) following import and prior to placement. 20 samples collected from stockpile at source site - Rossendale Road, Burnley (Lab cert 23-64512-1) reported within letter R2688A-L02 (see attached).
Source Subsoil	4.	x	Not used
Description Subsoil	5.	x	n/a
Sample Subsoil	6.	x	n/a

Topsoil Validation Record



Topsoil Results Summary – Rossendale Road

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NAD	NAD	Yes
Arsenic	37	1.8-20	Yes
Cadmium	11	<0.1-1.2	Yes
Chromium (total)	910	5.0-54	Yes
Chromium VI	6	<1.2	Yes
Copper	2,400	8.1-76	Yes
Lead	200	16-190	Yes
Mercury	40	<0.05-0.40	Yes
Nickel	180	2.8-15	Yes
Zinc	3,700	17-210	Yes
Naphthalene	2.3	0.57-2.9	Yes*
Acenaphthene	210	0.92-3.8	Yes
Acenaphthylene	170	0.11-2.0	Yes
Fluorene	170	0.68-3.4	Yes
Phenanthrene	95	5.9-21	Yes
Anthracene	2,400	1.5-7.0	Yes
Fluoranthene	280	8.2-26	Yes
Pyrene	620	8.2-26	Yes
Benzo(a)anthracene	7.2	3.8-14	Yes*
Chrysene	15	5.7-13	Yes
Benzo(b)fluoranthene	2.6	4.5-13	Yes*
Benzo(k)fluoranthene	77	2.8-4.8	Yes
Benzo(a)pyrene	2.2	4.1-10	Yes*
Indeno(123cd) pyrene	27	2.7-6.8	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Dibenzo(ah) anthracene	0.24	0.89-1.9	Yes*
Benzo(ghi) perylene	320	2.3-6.1	Yes
Aliphatic C5-C6	42	<0.1	Yes
Aliphatic C6-C8	100	<0.1	Yes
Aliphatic C8-C10	27	<0.1	Yes
Aliphatic C10-C12	130	<1	Yes
Aliphatic C12-C16	1,100	<2	Yes
Aliphatic C16-C21	65,000	<8	Yes
Aliphatic C21-C35	65,000	<1-20	Yes
Aromatic C6-C7	70	<1	Yes
Aromatic C7-C8	130	<1	Yes
Aromatic C8-C10	34	<1	Yes
Aromatic C10-C12	74	<1-1.5	Yes
Aromatic C12-C16	140	<1-7.8	Yes
Aromatic C16-C21	260	25-130	Yes
Aromatic C21-C35	1,100	49-250	Yes
Benzene	0.08	<0.005	Yes
Toluene	130	<0.005	Yes
Ethyl-benzene	47	<0.005	Yes
m/p-xylene	56	<0.005	Yes
o-xylene	60	<0.005	Yes
*See Summary section			

Topsoil Validation Record

Depth Validation	Inspection date/time:	05.02.24	Inspected by:	CM	Photographed:	✓
Plot 164	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site).					
Source Subsoil	n/a					
Soil profile/description	0.0-0.6m	Blackish brown slightly gravelly clayey topsoil with grass roots.				
	0.6m	Base (same material)				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

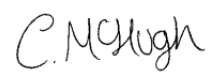
Topsoil Validation Record

**Summary**

Exceedances of the adopted residential soils screening criteria have been detected for a number of PAHs: Benzo(b)fluoranthene (2 no.), Benzo(a)pyrene (2 no.) and Dibenzo(ah)anthracene (2 no.). However, as summarised in the 'Rossendale Road, Burnley: Stockpile A Validation & Assessment' letter (ref: R2688-L02, dated 7th November 2023 – attached), these exceedances have been attributed to the inclusion of coal within the soils and this has been confirmed with the completion of a PAH ratio plot. Considering the undeveloped nature of the source site, the absence of any other identifiable sources, as well as the descriptions of coal gravel within the soils the overall risk to human health from PAHs from fragments of coal is considered to be very low due to the sequestration of PAHs within a carbon or vitrified matrix. A copy of this report was sent to the EHO for approval prior to the movement and placement of soils within gardens and was duly approved on 28.11.2023. The soil is therefore considered suitable for use as garden soils.

An additional inspection visit IS NOT required.

An additional inspection visit IS NOT required.

SGP Staff:	C McHugh BSc GradIEMA	Signed:		05.02.24
SGP Member:	D Wayland BSc MSC AssocMCIWM MCIWEM C.WEM	Signed:		06.02.24

Guide notes:

1.	Source Topsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
2.	Description Topsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
3.	Sample Topsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number
4.	Source Subsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
5.	Description Subsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
6.	Sample Subsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number



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Analytical Report Number : 23-71343

Project / Site name:	Tetrosyl - Rossendale Road Import R2174	Samples received on:	27/11/2023
Your job number:	R2174	Samples instructed on / Analysis started on:	27/11/2023
Your order number:		Analysis completed by:	01/12/2023
Report Issue Number:	1	Report issued on:	01/12/2023
Samples Analysed:	2 soil samples		

Signed: *A. Czerwinska*

Agnieszka Czerwinska
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

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

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.

Analytical Report Number: 23-71343

Project / Site name: Tetrosyl - Rossendale Road Import R2174

Lab Sample Number				2891279	2891280
Sample Reference				TS-S1	TS-S2
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				23/11/2023	24/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	39	50
Total mass of sample received	kg	0.001	NONE	0.8	0.8

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	KSZ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7	6.8
Organic Matter (automated)	%	0.1	MCERTS	9.4	15

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	3.1	0.84
Acenaphthylene	mg/kg	0.05	MCERTS	0.1	0.09
Acenaphthene	mg/kg	0.05	MCERTS	2.5	1.2
Fluorene	mg/kg	0.05	MCERTS	1.9	0.78
Phenanthrene	mg/kg	0.05	MCERTS	14	6.9
Anthracene	mg/kg	0.05	MCERTS	3.2	1.4
Fluoranthene	mg/kg	0.05	MCERTS	17	9.3
Pyrene	mg/kg	0.05	MCERTS	14	8.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	8.1	4.3
Chrysene	mg/kg	0.05	MCERTS	7	4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	7.6	5.1
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	3.5	1.6
Benzo(a)pyrene	mg/kg	0.05	MCERTS	7.2	4.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3.2	2.1
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.95	0.58
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.4	2.3

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	97.4	52.9
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	12
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	0.8
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35	28
Copper (aqua regia extractable)	mg/kg	1	MCERTS	37	51
Lead (aqua regia extractable)	mg/kg	1	MCERTS	87	99
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	14	14
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	99	130

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	48	70
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0

Analytical Report Number: 23-71343

Project / Site name: Tetrosyl - Rossendale Road Import R2174

Lab Sample Number				2891279	2891280
Sample Reference				TS-S1	TS-S2
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				23/11/2023	24/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS 1D AL}	mg/kg	0.02	NONE	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS 1D AL}	mg/kg	0.02	NONE	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS 1D AL}	mg/kg	0.05	NONE	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH CU 1D AL}	mg/kg	1	MCERTS	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH CU 1D AL}	mg/kg	2	MCERTS	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH CU 1D AL}	mg/kg	8	MCERTS	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH CU 1D AL}	mg/kg	8	MCERTS	31	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS 1D_AL}	mg/kg	10	NONE	38	< 10

TPH-CWG - Aromatic >EC5 - EC7 _{HS 1D AR}	mg/kg	0.01	NONE	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS 1D AR}	mg/kg	0.01	NONE	0.049	0.069
TPH-CWG - Aromatic >EC8 - EC10 _{HS 1D AR}	mg/kg	0.05	NONE	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH CU 1D AR}	mg/kg	1	MCERTS	1.8	2.3
TPH-CWG - Aromatic >EC12 - EC16 _{EH CU 1D AR}	mg/kg	2	MCERTS	6.7	8.6
TPH-CWG - Aromatic >EC16 - EC21 _{EH CU 1D AR}	mg/kg	10	MCERTS	22	28
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU 1D_AR}	mg/kg	10	MCERTS	61	46
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS 1D_AR}	mg/kg	10	NONE	91	85

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



Analytical Report Number : 23-71343
Project / Site name: Tetrosyl - Rossendale Road Import R2174

* 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 *
2891279	TS-S1	None Supplied	None Supplied	Brown clay and loam with gravel and plastic.
2891280	TS-S2	None Supplied	None Supplied	Brown loam and clay with vegetation.

Analytical Report Number : 23-71343

Project / Site name: Tetrosyl - Rossendale Road Import R2174

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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.	L038-PL	D	MCERTS
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	A001-PL	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
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.	L019-UK/PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser.	L080-PL	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.

Analytical Report Number : 23-71343

Project / Site name: Tetrosyl - Rossendale Road Import R2174

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Topsoil Validation Record

Job number	R2174	Depth ref:	R2174-R12-v2 Final			Quality ref:		R2174-R12-v2 Final			Other documents attached		✓	
Date	21.02.24	Area use:	Garden			landscaped			stockpile			other		
Site name / location	Waldmers Wood, Bury	Size area (m):	6 x 8 (Av.)	Approx. Area (m²):	144	Approx. Depth Top (m):	0.9	Approx. Volume Top (m³):	130	Approx. Depth Sub (m):	n/a	Approx. Volume Sub (m³):	n/a	
Plot/ location:	Plots 165													
Compiled by:	CM	Number depth entries required			1 (1 per plot); 1 entry provided.		Number samples required:			3 TS (1 per 250m³ TS, minimum 3 samples per source); 6 TS samples provided.				

Quality Validation		Inspection date/time:	15.06.23 & 09.08.23	Inspected by:	CM	Photographed:	✓
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Source Topsoil	1.	✓	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site).
Description Topsoil	2.	✓	Blackish brown slightly gravelly sandy clayey topsoil with grass roots.
Sample Topsoil	3.	✓	2 samples taken at stockpile on site on 23.11.23 (i2 Analytical Lab ref: 23-71343) following import and prior to placement. 20 samples collected from stockpile at source site - Rossendale Road, Burnley (Lab cert 23-64512-1) reported within letter R2688A-L02 (see attached).
Source Subsoil	4.	x	Not used
Description Subsoil	5.	x	n/a
Sample Subsoil	6.	x	n/a

Topsoil Validation Record



Topsoil Results Summary – Rossendale Road

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NAD	NAD	Yes
Arsenic	37	1.8-20	Yes
Cadmium	11	<0.1-1.2	Yes
Chromium (total)	910	5.0-54	Yes
Chromium VI	6	<1.2	Yes
Copper	2,400	8.1-76	Yes
Lead	200	16-190	Yes
Mercury	40	<0.05-0.40	Yes
Nickel	180	2.8-15	Yes
Zinc	3,700	17-210	Yes
Naphthalene	2.3	0.57-2.9	Yes*
Acenaphthene	210	0.92-3.8	Yes
Acenaphthylene	170	0.11-2.0	Yes
Fluorene	170	0.68-3.4	Yes
Phenanthrene	95	5.9-21	Yes
Anthracene	2,400	1.5-7.0	Yes
Fluoranthene	280	8.2-26	Yes
Pyrene	620	8.2-26	Yes
Benzo(a)anthracene	7.2	3.8-14	Yes*
Chrysene	15	5.7-13	Yes
Benzo(b)fluoranthene	2.6	4.5-13	Yes*
Benzo(k)fluoranthene	77	2.8-4.8	Yes
Benzo(a)pyrene	2.2	4.1-10	Yes*
Indeno(123cd) pyrene	27	2.7-6.8	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Dibenzo(ah) anthracene	0.24	0.89-1.9	Yes*
Benzo(ghi) perylene	320	2.3-6.1	Yes
Aliphatic C5-C6	42	<0.1	Yes
Aliphatic C6-C8	100	<0.1	Yes
Aliphatic C8-C10	27	<0.1	Yes
Aliphatic C10-C12	130	<1	Yes
Aliphatic C12-C16	1,100	<2	Yes
Aliphatic C16-C21	65,000	<8	Yes
Aliphatic C21-C35	65,000	<1-20	Yes
Aromatic C6-C7	70	<1	Yes
Aromatic C7-C8	130	<1	Yes
Aromatic C8-C10	34	<1	Yes
Aromatic C10-C12	74	<1-1.5	Yes
Aromatic C12-C16	140	<1-7.8	Yes
Aromatic C16-C21	260	25-130	Yes
Aromatic C21-C35	1,100	49-250	Yes
Benzene	0.08	<0.005	Yes
Toluene	130	<0.005	Yes
Ethyl-benzene	47	<0.005	Yes
m/p-xylene	56	<0.005	Yes
o-xylene	60	<0.005	Yes
*See Summary section			

Topsoil Validation Record

Depth Validation	Inspection date/time:	21.02.24	Inspected by:	SM	Photographed:	✓
Plot 165	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site).					
Source Subsoil	n/a					
Soil profile/description	0.0-0.6m	Blackish brown slightly gravelly clayey topsoil with grass roots.				
	0.6m	Base (same material)				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



Unable to confirm terram within depth validation due to difficult digging conditions. Please see picture above confirming terram placed at adjacent Plot 166.

No Photo

No Photo

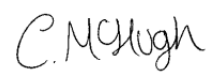
Topsoil Validation Record

**Summary**

Exceedances of the adopted residential soils screening criteria have been detected for a number of PAHs: Benzo(b)fluoranthene (2 no.), Benzo(a)pyrene (2 no.) and Dibenzo(ah)anthracene (2 no.). However, as summarised in the 'Rossendale Road, Burnley: Stockpile A Validation & Assessment' letter (ref: R2688-L02, dated 7th November 2023 – attached), these exceedances have been attributed to the inclusion of coal within the soils and this has been confirmed with the completion of a PAH ratio plot. Considering the undeveloped nature of the source site, the absence of any other identifiable sources, as well as the descriptions of coal gravel within the soils the overall risk to human health from PAHs from fragments of coal is considered to be very low due to the sequestration of PAHs within a carbon or vitrified matrix. A copy of this report was sent to the EHO for approval prior to the movement and placement of soils within gardens and was duly approved on 28.11.2023. The soil is therefore considered suitable for use as garden soils.

An additional inspection visit IS NOT required.

An additional inspection visit IS NOT required.

SGP Staff:	C McHugh BSc GradIEMA	Signed:		21.02.24
SGP Member:	D Wayland BSc MSC AssocMCIWM MCIWEM C.WEM	Signed:		21.02.24

Guide notes:

1.	Source Topsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
2.	Description Topsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
3.	Sample Topsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number
4.	Source Subsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
5.	Description Subsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
6.	Sample Subsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number



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Analytical Report Number : 23-71343

Project / Site name:	Tetrosyl - Rossendale Road Import R2174	Samples received on:	27/11/2023
Your job number:	R2174	Samples instructed on / Analysis started on:	27/11/2023
Your order number:		Analysis completed by:	01/12/2023
Report Issue Number:	1	Report issued on:	01/12/2023
Samples Analysed:	2 soil samples		

Signed: *A. Czerwinska*

Agnieszka Czerwinska
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

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

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.

Analytical Report Number: 23-71343

Project / Site name: Tetrosyl - Rossendale Road Import R2174

Lab Sample Number				2891279	2891280
Sample Reference				TS-S1	TS-S2
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				23/11/2023	24/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	39	50
Total mass of sample received	kg	0.001	NONE	0.8	0.8

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	KSZ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7	6.8
Organic Matter (automated)	%	0.1	MCERTS	9.4	15

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	3.1	0.84
Acenaphthylene	mg/kg	0.05	MCERTS	0.1	0.09
Acenaphthene	mg/kg	0.05	MCERTS	2.5	1.2
Fluorene	mg/kg	0.05	MCERTS	1.9	0.78
Phenanthrene	mg/kg	0.05	MCERTS	14	6.9
Anthracene	mg/kg	0.05	MCERTS	3.2	1.4
Fluoranthene	mg/kg	0.05	MCERTS	17	9.3
Pyrene	mg/kg	0.05	MCERTS	14	8.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	8.1	4.3
Chrysene	mg/kg	0.05	MCERTS	7	4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	7.6	5.1
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	3.5	1.6
Benzo(a)pyrene	mg/kg	0.05	MCERTS	7.2	4.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3.2	2.1
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.95	0.58
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.4	2.3

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	97.4	52.9
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	12
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	0.8
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35	28
Copper (aqua regia extractable)	mg/kg	1	MCERTS	37	51
Lead (aqua regia extractable)	mg/kg	1	MCERTS	87	99
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	14	14
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	99	130

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	48	70
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0

Analytical Report Number: 23-71343

Project / Site name: Tetrosyl - Rossendale Road Import R2174

Lab Sample Number				2891279	2891280
Sample Reference				TS-S1	TS-S2
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				23/11/2023	24/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS 1D AL}	mg/kg	0.02	NONE	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS 1D AL}	mg/kg	0.02	NONE	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS 1D AL}	mg/kg	0.05	NONE	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH CU 1D AL}	mg/kg	1	MCERTS	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH CU 1D AL}	mg/kg	2	MCERTS	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH CU 1D AL}	mg/kg	8	MCERTS	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH CU 1D AL}	mg/kg	8	MCERTS	31	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS 1D_AL}	mg/kg	10	NONE	38	< 10

TPH-CWG - Aromatic >EC5 - EC7 _{HS 1D AR}	mg/kg	0.01	NONE	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS 1D AR}	mg/kg	0.01	NONE	0.049	0.069
TPH-CWG - Aromatic >EC8 - EC10 _{HS 1D AR}	mg/kg	0.05	NONE	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH CU 1D AR}	mg/kg	1	MCERTS	1.8	2.3
TPH-CWG - Aromatic >EC12 - EC16 _{EH CU 1D AR}	mg/kg	2	MCERTS	6.7	8.6
TPH-CWG - Aromatic >EC16 - EC21 _{EH CU 1D AR}	mg/kg	10	MCERTS	22	28
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU 1D_AR}	mg/kg	10	MCERTS	61	46
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS 1D_AR}	mg/kg	10	NONE	91	85

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



Analytical Report Number : 23-71343
 Project / Site name: Tetrosyl - Rossendale Road Import R2174

* 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 *
2891279	TS-S1	None Supplied	None Supplied	Brown clay and loam with gravel and plastic.
2891280	TS-S2	None Supplied	None Supplied	Brown loam and clay with vegetation.

Analytical Report Number : 23-71343

Project / Site name: Tetrosyl - Rossendale Road Import R2174

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

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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.	L038-PL	D	MCERTS
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	A001-PL	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
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.	L019-UK/PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser.	L080-PL	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.

Analytical Report Number : 23-71343

Project / Site name: Tetrosyl - Rossendale Road Import R2174

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total



Partnership No: OC 300776

Our Ref: R2688-L02

7th November 2023

Barratt Homes Manchester
1st Floor - Adamson House
106 Wilmslow Road
Didsbury
Manchester
M20 2YY
Dear Barratt Homes

Rossendale Road, Burnley: Stockpile A Validation & Assessment

Barratt Homes Manchester (BHM) are carrying out preparatory earthworks at the Brun Lea, Rossendale Road site, Burnley to prepare for residential development. Preparatory works have included the recovery of circa 1,000m³ of topsoil separated into stockpile A (see Appendix C).

BHM propose to reuse the topsoil recovered for garden areas of the ongoing development at Brun Lea Heights under an MMP to allow reuse as garden soils. To assess the suitability of the soils for this intended use prior to placing the soil in garden areas, BHM have instructed Smith Grant LLP (SGP) to carry out validation testing.

SGP Consultant C McHugh attended site on 23.10.23 and collected 20 samples from the topsoil stockpile at varying depths using an excavator and submitted samples for chemical analysis in accordance with the Remediation Strategy for the site. SGP achieved a sampling frequency of 1 per 50m³ in accordance with the strategy requirement for site-won soils. It is understood that BHM may also export some of topsoil to Waldmers Wood, Bury.

Samples were couriered to i2 Analytical, Watford within 24 hours of collections. Samples were placed in appropriate containers as provided by the laboratory and stored in a chilled cool box. Chemical analysis was scheduled for a generic suite of urban contaminants (asbestos, metals, hydrocarbons and PAHs), the results of which have been compared against generic soil assessment criteria for use in residential gardens with plant uptake (LQM/CIEH Suitable 4 Use Levels (S4ULs) and Category 4 Screening Levels (C4SL) for lead and benzo(a)pyrene). Due to the high SOM content of the samples (average of 6.9%) soil screening criteria based on 6% have been adopted.

Figure 1: Image of Stockpile A



Stockpile Assessment

The results of the topsoil stockpile are presented in the section below and are compared to the adopted screening criteria. Where exceedances are present, additional risk assessment is provided. A copy of the laboratory test certificate (ref.23-64512-1) is provided in Appendix A.

Topsoil Stockpile

Twenty samples (TS-S1 – TS-S20) were collected from the stockpile. The results are summarised in the table below:

Table 1. Summary of Topsoil Stockpile Results

Determinant	Range of Concentrations (mg/kg, unless specified)	Screening Criteria (mg/g, unless specified)	Exceedances
Asbestos (%)	NAD	NAD	None
Arsenic	11-16	LQM/CIEH S4UL 37	None
Cadmium	0.5-0.7	LQM/CIEH S4UL 11	None
Chromium	29-35	LQM/CIEH S4UL 910	None
Copper	33-53	LQM/CIEH S4UL 2400	None
Lead	70-220	LQM/CIEH S4UL 200	(1): TS-S20
Mercury	0.3-0.4	LQM/CIEH S4UL 40	None
Nickel	14-21	LQM/CIEH S4UL 130	None
Zinc	88-190	LQM/CIEH S4UL 3700	None
Naphthalene	0.3-2.4	LQM/CIEH S4UL 13	(1): TS-S11
Acenaphthylene	0.1-0.6	LQM/CIEH S4UL 920	None
Acenaphthene	0.7-4.1	LQM/CIEH S4UL 1100	None
Fluorene	0.5-2.9	LQM/CIEH S4UL 440	None
Phenanthrene	4.4-20.0	LQM/CIEH S4UL 440	None



Determinant	Range of Concentrations (mg/kg, unless specified)	Screening Criteria (mg/g, unless specified)	Exceedances
Fluoranthene	6.2-23.0	LQM/CIEH S4UL 890	None
Anthracene	0.9-5.0	LQM/CIEH S4UL 11,000	None
Pyrene	5.4-20.0	LQM/CIEH S4UL 2000	None
Benzo(a)anthracene	2.8-10.0	LQM/CIEH S4UL 13	(2): TS-S11 & TS-S20
Chrysene	2.8-9.7	LQM/CIEH S4UL 27	None
Benzo(b)fluoranthene	3.4-10	LQM/CIEH S4UL 3.7	(17): TS S1 – TS-S5 & TS-S7 & TS-S9 - TS-S14 & TS-S16 - TS-S20
Benzo(k)fluoranthene	1.2-5.0	LQM/CIEH S4UL 100	None
Benzo(a)pyrene	2.8-9.8	C4SL 5	(18): TS-S1 – TS-S5 & TS-S7 & TS-S9 – TS-S20
Indeno(123cd) pyrene	1.4-4.9	S4UL 41	None
Dibenzo(ah)anthracene	0.4-1.2	LQM/CIEH S4UL 0.3	(20): TS-S1 – TS-S20
Benzo(ghi)perylene	1.5-5.5	LQM/CIEH S4UL 350	None
aliphatic >C5-C7	<1	LQM/CIEH S4UL 42	None
aliphatic >C7-C8	<1	LQM/CIEH S4UL 100	None
aliphatic >C8-C10	<1	LQM/CIEH S4UL 27	None
aliphatic >C10-C12	<1	LQM/CIEH S4UL 130	None
aliphatic >C12-C16	2-5.4	LQM/CIEH S4UL 1100	None
aliphatic >C16-C21	8	LQM/CIEH S4UL 5000	None
aliphatic >C21-C35	8-36	LQM/CIEH S4UL 5000	None
aromatic >C5-C7	<1	LQM/CIEH S4UL 70	None
aromatic >C7-C8	<1	LQM/CIEH S4UL 130	None
aromatic >C8-C10	<1	LQM/CIEH S4UL 34	None
aromatic >C10-C12	1-3.1	LQM/CIEH S4UL 74	None
aromatic >C12-C16	2-12	LQM/CIEH S4UL 140	None
aromatic >C16-C21	10-72	LQM/CIEH S4UL 260	None
aromatic >C21-C35	27-120	LQM/CIEH S4UL 1100	None
Benzene	<1	LQM/CIEH S4UL 0.087	None
Toluene	<1	LQM/CIEH S4UL 130	None
Ethylbenzene	<1	LQM/CIEH S4UL 47	None
Xylenes	<1	LQM/CIEH S4UL 59	None

A single minor lead exceedance was recorded with a concentration of 220 mg/kg (sample: T1-S20), above the assessment criteria of 200 mg/kg.

There were multiple PAH exceedances recorded within the topsoil stockpile A results:

- Naphthalene – single exceedance recorded with a concentration of 2.4 mg/kg (sample: TS-S11).
- Benzo(a)anthracene – 2 exceedances recorded at 9.2 mg/kg (sample: TS-S11) and 10.0 mg/kg (samples TS-S20).



- Benzo(f)fluoranthene – 17 exceedances were recorded with a maximum concentration of 10.0 mg/kg (sample: TS-S20).
- Benzo(a)pyrene – 18 exceedances were recorded with a maximum concentration of 9.8 mg/kg (sample: TS-S20).
- Dibenzo(ah)anthracene – 20 exceedances recorded dibenzo(ah)anthracene exceedances with a maximum concentration of 1.2mg/kg (sample: TS-S20).

Further Assessment

PAHs

To assess the potential source of the PAHs a ratio-cross plot has been undertaken, a copy of the plot is presented in Appendix B. All 20 samples confirmed a coal signature which is consistent with the findings and assessment undertaken on other stockpiles of site-won soils. The presence of coal fragments is not unexpected given the history of the site where former coal shafts have been identified and inclusions of gravel of coal have been reported. The overall risk to human health from exposure to PAHs within the fine fragments of coal is considered to be low due to the low bioavailability of the PAHs within the vitrified or carbon matrix of the coal.

Lead

A single very minor exceedance of lead was reported in sample TS-S20. There was no noticeable difference in the material from sample TS-S20 which consisted of brown loamy topsoil, consistent with the other samples. Given the absence of any significant anthropogenic inclusions with the shallow soils or history of industrial use other than mining, the minor occurrence of elevated lead may be attributed to the natural geology of the site and surrounding area. Reference is made to the British Geological Society (BGS) Natural Background Concentrations (NBC) which report that natural soils within the site area may range between 99.5 – 242 mg/kg; this is consistent with the reported concentrations.

Given the uniformity of the soil in the stockpile and the heterogeneity of the material that had been stripped, recovered and stockpiled, it is considered appropriate to treat the stockpile as a single averaging area. The average lead concentration is 90.15 mg/kg which is below the assessment criteria of 200 mg/kg.

Conclusions

It is concluded that stockpile A which consists of circa 1,000m³ of site-won topsoil has been sampled at the required frequency of 1 per 50m³ for site-won soils as per the approved Remediation Strategy.

Elevated PAHs have been reported with exceedances of benzo(a)pyrene, dibenzo(ah)anthracene, benzo(b)fluoranthene and benzo(a)anthracene when compared to the adopted assessment criteria for residential land use and based on 6% SOM content. Given the absence of made ground or any anthropogenic inclusions, a PAH cross-plot has been undertaken to establish the probable source with a coal signature reported for each sample. This is consistent with previous sampling and assessment works undertaken by SGP (R2688-L01) which reported near identical results. The presence of fine inclusions of coal were reported during previous site investigation works with a separate mining investigation confirming the presence of three shafts (Shaft A, B and C) on the Site.

The overall risk to human health from PAHs within fragments of coal is with the bioavailability of the PAHs limited due to the sequestration of PAHs within a carbon or vitrified matrix.

A single very minor exceedance of lead was reported (sample TS-S20), however the reported concentration of 220 mg/kg falls within the BGS Natural Background Concentrations (NBCs) of the site which range



between 99.5 – 242 mg/kg. Given the consistency of soils within the stockpile and the absence of any anthropogenic inclusions, the stockpile has been treated as a single averaging area with the average lead concentration below the assessment criteria of 200 mg/kg.

It is therefore considered following further assessment that the topsoil within Stockpile A is considered suitable for reuse as garden soils and has a low risk to human health. Due to the reported exceedances, approval by the Local Authority Contaminated Land Officer (CLO) will be required prior to the re-use of soils.

If any of the stockpile is to be exported to an additional Barratt site, the CLO for the receiving Site will also be required to approve this assessment. Movement of material should be completed under a declared Material Management Plan (MMP).

Recommendations

No further testing is recommended; however, this assessment should be provided to the Local Authority Contaminated Land Officer for approval prior to the soils being reused. If it is proposed to export all or part of the stockpile to another Barratt development, this assessment should also be provided to the CLO for the receiving site for approval. The movement of soils should be completed under an MMP.

Yours sincerely
for: Smith Grant LLP

A handwritten signature in black ink, appearing to read "C. McHugh".

Caitlin McHugh BSc GradIEMA
Graduate Consultant

Attached

Laboratory Certificate: 23-64512-1
PAH ratio cross plot analysis



APPENDIX A

Laboratory Certificate



Caitlin McHugh
Smith Grant LLP
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Wrexham
LL13 9TY

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t: 01923 225404
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e: reception@i2analytical.com

e: caitlin.mchugh@smithgrant.co.uk

Analytical Report Number : 23-64512

Project / Site name:	Rosendale Road	Samples received on:	25/10/2023
Your job number:	R2688B	Samples instructed on / Analysis started on:	25/10/2023
Your order number:		Analysis completed by:	01/11/2023
Report Issue Number:	1	Report issued on:	02/11/2023
Samples Analysed:	20 soil samples		

Signed: _____

Joanna Szwarzak
Junior 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

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

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.

Analytical Report Number: 23-64512
Project / Site name: Rosendale Road

Lab Sample Number	2855334	2855335	2855336	2855337	2855338
Sample Reference	TS-S1	TS-S2	TS-S3	TS-S4	TS-S5
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.00	0.00	0.00	0.00	0.00
Date Sampled	23/10/2023	23/10/2023	23/10/2023	23/10/2023	23/10/2023
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	39	41
Total mass of sample received	kg	0.001	NONE	0.8	0.7

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	ASE	ASE	ASE	ASE	ASE

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7	7	6.5	6.5	6.6
Organic Matter	%	0.1	MCERTS	-	-	-	-	-
Organic Matter (automated)	%	0.1	MCERTS	11	10	9.6	8.4	9.9

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	1.2	0.76	1.4	0.4	0.62
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.06
Acenaphthene	mg/kg	0.05	MCERTS	2.5	1.6	1.4	1.4	1.5
Fluorene	mg/kg	0.05	MCERTS	1.8	1.1	1.1	1	0.96
Phenanthrene	mg/kg	0.05	MCERTS	14	9.1	9.1	7.6	7.7
Anthracene	mg/kg	0.05	MCERTS	3	1.9	1.6	1.5	1.5
Fluoranthene	mg/kg	0.05	MCERTS	16	11	10	9.2	9.6
Pyrene	mg/kg	0.05	MCERTS	14	9.8	8.9	7.9	8.1
Benzo(a)anthracene	mg/kg	0.05	MCERTS	6.8	4.9	4.7	4.3	4.1
Chrysene	mg/kg	0.05	MCERTS	6.3	4.4	4.3	3.7	4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	7.2	5.7	5.4	4.8	4.9
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	2.7	1.5	1.6	1.5	1.5
Benzo(a)pyrene	mg/kg	0.05	MCERTS	5.9	4.3	4.4	3.7	3.7
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3.1	2.1	1.9	1.8	1.8
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.68	0.49	0.48	0.41	0.56
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.2	2.4	2.3	1.9	2

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	87.4	61.3	58.9	51.1	52.5
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	14	14	11	15
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7	0.7	0.6	0.5	0.6
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	33	35	33	29	32
Copper (aqua regia extractable)	mg/kg	1	MCERTS	40	39	43	33	40
Lead (aqua regia extractable)	mg/kg	1	MCERTS	86	86	83	70	82
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	16	17	19	18	17
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	110	100	100	100

Monoaromatics & Oxygenates

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	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Analytical Report Number: 23-64512
Project / Site name: Rosendale Road

Lab Sample Number	2855334	2855335	2855336	2855337	2855338
Sample Reference	TS-S1	TS-S2	TS-S3	TS-S4	TS-S5
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.00	0.00	0.00	0.00	0.00
Date Sampled	23/10/2023	23/10/2023	23/10/2023	23/10/2023	23/10/2023
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS 1D AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS 1D AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS 1D AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH CU 1D AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH CU 1D AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH CU 1D AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH CU 1D AL}	mg/kg	8	MCERTS	22	20	< 8.0	18	8.2
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	23	22	< 10	18	< 10

TPH-CWG - Aromatic >EC5 - EC7 _{HS 1D AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS 1D AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC8 - EC10 _{HS 1D AR}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH CU 1D AR}	mg/kg	1	MCERTS	1.2	1.1	< 1.0	< 1.0	1.3
TPH-CWG - Aromatic >EC12 - EC16 _{EH CU 1D AR}	mg/kg	2	MCERTS	7.9	5.3	2.7	3.5	5.8
TPH-CWG - Aromatic >EC16 - EC21 _{EH CU 1D AR}	mg/kg	10	MCERTS	38	19	18	15	20
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	51	32	37	35	27
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	97	58	57	53	54

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

Analytical Report Number: 23-64512
Project / Site name: Rosendale Road

Lab Sample Number	2855339				2855340	2855341	2855342	2855343
Sample Reference	TS-S6				TS-S7	TS-S8	TS-S9	TS-S10
Sample Number	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.80-1.00				2.00	1.50	0.50-0.60	2.50-3.00
Date Sampled	23/10/2023				23/10/2023	23/10/2023	23/10/2023	23/10/2023
Time Taken	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	39	36	34	44	33
Total mass of sample received	kg	0.001	NONE	0.8	0.9	0.8	0.7	0.8

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	ASE	ASE	ASE	DSA	DSA

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.5	7.2	7.4	7.4	7.9
Organic Matter	%	0.1	MCERTS	-	-	-	14	-
Organic Matter (automated)	%	0.1	MCERTS	10	10	9	-	8.2

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.34	0.32	0.25	0.33	0.74
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.06	0.05	0.08	0.06
Acenaphthene	mg/kg	0.05	MCERTS	0.68	0.85	0.75	1	1.9
Fluorene	mg/kg	0.05	MCERTS	0.51	0.58	0.55	0.75	1.3
Phenanthrene	mg/kg	0.05	MCERTS	4.5	5.2	4.4	7.3	11
Anthracene	mg/kg	0.05	MCERTS	0.96	1.1	0.91	1.4	2
Fluoranthene	mg/kg	0.05	MCERTS	6.4	7.1	6.2	10	11
Pyrene	mg/kg	0.05	MCERTS	5.7	6.3	5.4	8.6	9.7
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.2	3.4	2.8	4.4	4.7
Chrysene	mg/kg	0.05	MCERTS	2.8	3.1	2.8	4.2	4.4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	3.5	3.7	3.4	4.9	5.3
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	1.3	1.6	1.2	2.1	1.7
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3	3.4	2.8	4.5	4.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.6	1.5	1.4	2	2
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.39	0.35	0.39	0.45	0.49
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.6	1.7	1.5	2.4	2.2

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	36.4	40.3	34.7	54.4	63.2
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	12	16	13	15
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7	0.6	0.7	0.7	0.6
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	33	30	35	32	32
Copper (aqua regia extractable)	mg/kg	1	MCERTS	39	39	34	39	41
Lead (aqua regia extractable)	mg/kg	1	MCERTS	88	81	86	83	87
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	0.4	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	17	16	15	18
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	100	110	110	88

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	29	< 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	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Analytical Report Number: 23-64512
Project / Site name: Rosendale Road

Lab Sample Number				2855339	2855340	2855341	2855342	2855343
Sample Reference				TS-S6	TS-S7	TS-S8	TS-S9	TS-S10
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80-1.00	2.00	1.50	0.50-0.60	2.50-3.00
Date Sampled				23/10/2023	23/10/2023	23/10/2023	23/10/2023	23/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 _{HS 1D AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS 1D AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS 1D AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH CU 1D AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH CU 1D AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH CU 1D AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH CU 1D AL}	mg/kg	8	MCERTS	< 8.0	9.1	9.3	14	8.2
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	< 10	< 10	14	< 10
TPH-CWG - Aromatic >EC5 - EC7 _{HS 1D AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS 1D AR}	mg/kg	0.01	NONE	< 0.010	0.031	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC8 - EC10 _{HS 1D AR}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH CU 1D AR}	mg/kg	1	MCERTS	1.3	< 1.0	< 1.0	< 1.0	1.9
TPH-CWG - Aromatic >EC12 - EC16 _{EH CU 1D AR}	mg/kg	2	MCERTS	5.7	5	3.1	< 2.0	9.8
TPH-CWG - Aromatic >EC16 - EC21 _{EH CU 1D AR}	mg/kg	10	MCERTS	16	22	18	< 10	26
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	35	45	39	31	40
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	58	72	60	40	78

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

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Lab Sample Number				2855344	2855345	2855346	2855347	2855348
Sample Reference				TS-S11	TS-S12	TS-S13	TS-S14	TS-S15
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.50	None Supplied	1.50	1.50	3.00
Date Sampled				23/10/2023	23/10/2023	23/10/2023	23/10/2023	23/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	34	38	37	40	34
Total mass of sample received	kg	0.001	NONE	0.9	0.8	0.9	0.8	0.7

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSA	DSA	DSA	DSA	DSA

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.6	7.1	7.2	7	7
Organic Matter	%	0.1	MCERTS	-	-	-	-	-
Organic Matter (automated)	%	0.1	MCERTS	8.9	9.9	9.8	11	8.2

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	2.4	0.67	0.56	1.8	0.59
Acenaphthylene	mg/kg	0.05	MCERTS	0.13	0.06	0.05	0.08	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	4.1	1.4	1.3	2.1	0.93
Fluorene	mg/kg	0.05	MCERTS	2.9	0.92	0.92	1.5	0.69
Phenanthrene	mg/kg	0.05	MCERTS	20	7.2	7.1	12	5.7
Anthracene	mg/kg	0.05	MCERTS	4.2	1.5	1.6	2.4	1.1
Fluoranthene	mg/kg	0.05	MCERTS	22	9.2	8.7	13	7
Pyrene	mg/kg	0.05	MCERTS	18	8.1	7.5	11	6.1
Benzo(a)anthracene	mg/kg	0.05	MCERTS	9.2	4.4	3.9	5.7	3.4
Chrysene	mg/kg	0.05	MCERTS	8.2	3.8	3.5	5.3	3.1
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	9.5	4.9	4.1	6.1	3.7
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	3.8	1.7	1.8	2.4	1.6
Benzo(a)pyrene	mg/kg	0.05	MCERTS	8.6	4	3.5	5.2	3.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3.7	2	1.7	2.4	1.5
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1	0.46	0.4	0.59	0.39
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	4.1	2.2	1.9	2.6	1.7

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	121	52.5	48.5	73.5	40.5
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	13	13	12	13
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7	0.6	0.6	0.6	0.6
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35	31	32	30	35
Copper (aqua regia extractable)	mg/kg	1	MCERTS	41	36	37	36	40
Lead (aqua regia extractable)	mg/kg	1	MCERTS	88	82	82	80	88
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	21	15	16	15	17
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	99	98	100	99

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	41	< 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	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Analytical Report Number: 23-64512
Project / Site name: Rosendale Road

Lab Sample Number				2855344	2855345	2855346	2855347	2855348
Sample Reference				TS-S11	TS-S12	TS-S13	TS-S14	TS-S15
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.50	None Supplied	1.50	1.50	3.00
Date Sampled				23/10/2023	23/10/2023	23/10/2023	23/10/2023	23/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 _{HS 1D AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS 1D AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS 1D AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH CU 1D AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH CU 1D AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH CU 1D AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH CU 1D AL}	mg/kg	8	MCERTS	9.5	< 8.0	< 8.0	< 8.0	8.8
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 _{HS 1D AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS 1D AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC8 - EC10 _{HS 1D AR}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH CU 1D AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	1.4	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH CU 1D AR}	mg/kg	2	MCERTS	6.2	6	6.1	8.9	2.7
TPH-CWG - Aromatic >EC16 - EC21 _{EH CU 1D AR}	mg/kg	10	MCERTS	31	19	18	30	19
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	50	41	35	53	34
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	87	67	61	93	57

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

Analytical Report Number: 23-64512
Project / Site name: Rosendale Road

Lab Sample Number	2855349				2855350	2855351	2855352	2855353
Sample Reference	TS-S16				TS-S17	TS-S18	TS-S19	TS-S20
Sample Number	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	3.00				1.50-2.00	2.00	0.00	1.00
Date Sampled	23/10/2023				23/10/2023	23/10/2023	23/10/2023	23/10/2023
Time Taken	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	32	37	38	29	35
Total mass of sample received	kg	0.001	NONE	0.8	0.9	0.8	0.7	0.9

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSA	KWB	KWB	KWB	KWB

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.8	7.1	7	7.4	7.1
Organic Matter	%	0.1	MCERTS	-	-	-	-	-
Organic Matter (automated)	%	0.1	MCERTS	7	9.2	10	9.9	5.8

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.27	0.56	0.6	0.41	1.6
Acenaphthylene	mg/kg	0.05	MCERTS	0.63	0.08	0.1	0.05	0.09
Acenaphthene	mg/kg	0.05	MCERTS	0.72	1.6	1.3	1.3	3.4
Fluorene	mg/kg	0.05	MCERTS	1.3	1.1	1.1	0.83	2.5
Phenanthrene	mg/kg	0.05	MCERTS	9.4	9.1	10	7	19
Anthracene	mg/kg	0.05	MCERTS	2.4	1.8	2.2	1.6	5
Fluoranthene	mg/kg	0.05	MCERTS	12	12	12	8.6	23
Pyrene	mg/kg	0.05	MCERTS	10	10	11	7.6	20
Benzo(a)anthracene	mg/kg	0.05	MCERTS	5.1	5.3	5.2	3.8	10
Chrysene	mg/kg	0.05	MCERTS	4.8	4.6	5.2	3.8	9.7
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	4.9	6.1	5.2	3.8	10
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	1.7	1.9	2.7	1.9	5
Benzo(a)pyrene	mg/kg	0.05	MCERTS	4.3	4.8	4.9	3.4	9.8
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2.1	2.2	2.5	1.8	4.9
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.66	0.5	0.68	0.47	1.2
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.5	2.6	2.8	2	5.5

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	62.6	63.8	68	48.3	131
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	12	13	13	15
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.6	0.7	0.7	0.6	0.7
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35	33	32	32	29
Copper (aqua regia extractable)	mg/kg	1	MCERTS	42	43	39	37	53
Lead (aqua regia extractable)	mg/kg	1	MCERTS	73	88	90	80	220
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.4	< 0.3	< 0.3	0.4
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	20	16	16	14	15
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	97	180	100	100	190

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	12	8.1	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

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Lab Sample Number				2855349	2855350	2855351	2855352	2855353
Sample Reference				TS-S16	TS-S17	TS-S18	TS-S19	TS-S20
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				3.00	1.50-2.00	2.00	0.00	1.00
Date Sampled				23/10/2023	23/10/2023	23/10/2023	23/10/2023	23/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 _{HS 1D AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS 1D AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS 1D AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH CU 1D AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH CU 1D AL}	mg/kg	2	MCERTS	5.4	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH CU 1D AL}	mg/kg	8	MCERTS	8	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH CU 1D AL}	mg/kg	8	MCERTS	36	9.9	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	49	10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 _{HS 1D AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS 1D AR}	mg/kg	0.01	NONE	< 0.010	0.013	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC8 - EC10 _{HS 1D AR}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH CU 1D AR}	mg/kg	1	MCERTS	3.1	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH CU 1D AR}	mg/kg	2	MCERTS	11	2.4	2.3	4	12
TPH-CWG - Aromatic >EC16 - EC21 _{EH CU 1D AR}	mg/kg	10	MCERTS	53	17	19	21	72
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	71	32	34	39	120
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	140	52	55	64	210

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

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* 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 *
2855334	TS-S1	None Supplied	0	Brown loam and clay with gravel and vegetation.
2855335	TS-S2	None Supplied	0	Brown loam and clay with gravel and vegetation.
2855336	TS-S3	None Supplied	0	Brown loam and clay with gravel and vegetation.
2855337	TS-S4	None Supplied	0	Brown loam and clay with gravel and vegetation.
2855338	TS-S5	None Supplied	0	Brown loam and clay with gravel and vegetation.
2855339	TS-S6	None Supplied	0.80-1.00	Brown loam and clay with gravel and vegetation.
2855340	TS-S7	None Supplied	2	Brown clay and loam with gravel and vegetation.
2855341	TS-S8	None Supplied	1.5	Brown clay and sand with gravel and vegetation.
2855342	TS-S9	None Supplied	0.50-0.60	Brown clay and sand with gravel and vegetation.
2855343	TS-S10	None Supplied	2.50-3.00	Brown clay and sand with gravel and vegetation.
2855344	TS-S11	None Supplied	2.5	Brown clay and sand with gravel and vegetation.
2855345	TS-S12	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation.
2855346	TS-S13	None Supplied	1.5	Brown clay and sand with gravel and vegetation.
2855347	TS-S14	None Supplied	1.5	Brown clay and sand with gravel and vegetation.
2855348	TS-S15	None Supplied	3	Brown clay and loam with gravel and vegetation.
2855349	TS-S16	None Supplied	3	Brown clay and loam with gravel and vegetation.
2855350	TS-S17	None Supplied	1.50-2.00	Brown clay and sand with gravel and vegetation.
2855351	TS-S18	None Supplied	2	Brown clay and sand with gravel and vegetation.
2855352	TS-S19	None Supplied	0	Brown loam with gravel and vegetation.
2855353	TS-S20	None Supplied	1	Brown loam and clay with gravel and vegetation.

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Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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.	L038-PL	D	MCERTS
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	A001-PL	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Organic matter in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L023-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
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.	L019-UK/PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser.	L080-PL	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).

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.

Analytical Report Number : 23-64512
Project / Site name: Rosendale Road

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total



APPENDIX B

PAH Ratio Cross Plot Analysis

Job name	Rossendale Road
Job no.	R2688A
Date:	03.11.23
Author:	CM
Laboratory:	I2 Analytical
Lab. Reference:	23-64512



PAH concentrations

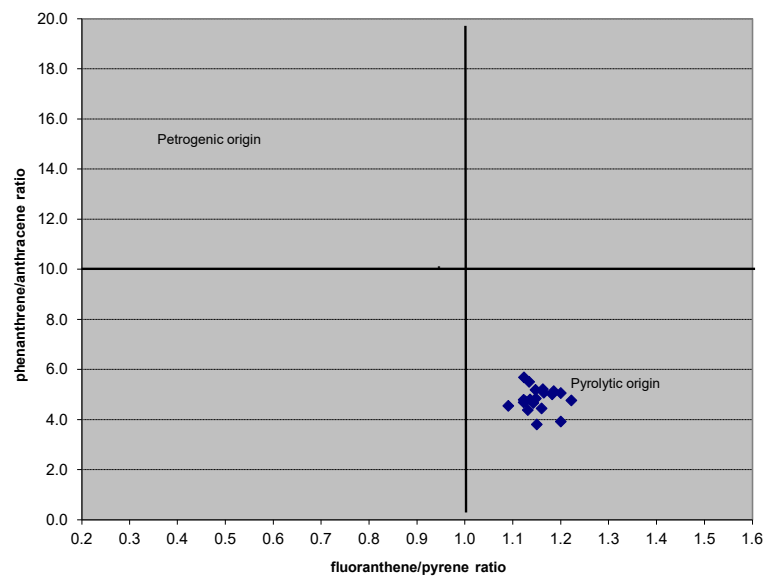
sample identity	TS-S1	TS-S2	TS-S3	TS-S4	TS-S5	TS-S6	TS-S7	TS-S8	TS-S9	TS-S10	TS-S11	TS-S12	TS-S13	TS-S14	TS-S15	TS-S16	TS-S17	TS-S18	TS-S19	TS-S20
phenanthrene	14	9.1	9.1	7.6	7.7	4.5	5.2	4.4	7.3	11	20	7.2	7.1	12	5.7	9.4	9.1	10	7	19
anthracene	3	1.9	1.6	1.5	1.5	0.96	1.1	0.91	1.4	2	4.2	1.5	1.6	2.4	1.1	2.4	1.8	2.2	1.6	5
fluoranthene	16	11	10	9.2	9.6	6.4	7.1	6.2	10	11	22	9.2	8.7	13	7	12	12	12	8.6	23
pyrene	14	9.8	8.9	7.9	8.1	5.7	6.3	5.4	8.6	9.7	18	8.1	7.5	11	6.1	10	10	11	7.6	20
benz(a)anthracene	6.8	4.9	4.7	4.3	4.1	3.2	3.4	2.8	4.4	4.7	9.2	4.4	3.9	5.7	3.4	5.1	5.3	5.2	3.8	10
chrysene	6.3	4.4	4.3	3.7	4	2.8	3.1	2.8	4.2	4.4	8.2	3.8	3.5	5.3	3.1	4.8	4.6	5.2	3.8	9.7

PAH units	mg/kg
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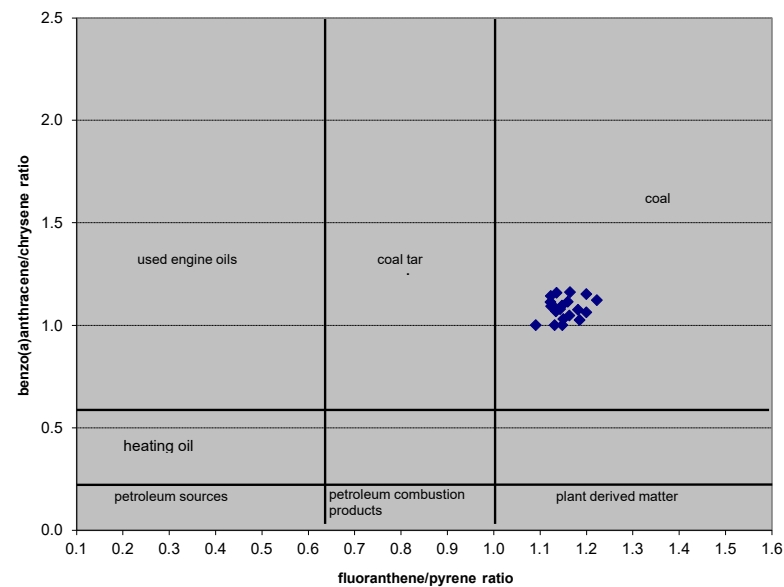
PAH ratios

phe/ant	4.667	4.789	5.688	5.067	5.133	4.688	4.727	4.835	5.214	5.500	4.762	4.800	4.438	5.000	5.182	3.917	5.056	4.545	4.375	3.800
flu/pyr	1.143	1.122	1.124	1.165	1.185	1.123	1.127	1.148	1.163	1.134	1.222	1.136	1.160	1.182	1.148	1.200	1.200	1.091	1.132	1.150
baa/chr	1.079	1.114	1.093	1.162	1.025	1.143	1.097	1.000	1.048	1.068	1.122	1.158	1.114	1.075	1.097	1.063	1.152	1.000	1.000	1.031

PAH source diagnosis



PAH source diagnosis



Topsoil Validation Record

Job number	R2174	Depth ref:	R2174-R12-v2 Final			Quality ref:		R2174-R12-v2 Final			Other documents attached		✓	
Date	26.04.24	Area use:	Garden			landscaped			stockpile			other		
Site name / location	Waldmers Wood, Bury	Size area (m):	7 x 6	Approx. Area (m²):	168	Approx. Depth Top (m):	0.6	Approx. Volume Top (m³):	100	Approx. depth Sub (m):	n/a	Approx. Volume Sub (m³):	n/a	
Plot/ location:	Plots 167-170	Number depth entries required			4 (1 per plot); 4 entries provided.		Number samples required:			3 TS (1 per 250m³ TS, minimum 3 samples per source); 5 provided.				
Compiled by:	CM													

Quality Validation		Inspection date/time:	4.04.24	Inspected by:	CM	Photographed:	✓
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Source Topsoil	1.	✓	Leyland Test Track
Description Topsoil	2.	✓	Dark brown, slightly gravelly, CLAY with frequent rootlets.
Sample Topsoil	3.	✓	3 samples were collected from stockpile at destination Site and submitted for SGP Standard Suite testing (ref: 24-012749). A further 2 samples collected from stockpile at destination Site on 20.05.24 (lab ref: 24-017879).
Source Subsoil	4.	x	n/a
Description Subsoil	5.	x	n/a
Sample Subsoil	6.	x	n/a

Topsoil Validation Record



Topsoil Results Summary – Leyland (24-012749 & 24-017879)

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NAD	NAD	Yes
Arsenic	37	7.9-19	Yes
Cadmium	11	<1	Yes
Chromium (total)	910	17-33	Yes
Chromium VI	6	<1	Yes
Copper	2,400	19-35	Yes
Lead	200	24-60	Yes
Mercury	40	<1	Yes
Nickel	180	12-26	Yes
Zinc	3,700	48-88	Yes
Naphthalene	2.3	<1	Yes
Acenaphthene	210	<1	Yes
Acenaphthylene	170	<1	Yes
Fluorene	170	<1-0.64	Yes
Phenanthrene	95	<1-0.31	Yes
Anthracene	2,400	<1	Yes
Fluoranthene	280	<1-0.17	Yes
Pyrene	620	<1-0.14	Yes
Benzo(a)anthracene	7.2	<1-0.07	Yes
Chrysene	15	<1-0.09	Yes
Benzo(b)fluoranthene	2.6	<1-0.08	Yes
Benzo(k)fluoranthene	77	<1-0.35	Yes
Benzo(a)pyrene	2.2	<1-0.09	Yes
Indeno(123cd) pyrene	27	<1-0.21	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Dibenzo(ah) anthracene	0.24	<1	Yes
Benzo(ghi) perylene	320	<1-0.17	Yes
Aliphatic C5-C6	42	<1	Yes
Aliphatic C6-C8	100	<1	Yes
Aliphatic C8-C10	27	<1	Yes
Aliphatic C10-C12	130	<1	Yes
Aliphatic C12-C16	1,100	<1	Yes
Aliphatic C16-C21	65,000	<1-9.4	Yes
Aliphatic C21-C35	65,000	<1-37	Yes
Aromatic C6-C7	70	<1	Yes
Aromatic C7-C8	130	0.05-0.036	Yes
Aromatic C8-C10	34	<1	Yes
Aromatic C10-C12	74	<1	Yes
Aromatic C12-C16	140	<1	Yes
Aromatic C16-C21	260	<1	Yes
Aromatic C21-C35	1,100	<1-26	Yes
Benzene	0.08	<1	Yes
Toluene	130	<1-50	Yes
Ethyl-benzene	47	<1	Yes
m/p-xylene	56	<1	Yes
o-xylene	60	<1	Yes

Soil Standards are primarily adopted from the published LQM/CIEH Sutable 4 Use Levels (S4ULs); the C4SL criteria for lead has also been adopted.
The appropriate land use is residential (1% SOM initially assumed for conservative assessment unless stated otherwise).

Topsoil Validation Record

Depth Validation	Inspection date/time:	11.06.24	Inspected by:	CM	Photographed:	✓
Plot 167	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	N/A					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets. <i>Soil cover extends beyond 0.6m so geotextile not visible in this plot. See developer provided photos below of geotextile placement.</i>				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record

Depth Validation	Inspection date/time:	11.06.24	Inspected by:	CM	Photographed:	✓
Plot 168	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	n/a					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets. <i>Soil cover extends beyond 0.6m so geotextile not visible in this plot. See developer provided photos below of geotextile placement.</i>				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



Depth Validation	Inspection date/time:	11.06.24	Inspected by:	CM	Photographed:	✓
Plot 169	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	n/a					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets. <i>Soil cover extends beyond 0.6m so geotextile not visible in this plot. See developer provided photos below of geotextile placement.</i>				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



Depth Validation	Inspection date/time:	11.06.24	Inspected by:	CM	Photographed:	✓
Plot 170	Required Depth	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	n/a					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets.				
	0.6m	Base (Terram placed)				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



Topsoil Validation Record

Summary

Soil PASSED testing for quality and depth.

An additional inspection visit IS NOT required.

SGP Staff:	C McHugh BSc GradIEMA	Signed:	<i>C. McHugh</i>	13.06.24
SGP Staff:	D Wayland BSc MSc AssocMCIWM MCIWEM C.WEM	Signed:	<i>D. Wayland</i>	13.06.24

Guide notes:

1.	Source Topsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
2.	Description Topsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
3.	Sample Topsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number
4.	Source Subsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
5.	Description Subsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
6.	Sample Subsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number

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e: Caitlin.McHugh@smithgrant.co.uk

Analytical Report Number : 24-017879

Project / Site name:	R2174 Waldmers Wood Leyland Topsoil	Samples received on:	07/05/2024
Your job number:		Samples instructed on/ Analysis started on:	07/05/2024
Your order number:		Analysis completed by:	11/05/2024
Report Issue Number:	1	Report issued on:	13/05/2024
Samples Analysed:	2 soil samples		



Signed: _____

Anna Goc
PL Head of Reporting Team
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

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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.

Analytical Report Number: 24-017879
Project / Site name: R2174 Waldmers Wood Leyland Topsoil

Lab Sample Number				189769	189770
Sample Reference				TS-SP-S1 (ley)	TS-SP-S2 (ley)
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				02/05/2024	02/05/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Stone Content	%	0.1	NONE	19.9	39.5
Moisture Content	%	0.01	NONE	18	15
Total mass of sample received	kg	0.1	NONE	0.8	0.7

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MBI	MBI

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.5	7.8
Organic Matter (automated)	%	0.1	MCERTS	4.8	4.3

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.06
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.26	0.31
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.09
Fluoranthene	mg/kg	0.05	MCERTS	0.5	0.64
Pyrene	mg/kg	0.05	MCERTS	0.46	0.56
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.32
Chrysene	mg/kg	0.05	MCERTS	0.29	0.4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.35	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.24	0.29
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.14	0.17
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.16

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	2.23	3.06
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.6	7.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	31	21
Lead (aqua regia extractable)	mg/kg	1	MCERTS	34	24
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	25	19
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	69	52

Analytical Report Number: 24-017879
Project / Site name: R2174 Waldmers Wood Leyland Topsoil

Lab Sample Number				189769	189770
Sample Reference				TS-SP-S1 (ley)	TS-SP-S2 (ley)
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				02/05/2024	02/05/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	3.1
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	7.2
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	9.4
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	37
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	57

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	26
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	26

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0 ^	< 5.0 ^
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0

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

Analytical Report Number : 24-017879

Project / Site name: R2174 Waldmers Wood Leyland Topsoil

* 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 *
189769	TS-SP-S1 (ley)	None Supplied	None Supplied	Brown loam and clay with vegetation and stones
189770	TS-SP-S2 (ley)	None Supplied	None Supplied	Brown loam and clay with vegetation and stones

Analytical Report Number : 24-017879
Project / Site name: R2174 Waldmers Wood Leyland Topsoil

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
Speciated EPA-16 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/L08B	D/W	MCERTS
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

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 30°C.

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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics

Analytical Report Number : 24-017879
Project / Site name: R2174 Waldmers Wood Leyland Topsoil

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
#1	EH_2D_Total but with humics mathematically subtracted				
#2	EH_2D_Total but with fatty acids mathematically subtracted				
-	Operator - understore to separate acronyms (exception for +)				
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total				

^ - Data reported unaccredited due to quality control parameter failure associated with this result; The result should be considered as being deviating and may be compromised.



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Analytical Report Number : 24-012749

Project / Site name:	Waldmers Wood, Bury	Samples received on:	08/04/2024
Your job number:	R2174	Samples instructed on/ Analysis started on:	08/04/2024
Your order number:		Analysis completed by:	11/04/2024
Report Issue Number:	1	Report issued on:	12/04/2024
Samples Analysed:	3 soil samples		

Signed: _____

Anna Goc
PL Head of Reporting Team
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

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

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.



Analytical Report Number: 24-012749
Project / Site name: Waldmers Wood, Bury

Lab Sample Number				163903	163904	163905
Sample Reference				TS-SP-S1	TS-SP-S2	TS-SP-S3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				04/04/2024	04/04/2024	04/04/2024
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	20	19	18
Total mass of sample received	kg	0.1	NONE	0.8	0.8	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EWS	EWS	EWS

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	6.9	6.8	6.7
Organic Matter (automated)	%	0.1	MCERTS	3	2.9	4.1

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.1	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.17	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.14	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.07	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.09	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.08	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.09	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.21	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.17	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	19	11
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	33	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	19	35	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	30	60	36
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	12	26	13
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	48	88	53



Analytical Report Number: 24-012749
Project / Site name: Waldmers Wood, Bury

Lab Sample Number				163903	163904	163905
Sample Reference				TS-SP-S1	TS-SP-S2	TS-SP-S3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				04/04/2024	04/04/2024	04/04/2024
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	< 10	< 10

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	0.05	0.036	0.027
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	< 10	< 10

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	50	35	27
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0

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



Analytical Report Number : 24-012749
Project / Site name: Waldmers Wood, Bury

* 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 *
163903	TS-SP-S1	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation
163904	TS-SP-S2	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation
163905	TS-SP-S3	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation



Analytical Report Number : 24-012749
Project / Site name: Waldmers Wood, Bury

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
Speciated EPA-16 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	D/W	MCERTS
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

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 aravimetrically 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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total



Topsoil Validation Record

Job number	R2174	Depth ref:	R2174-R12-v2 Final			Quality ref:		R2174-R12-v2 Final			Other documents attached		✓	
Date	25.07.24	Area use:	Garden			landscaped			stockpile			other		
Site name / location	Waldmers Wood, Bury	Size area (m):	Irregular	Approx. Area (m²):	248	Approx. Depth Top (m):	0.6	Approx. Volume Top (m³):	149	Approx. depth Sub (m):	n/a	Approx. Volume Sub (m³):	n/a	
Plot/ location:	Plots 171-173													
Compiled by:	CM	Number depth entries required			3 (1 per plot); 3 entries provided.			Number samples required:			3 TS (1 per 250m³ TS, minimum 3 samples per source); 5 provided.			

Quality Validation		Inspection date/time:	04.04.24, 20.05.24	Inspected by:	CM	Photographed:	✓
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Source Topsoil	1.	✓	Leyland Test Track
Description Topsoil	2.	✓	Dark brown, slightly gravelly, CLAY with frequent rootlets.
Sample Topsoil	3.	✓	3 samples were collected from stockpile at destination Site and submitted for SGP Standard Suite testing (ref: 24-012749). A further 2 samples collected from stockpile at destination Site on 20.05.24 (lab ref: 24-017879).
Source Subsoil	4.	x	n/a
Description Subsoil	5.	x	n/a
Sample Subsoil	6.	x	n/a

Topsoil Validation Record



Topsoil Results Summary – Leyland (24-012749 & 24-017879)

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NAD	NAD	Yes
Arsenic	37	7.9-19	Yes
Cadmium	11	<0.2	Yes
Chromium (total)	910	17-33	Yes
Chromium VI	6	<1.2	Yes
Copper	2,400	19-35	Yes
Lead	200	24-60	Yes
Mercury	40	<0.3	Yes
Nickel	180	12-26	Yes
Zinc	3,700	48-88	Yes
Naphthalene	2.3	<0.05	Yes
Acenaphthene	210	<0.05	Yes
Acenaphthylene	170	<0.05	Yes
Fluorene	170	<0.05-0.64	Yes
Phenanthrene	95	<0.05-0.31	Yes
Anthracene	2,400	<0.05	Yes
Fluoranthene	280	<0.05-0.17	Yes
Pyrene	620	<0.05-0.14	Yes
Benzo(a)anthracene	7.2	<0.05-0.07	Yes
Chrysene	15	<0.05-0.09	Yes
Benzo(b)fluoranthene	2.6	<0.05-0.08	Yes
Benzo(k)fluoranthene	77	<0.05-0.35	Yes
Benzo(a)pyrene	2.2	<0.05-0.09	Yes
Indeno(123cd) pyrene	27	<0.05-0.21	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Dibenzo(ah) anthracene	0.24	<0.05	Yes
Benzo(ghi) perylene	320	<0.05-0.17	Yes
Aliphatic C5-C6	42	<0.02	Yes
Aliphatic C6-C8	100	<0.02	Yes
Aliphatic C8-C10	27	<0.05	Yes
Aliphatic C10-C12	130	<1	Yes
Aliphatic C12-C16	1,100	<2	Yes
Aliphatic C16-C21	65,000	<8-9.4	Yes
Aliphatic C21-C35	65,000	<8-37	Yes
Aromatic C6-C7	70	<0.01	Yes
Aromatic C7-C8	130	0.05-0.036	Yes
Aromatic C8-C10	34	<0.05	Yes
Aromatic C10-C12	74	<1	Yes
Aromatic C12-C16	140	<2	Yes
Aromatic C16-C21	260	<10	Yes
Aromatic C21-C35	1,100	<10-26	Yes
Benzene	0.08	<5	Yes
Toluene	130	<5-50	Yes
Ethyl-benzene	47	<5	Yes
m/p-xylene	56	<5	Yes
o-xylene	60	<5	Yes

Soil Standards are primarily adopted from the published LQM/CIEH Sutable 4 Use Levels (S4ULs); the C4SL criteria for lead has also been adopted.
The appropriate land use is residential (1% SOM initially assumed for conservative assessment unless stated otherwise).

Topsoil Validation Record



Depth Validation	Inspection date/time:	25.07.24	Inspected by:	CM	Photographed:	✓
Plot 171	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	n/a					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets. (Soil cover extends beyond 0.6m so geotextile not visible in this plot. See developer provided photos below of geotextile placement.)				

Photograph (location)



Photograph (depth profile)



Photograph (soil type)





Topsoil Validation Record

Depth Validation	Inspection date/time:	25.07.24	Inspected by:	CM	Photographed:	✓
Plot 172	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	n/a					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets. <i>(Soil cover extends beyond 0.6m so geotextile not visible in this plot. See developer provided photos below of geotextile placement.)</i>				

Photograph (location)



Photograph (depth profile)



Photograph (soil type)



Topsoil Validation Record



Depth Validation	Inspection date/time:	25.07.24	Inspected by:	CM	Photographed:	✓
Plot 173	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	n/a					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets. <i>(Soil cover extends beyond 0.6m so geotextile not visible in this plot. See developer provided photos below of geotextile placement.)</i>				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		

Topsoil Validation Record



Geotextile membrane placed in Plot 171



Geotextile membrane placed in Plot 172



Geotextile membrane placed in Plot 173

Topsoil Validation Record

Summary

Soil PASSED testing for quality and depth.

An additional inspection visit IS NOT required.

SGP Staff:	C McHugh BSc GradIEMA	Signed:	<i>C. McHugh</i>	26.07.24
SGP Staff:	S D Miller BSc MCIWEM	Signed:	<i>S D Miller</i>	26.07.24

Guide notes:

1.	Source Topsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
2.	Description Topsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
3.	Sample Topsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number
4.	Source Subsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
5.	Description Subsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
6.	Sample Subsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number



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Analytical Report Number : 24-012749

Project / Site name:	Waldmers Wood, Bury	Samples received on:	08/04/2024
Your job number:	R2174	Samples instructed on/ Analysis started on:	08/04/2024
Your order number:		Analysis completed by:	11/04/2024
Report Issue Number:	1	Report issued on:	12/04/2024
Samples Analysed:	3 soil samples		

Signed: _____

Anna Goc
PL Head of Reporting Team
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

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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.



Analytical Report Number: 24-012749
Project / Site name: Waldmers Wood, Bury

Lab Sample Number				163903	163904	163905
Sample Reference				TS-SP-S1	TS-SP-S2	TS-SP-S3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				04/04/2024	04/04/2024	04/04/2024
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	20	19	18
Total mass of sample received	kg	0.1	NONE	0.8	0.8	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EWS	EWS	EWS

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	6.9	6.8	6.7
Organic Matter (automated)	%	0.1	MCERTS	3	2.9	4.1

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.1	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.17	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.14	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.07	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.09	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.08	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.09	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.21	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.17	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	19	11
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	33	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	19	35	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	30	60	36
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	12	26	13
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	48	88	53



Analytical Report Number: 24-012749
Project / Site name: Waldmers Wood, Bury

Lab Sample Number				163903	163904	163905
Sample Reference				TS-SP-S1	TS-SP-S2	TS-SP-S3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				04/04/2024	04/04/2024	04/04/2024
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	< 10	< 10

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	0.05	0.036	0.027
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	< 10	< 10

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	50	35	27
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0

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



Analytical Report Number : 24-012749
Project / Site name: Waldmers Wood, Bury

* 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 *
163903	TS-SP-S1	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation
163904	TS-SP-S2	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation
163905	TS-SP-S3	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation



Analytical Report Number : 24-012749
Project / Site name: Waldmers Wood, Bury

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
Speciated EPA-16 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	D/W	MCERTS
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

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 aravimetrically 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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Analytical Report Number : 24-017879

Project / Site name:	R2174 Waldmers Wood Leyland Topsoil	Samples received on:	07/05/2024
Your job number:		Samples instructed on/ Analysis started on:	07/05/2024
Your order number:		Analysis completed by:	11/05/2024
Report Issue Number:	1	Report issued on:	13/05/2024
Samples Analysed:	2 soil samples		



Signed: _____

Anna Goc
PL Head of Reporting Team
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

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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.

Analytical Report Number: 24-017879
Project / Site name: R2174 Waldmers Wood Leyland Topsoil

Lab Sample Number	189769	189770
Sample Reference	TS-SP-S1 (ley)	TS-SP-S2 (ley)
Sample Number	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied
Date Sampled	02/05/2024	02/05/2024
Time Taken	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection
		Accreditation Status

Stone Content	%	0.1	NONE	19.9	39.5
Moisture Content	%	0.01	NONE	18	15
Total mass of sample received	kg	0.1	NONE	0.8	0.7

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MBI	MBI

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.5	7.8
Organic Matter (automated)	%	0.1	MCERTS	4.8	4.3

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.06
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.26	0.31
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.09
Fluoranthene	mg/kg	0.05	MCERTS	0.5	0.64
Pyrene	mg/kg	0.05	MCERTS	0.46	0.56
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.32
Chrysene	mg/kg	0.05	MCERTS	0.29	0.4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.35	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.24	0.29
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.14	0.17
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.16

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	2.23	3.06
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.6	7.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	31	21
Lead (aqua regia extractable)	mg/kg	1	MCERTS	34	24
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	25	19
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	69	52

Analytical Report Number: 24-017879
Project / Site name: R2174 Waldmers Wood Leyland Topsoil

Lab Sample Number	189769	189770
Sample Reference	TS-SP-S1 (ley)	TS-SP-S2 (ley)
Sample Number	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied
Date Sampled	02/05/2024	02/05/2024
Time Taken	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection
		Accreditation Status

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	3.1
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	7.2
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	9.4
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	37
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	57

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	26
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	26

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0 ^	< 5.0 ^
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0

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

Analytical Report Number : 24-017879

Project / Site name: R2174 Waldmers Wood Leyland Topsoil

* 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 *
189769	TS-SP-S1 (ley)	None Supplied	None Supplied	Brown loam and clay with vegetation and stones
189770	TS-SP-S2 (ley)	None Supplied	None Supplied	Brown loam and clay with vegetation and stones

Analytical Report Number : 24-017879
Project / Site name: R2174 Waldmers Wood Leyland Topsoil

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
Speciated EPA-16 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	D/W	MCERTS
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

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 30°C.

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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics

Analytical Report Number : 24-017879
Project / Site name: R2174 Waldmers Wood Leyland Topsoil

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
#1	EH_2D_Total but with humics mathematically subtracted				
#2	EH_2D_Total but with fatty acids mathematically subtracted				
-	Operator - understore to separate acronyms (exception for +)				
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total				

^ - Data reported unaccredited due to quality control parameter failure associated with this result; The result should be considered as being deviating and may be compromised.



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Analytical Report Number : 24-026885

Project / Site name:	Tetrosyl, Bury	Samples received on:	25/06/2024
Your job number:	R2174	Samples instructed on / Analysis started on:	25/06/2024
Your order number:		Analysis completed by:	02/07/2024
Report Issue Number:	1	Report issued on:	02/07/2024
Samples Analysed:	3 soil samples		

Signed: 

Dominika Liana
Junior 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

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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.

Analytical Report Number: 24-026885
Project / Site name: Tetrosyl, Bury

Lab Sample Number	236951	236952	236953
Sample Reference	TS-SP-Ley-S1	TS-SP-Ley-S2	TS-SP-Ley-S3
Sample Number	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied
Date Sampled	20/06/2024	20/06/2024	20/06/2024
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	19	20	19
Total mass of sample received	kg	0.1	NONE	1.3	1.4	1.5

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KJK	KJK	KJK

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.6	7.5	7.6
Organic Matter (automated)	%	0.1	MCERTS	4	5.9	5.6

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.08	0.08
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.17	0.24	0.14
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.27	0.5	0.28
Pyrene	mg/kg	0.05	MCERTS	0.24	0.47	0.26
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.13	0.23	0.13
Chrysene	mg/kg	0.05	MCERTS	0.18	0.31	0.15
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.2	0.35	0.18
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.09	0.16	0.09
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.16
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.1	0.17	0.08
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.12	0.19	0.1

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	1.54	2.71	1.64
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Analytical Report Number: 24-026885
Project / Site name: Tetrosyl, Bury

Lab Sample Number	236951	236952	236953
Sample Reference	TS-SP-Ley-S1	TS-SP-Ley-S2	TS-SP-Ley-S3
Sample Number	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied
Date Sampled	20/06/2024	20/06/2024	20/06/2024
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.6	9.1	9.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	37	33	35
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24	25	25
Lead (aqua regia extractable)	mg/kg	1	MCERTS	26	33	30
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	32	28	29
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	65	69	74

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	< 10	< 10

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10	< 10	< 10

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0

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

Analytical Report Number : 24-026885

Project / Site name: Tetrosyl, Bury

* 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 *
236951	TS-SP-Ley-S1	None Supplied	None Supplied	Brown clay with vegetation
236952	TS-SP-Ley-S2	None Supplied	None Supplied	Brown clay and loam with gravel and vegetation
236953	TS-SP-Ley-S3	None Supplied	None Supplied	Brown clay with gravel and vegetation

Analytical Report Number : 24-026885

Project / Site name: Tetrosyl, Bury

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
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	D/W	MCERTS
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	NONE

Analytical Report Number : 24-026885
Project / Site name: Tetrosyl, Bury

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

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 30°C.

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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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

The result for sum should be interpreted with caution



Topsoil Validation Record

Job number	R2174	Depth ref:	R2174-R12-v2 Final			Quality ref:		R2174-R12-v2 Final			Other documents attached		✓	
Date	01.08.24	Area use:	Garden			landscaped			stockpile			other		
Site name / location	Waldmers Wood, Bury	Size area (m):	6 x 7	Approx. Area (m²):	35	Approx. Depth Top (m):	0.6	Approx. Volume Top (m³):	21	Approx. depth Sub (m):	n/a	Approx. Volume Sub (m³):	n/a	
Plot/ location:	Plot 174													
Compiled by:	MJ		Number depth entries required			1 (1 per plot); 1 entry provided.		Number samples required:			3 TS (1 per 250m³ TS, minimum 3 samples per source); 5 provided.			

Quality Validation		Inspection date/time:	04.04.24, 20.05.24	Inspected by:	CM	Photographed:	✓
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Source Topsoil	1.	✓	Leyland Test Track
Description Topsoil	2.	✓	Dark brown, slightly gravelly, CLAY with frequent rootlets.
Sample Topsoil	3.	✓	3 samples were collected from stockpile at destination Site and submitted for SGP Standard Suite testing (ref: 24-012749). A further 2 samples collected from stockpile at destination Site on 20.05.24 (lab ref: 24-017879).
Source Subsoil	4.	x	n/a
Description Subsoil	5.	x	n/a
Sample Subsoil	6.	x	n/a

Topsoil Validation Record



Topsoil Results Summary – Leyland (24-012749 & 24-017879)

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NAD	NAD	Yes
Arsenic	37	7.9-19	Yes
Cadmium	11	<0.2	Yes
Chromium (total)	910	17-33	Yes
Chromium VI	6	<1.2	Yes
Copper	2,400	19-35	Yes
Lead	200	24-60	Yes
Mercury	40	<0.3	Yes
Nickel	180	12-26	Yes
Zinc	3,700	48-88	Yes
Naphthalene	2.3	<0.05	Yes
Acenaphthene	210	<0.05	Yes
Acenaphthylene	170	<0.05	Yes
Fluorene	170	<0.05-0.64	Yes
Phenanthrene	95	<0.05-0.31	Yes
Anthracene	2,400	<0.05	Yes
Fluoranthene	280	<0.05-0.17	Yes
Pyrene	620	<0.05-0.14	Yes
Benzo(a)anthracene	7.2	<0.05-0.07	Yes
Chrysene	15	<0.05-0.09	Yes
Benzo(b)fluoranthene	2.6	<0.05-0.08	Yes
Benzo(k)fluoranthene	77	<0.05-0.35	Yes
Benzo(a)pyrene	2.2	<0.05-0.09	Yes
Indeno(123cd) pyrene	27	<0.05-0.21	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Dibenzo(ah) anthracene	0.24	<0.05	Yes
Benzo(ghi) perylene	320	<0.05-0.17	Yes
Aliphatic C5-C6	42	<0.02	Yes
Aliphatic C6-C8	100	<0.02	Yes
Aliphatic C8-C10	27	<0.05	Yes
Aliphatic C10-C12	130	<1	Yes
Aliphatic C12-C16	1,100	<2	Yes
Aliphatic C16-C21	65,000	<8-9.4	Yes
Aliphatic C21-C35	65,000	<8-37	Yes
Aromatic C6-C7	70	<0.01	Yes
Aromatic C7-C8	130	0.05-0.036	Yes
Aromatic C8-C10	34	<0.05	Yes
Aromatic C10-C12	74	<1	Yes
Aromatic C12-C16	140	<2	Yes
Aromatic C16-C21	260	<10	Yes
Aromatic C21-C35	1,100	<10-26	Yes
Benzene	0.08	<5	Yes
Toluene	130	<5-50	Yes
Ethyl-benzene	47	<5	Yes
m/p-xylene	56	<5	Yes
o-xylene	60	<5	Yes

Soil Standards are primarily adopted from the published LQM/CIEH Sutable 4 Use Levels (S4ULs); the C4SL criteria for lead has also been adopted.
The appropriate land use is residential (1% SOM initially assumed for conservative assessment unless stated otherwise).

Topsoil Validation Record



Depth Validation	Inspection date/time:	01.08.24	Inspected by:	CM	Photographed:	✓
Plot 174	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	n/a					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets. <i>(Soil cover extends beyond 0.6m so geotextile not visible in this plot. See developer provided photos below of geotextile placement.)</i>				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						



Geotextile membrane placed in Plot 174

Topsoil Validation Record

Summary

Soil PASSED testing for quality and depth.

An additional inspection visit IS NOT required.

SGP Staff:	M Jones BSc MSc MEnvSc	Signed:		01.08.24
SGP Staff:	D Wayland	Signed:		01.08.24

Guide notes:

1.	Source Topsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
2.	Description Topsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
3.	Sample Topsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number
4.	Source Subsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
5.	Description Subsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
6.	Sample Subsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number



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Analytical Report Number : 24-012749

Project / Site name:	Waldmers Wood, Bury	Samples received on:	08/04/2024
Your job number:	R2174	Samples instructed on/ Analysis started on:	08/04/2024
Your order number:		Analysis completed by:	11/04/2024
Report Issue Number:	1	Report issued on:	12/04/2024
Samples Analysed:	3 soil samples		

Signed: _____

Anna Goc
PL Head of Reporting Team
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

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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.



Analytical Report Number: 24-012749
Project / Site name: Waldmers Wood, Bury

Lab Sample Number				163903	163904	163905
Sample Reference				TS-SP-S1	TS-SP-S2	TS-SP-S3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				04/04/2024	04/04/2024	04/04/2024
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	20	19	18
Total mass of sample received	kg	0.1	NONE	0.8	0.8	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EWS	EWS	EWS

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	6.9	6.8	6.7
Organic Matter (automated)	%	0.1	MCERTS	3	2.9	4.1

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.1	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.17	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.14	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.07	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.09	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.08	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.09	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.21	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.17	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	19	11
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	33	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	19	35	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	30	60	36
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	12	26	13
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	48	88	53



Analytical Report Number: 24-012749
Project / Site name: Waldmers Wood, Bury

Lab Sample Number				163903	163904	163905
Sample Reference				TS-SP-S1	TS-SP-S2	TS-SP-S3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				04/04/2024	04/04/2024	04/04/2024
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	< 10	< 10

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	0.05	0.036	0.027
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	< 10	< 10

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	50	35	27
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0

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



Analytical Report Number : 24-012749
Project / Site name: Waldmers Wood, Bury

* 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 *
163903	TS-SP-S1	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation
163904	TS-SP-S2	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation
163905	TS-SP-S3	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation



Analytical Report Number : 24-012749
Project / Site name: Waldmers Wood, Bury

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
Speciated EPA-16 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	D/W	MCERTS
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

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 aravimetrically 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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Analytical Report Number : 24-017879

Project / Site name:	R2174 Waldmers Wood Leyland Topsoil	Samples received on:	07/05/2024
Your job number:		Samples instructed on/ Analysis started on:	07/05/2024
Your order number:		Analysis completed by:	11/05/2024
Report Issue Number:	1	Report issued on:	13/05/2024
Samples Analysed:	2 soil samples		



Signed: _____

Anna Goc
PL Head of Reporting Team
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

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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.

Analytical Report Number: 24-017879
Project / Site name: R2174 Waldmers Wood Leyland Topsoil

Lab Sample Number	189769	189770
Sample Reference	TS-SP-S1 (ley)	TS-SP-S2 (ley)
Sample Number	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied
Date Sampled	02/05/2024	02/05/2024
Time Taken	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection
		Accreditation Status

Stone Content	%	0.1	NONE	19.9	39.5
Moisture Content	%	0.01	NONE	18	15
Total mass of sample received	kg	0.1	NONE	0.8	0.7

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MBI	MBI

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.5	7.8
Organic Matter (automated)	%	0.1	MCERTS	4.8	4.3

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.06
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.26	0.31
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.09
Fluoranthene	mg/kg	0.05	MCERTS	0.5	0.64
Pyrene	mg/kg	0.05	MCERTS	0.46	0.56
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.32
Chrysene	mg/kg	0.05	MCERTS	0.29	0.4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.35	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.24	0.29
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.14	0.17
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.16

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	2.23	3.06
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.6	7.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	31	21
Lead (aqua regia extractable)	mg/kg	1	MCERTS	34	24
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	25	19
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	69	52

Analytical Report Number: 24-017879
Project / Site name: R2174 Waldmers Wood Leyland Topsoil

Lab Sample Number	189769	189770
Sample Reference	TS-SP-S1 (ley)	TS-SP-S2 (ley)
Sample Number	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied
Date Sampled	02/05/2024	02/05/2024
Time Taken	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection
		Accreditation Status

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	3.1
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	7.2
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	9.4
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	37
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	57

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	26
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	26

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0 ^	< 5.0 ^
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0

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

Analytical Report Number : 24-017879

Project / Site name: R2174 Waldmers Wood Leyland Topsoil

* 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 *
189769	TS-SP-S1 (ley)	None Supplied	None Supplied	Brown loam and clay with vegetation and stones
189770	TS-SP-S2 (ley)	None Supplied	None Supplied	Brown loam and clay with vegetation and stones

Analytical Report Number : 24-017879
Project / Site name: R2174 Waldmers Wood Leyland Topsoil

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
Speciated EPA-16 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/L08B	D/W	MCERTS
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

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 30°C.

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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics

Analytical Report Number : 24-017879
Project / Site name: R2174 Waldmers Wood Leyland Topsoil

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
#1	EH_2D_Total but with humics mathematically subtracted				
#2	EH_2D_Total but with fatty acids mathematically subtracted				
-	Operator - understore to separate acronyms (exception for +)				
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total				

^ - Data reported unaccredited due to quality control parameter failure associated with this result; The result should be considered as being deviating and may be compromised.



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Analytical Report Number : 24-026885

Project / Site name:	Tetrosyl, Bury	Samples received on:	25/06/2024
Your job number:	R2174	Samples instructed on / Analysis started on:	25/06/2024
Your order number:		Analysis completed by:	02/07/2024
Report Issue Number:	1	Report issued on:	02/07/2024
Samples Analysed:	3 soil samples		

Signed: 

Dominika Liana
Junior 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

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

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.

Analytical Report Number: 24-026885
Project / Site name: Tetrosyl, Bury

Lab Sample Number	236951	236952	236953
Sample Reference	TS-SP-Ley-S1	TS-SP-Ley-S2	TS-SP-Ley-S3
Sample Number	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied
Date Sampled	20/06/2024	20/06/2024	20/06/2024
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	19	20	19
Total mass of sample received	kg	0.1	NONE	1.3	1.4	1.5

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KJK	KJK	KJK

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.6	7.5	7.6
Organic Matter (automated)	%	0.1	MCERTS	4	5.9	5.6

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.08	0.08
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.17	0.24	0.14
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.27	0.5	0.28
Pyrene	mg/kg	0.05	MCERTS	0.24	0.47	0.26
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.13	0.23	0.13
Chrysene	mg/kg	0.05	MCERTS	0.18	0.31	0.15
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.2	0.35	0.18
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.09	0.16	0.09
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.16
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.1	0.17	0.08
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.12	0.19	0.1

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	1.54	2.71	1.64
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Analytical Report Number: 24-026885
Project / Site name: Tetrosyl, Bury

Lab Sample Number	236951	236952	236953
Sample Reference	TS-SP-Ley-S1	TS-SP-Ley-S2	TS-SP-Ley-S3
Sample Number	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied
Date Sampled	20/06/2024	20/06/2024	20/06/2024
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.6	9.1	9.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	37	33	35
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24	25	25
Lead (aqua regia extractable)	mg/kg	1	MCERTS	26	33	30
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	32	28	29
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	65	69	74

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	< 10	< 10

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10	< 10	< 10

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0

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

Analytical Report Number : 24-026885

Project / Site name: Tetrosyl, Bury

* 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 *
236951	TS-SP-Ley-S1	None Supplied	None Supplied	Brown clay with vegetation
236952	TS-SP-Ley-S2	None Supplied	None Supplied	Brown clay and loam with gravel and vegetation
236953	TS-SP-Ley-S3	None Supplied	None Supplied	Brown clay with gravel and vegetation

Analytical Report Number : 24-026885

Project / Site name: Tetrosyl, Bury

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
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	D/W	MCERTS
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	NONE

Analytical Report Number : 24-026885
Project / Site name: Tetrosyl, Bury

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

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 30°C.

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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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

The result for sum should be interpreted with caution



Topsoil Validation Record

Job number	R2174	Depth ref:	R2174-R12-v2 Final			Quality ref:		R2174-R12-v2 Final			Other documents attached		✓	
Date	02.10.24	Area use:	Garden			landscaped			stockpile			other		
Site name / location	Waldmers Wood, Bury	Size area (m):	6x4 (per garden)	Approx. Area (m²):	144	Approx. Depth Top (m):	0.6	Approx. Volume Top (m³):	86.4	Approx. depth Sub (m):	n/a	Approx. Volume Sub (m³):	n/a	
Plot/ location:	Plot 175-180													
Compiled by:	CM		Number depth entries required			6 (1 per plot); 6 entries provided.		Number samples required:			3 TS (1 per 250m³ TS, minimum 3 samples per source); 5 provided.			

Quality Validation		Inspection date/time:	04.04.24, 20.05.24	Inspected by:	CM	Photographed:	✓
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Source Topsoil	1.	✓	Leyland Test Track
Description Topsoil	2.	✓	Dark brown, slightly gravelly, CLAY with frequent rootlets.
Sample Topsoil	3.	✓	3 samples were collected from stockpile at destination Site and submitted for SGP Standard Suite testing (ref: 24-012749). A further 2 samples collected from stockpile at destination Site on 20.05.24 (lab ref: 24-017879).
Source Subsoil	4.	x	n/a
Description Subsoil	5.	x	n/a
Sample Subsoil	6.	x	n/a

Topsoil Validation Record



Topsoil Results Summary – Leyland (24-012749 & 24-017879)

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NAD	NAD	Yes
Arsenic	37	7.9-19	Yes
Cadmium	11	<0.2	Yes
Chromium (total)	910	17-33	Yes
Chromium VI	6	<1.2	Yes
Copper	2,400	19-35	Yes
Lead	200	24-60	Yes
Mercury	40	<0.3	Yes
Nickel	180	12-26	Yes
Zinc	3,700	48-88	Yes
Naphthalene	2.3	<0.05	Yes
Acenaphthene	210	<0.05	Yes
Acenaphthylene	170	<0.05	Yes
Fluorene	170	<0.05-0.64	Yes
Phenanthrene	95	<0.05-0.31	Yes
Anthracene	2,400	<0.05	Yes
Fluoranthene	280	<0.05-0.17	Yes
Pyrene	620	<0.05-0.14	Yes
Benzo(a)anthracene	7.2	<0.05-0.07	Yes
Chrysene	15	<0.05-0.09	Yes
Benzo(b)fluoranthene	2.6	<0.05-0.08	Yes
Benzo(k)fluoranthene	77	<0.05-0.35	Yes
Benzo(a)pyrene	2.2	<0.05-0.09	Yes
Indeno(123cd) pyrene	27	<0.05-0.21	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Dibenzo(ah) anthracene	0.24	<0.05	Yes
Benzo(ghi) perylene	320	<0.05-0.17	Yes
Aliphatic C5-C6	42	<0.02	Yes
Aliphatic C6-C8	100	<0.02	Yes
Aliphatic C8-C10	27	<0.05	Yes
Aliphatic C10-C12	130	<1	Yes
Aliphatic C12-C16	1,100	<2	Yes
Aliphatic C16-C21	65,000	<8-9.4	Yes
Aliphatic C21-C35	65,000	<8-37	Yes
Aromatic C6-C7	70	<0.01	Yes
Aromatic C7-C8	130	0.05-0.036	Yes
Aromatic C8-C10	34	<0.05	Yes
Aromatic C10-C12	74	<1	Yes
Aromatic C12-C16	140	<2	Yes
Aromatic C16-C21	260	<10	Yes
Aromatic C21-C35	1,100	<10-26	Yes
Benzene	0.08	<5	Yes
Toluene	130	<5-50	Yes
Ethyl-benzene	47	<5	Yes
m/p-xylene	56	<5	Yes
o-xylene	60	<5	Yes

Soil Standards are primarily adopted from the published LQM/CIEH Sutable 4 Use Levels (S4ULs); the C4SL criteria for lead has also been adopted.
The appropriate land use is residential (1% SOM initially assumed for conservative assessment unless stated otherwise).

Topsoil Validation Record



Depth Validation	Inspection date/time:	01.08.24	Inspected by:	CM	Photographed:	✓
Plot 175	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	n/a					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets. <i>(Soil cover extends beyond 0.6m so geotextile not visible in this plot. See developer provided photos below of geotextile placement.)</i>				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



Depth Validation	Inspection date/time:	01.08.24	Inspected by:	CM	Photographed:	✓
Plot 176	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	n/a					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets. <i>(Soil cover extends beyond 0.6m so geotextile not visible in this plot. See developer provided photos below of geotextile placement.)</i>				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



Depth Validation	Inspection date/time:	01.08.24	Inspected by:	CM	Photographed:	✓
Plot 177	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	n/a					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets. <i>(Soil cover extends beyond 0.6m so geotextile not visible in this plot. See developer provided photos below of geotextile placement.)</i>				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



Depth Validation	Inspection date/time:	01.08.24	Inspected by:	CM	Photographed:	✓
Plot 178	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	n/a					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets. <i>(Soil cover extends beyond 0.6m so geotextile not visible in this plot. See developer provided photos below of geotextile placement.)</i>				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



Depth Validation	Inspection date/time:	01.08.24	Inspected by:	CM	Photographed:	✓
Plot 179	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	n/a					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets. <i>(Soil cover extends beyond 0.6m so geotextile not visible in this plot. See developer provided photos below of geotextile placement.)</i>				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



Depth Validation	Inspection date/time:	01.08.24	Inspected by:	CM	Photographed:	✓
Plot 180	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	n/a					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets. <i>(Soil cover extends beyond 0.6m so geotextile not visible in this plot. See developer provided photos below of geotextile placement.)</i>				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



Developer provided photographs of geotextile membrane placed over Plots 175-180			
Plot 175	Plot 176-177	Plot 179	Plot 180
			



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Analytical Report Number : 24-012749

Project / Site name:	Waldmers Wood, Bury	Samples received on:	08/04/2024
Your job number:	R2174	Samples instructed on/ Analysis started on:	08/04/2024
Your order number:		Analysis completed by:	11/04/2024
Report Issue Number:	1	Report issued on:	12/04/2024
Samples Analysed:	3 soil samples		

Signed: _____

Anna Goc
PL Head of Reporting Team
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

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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.



Analytical Report Number: 24-012749
Project / Site name: Waldmers Wood, Bury

Lab Sample Number				163903	163904	163905
Sample Reference				TS-SP-S1	TS-SP-S2	TS-SP-S3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				04/04/2024	04/04/2024	04/04/2024
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	20	19	18
Total mass of sample received	kg	0.1	NONE	0.8	0.8	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EWS	EWS	EWS

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	6.9	6.8	6.7
Organic Matter (automated)	%	0.1	MCERTS	3	2.9	4.1

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.1	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.17	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.14	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.07	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.09	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.08	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.09	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.21	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.17	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	19	11
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	33	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	19	35	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	30	60	36
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	12	26	13
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	48	88	53



Analytical Report Number: 24-012749
Project / Site name: Waldmers Wood, Bury

Lab Sample Number				163903	163904	163905
Sample Reference				TS-SP-S1	TS-SP-S2	TS-SP-S3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				04/04/2024	04/04/2024	04/04/2024
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	< 10	< 10

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	0.05	0.036	0.027
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	< 10	< 10

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	50	35	27
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0

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



Analytical Report Number : 24-012749
Project / Site name: Waldmers Wood, Bury

* 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 *
163903	TS-SP-S1	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation
163904	TS-SP-S2	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation
163905	TS-SP-S3	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation



Analytical Report Number : 24-012749
Project / Site name: Waldmers Wood, Bury

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
Speciated EPA-16 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	D/W	MCERTS
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

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 aravimetrically 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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Analytical Report Number : 24-017879

Project / Site name:	R2174 Waldmers Wood Leyland Topsoil	Samples received on:	07/05/2024
Your job number:		Samples instructed on/ Analysis started on:	07/05/2024
Your order number:		Analysis completed by:	11/05/2024
Report Issue Number:	1	Report issued on:	13/05/2024
Samples Analysed:	2 soil samples		



Signed: _____

Anna Goc
PL Head of Reporting Team
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

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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.

Analytical Report Number: 24-017879
Project / Site name: R2174 Waldmers Wood Leyland Topsoil

Lab Sample Number				189769	189770
Sample Reference				TS-SP-S1 (ley)	TS-SP-S2 (ley)
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				02/05/2024	02/05/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Stone Content	%	0.1	NONE	19.9	39.5
Moisture Content	%	0.01	NONE	18	15
Total mass of sample received	kg	0.1	NONE	0.8	0.7

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MBI	MBI

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.5	7.8
Organic Matter (automated)	%	0.1	MCERTS	4.8	4.3

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.06
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.26	0.31
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.09
Fluoranthene	mg/kg	0.05	MCERTS	0.5	0.64
Pyrene	mg/kg	0.05	MCERTS	0.46	0.56
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.32
Chrysene	mg/kg	0.05	MCERTS	0.29	0.4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.35	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.24	0.29
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.14	0.17
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.16

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	2.23	3.06
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.6	7.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	31	21
Lead (aqua regia extractable)	mg/kg	1	MCERTS	34	24
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	25	19
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	69	52

Analytical Report Number: 24-017879
Project / Site name: R2174 Waldmers Wood Leyland Topsoil

Lab Sample Number				189769	189770
Sample Reference				TS-SP-S1 (ley)	TS-SP-S2 (ley)
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				02/05/2024	02/05/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	3.1
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	7.2
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	9.4
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	37
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	57

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	26
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	26

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0 ^	< 5.0 ^
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0

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



Analytical Report Number : 24-017879

Project / Site name: R2174 Waldmers Wood Leyland Topsoil

* 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 *
189769	TS-SP-S1 (ley)	None Supplied	None Supplied	Brown loam and clay with vegetation and stones
189770	TS-SP-S2 (ley)	None Supplied	None Supplied	Brown loam and clay with vegetation and stones

Analytical Report Number : 24-017879
Project / Site name: R2174 Waldmers Wood Leyland Topsoil

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
Speciated EPA-16 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/L08B	D/W	MCERTS
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

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 30°C.

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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics

Analytical Report Number : 24-017879
Project / Site name: R2174 Waldmers Wood Leyland Topsoil

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
#1	EH_2D_Total but with humics mathematically subtracted				
#2	EH_2D_Total but with fatty acids mathematically subtracted				
-	Operator - understore to separate acronyms (exception for +)				
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total				

^ - Data reported unaccredited due to quality control parameter failure associated with this result; The result should be considered as being deviating and may be compromised.



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Analytical Report Number : 24-026885

Project / Site name:	Tetrosyl, Bury	Samples received on:	25/06/2024
Your job number:	R2174	Samples instructed on / Analysis started on:	25/06/2024
Your order number:		Analysis completed by:	02/07/2024
Report Issue Number:	1	Report issued on:	02/07/2024
Samples Analysed:	3 soil samples		

Signed: 

Dominika Liana
Junior 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

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

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.

Analytical Report Number: 24-026885
Project / Site name: Tetrosyl, Bury

Lab Sample Number	236951	236952	236953
Sample Reference	TS-SP-Ley-S1	TS-SP-Ley-S2	TS-SP-Ley-S3
Sample Number	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied
Date Sampled	20/06/2024	20/06/2024	20/06/2024
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	19	20	19
Total mass of sample received	kg	0.1	NONE	1.3	1.4	1.5

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KJK	KJK	KJK

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.6	7.5	7.6
Organic Matter (automated)	%	0.1	MCERTS	4	5.9	5.6

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.08	0.08
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.17	0.24	0.14
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.27	0.5	0.28
Pyrene	mg/kg	0.05	MCERTS	0.24	0.47	0.26
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.13	0.23	0.13
Chrysene	mg/kg	0.05	MCERTS	0.18	0.31	0.15
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.2	0.35	0.18
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.09	0.16	0.09
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.16
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.1	0.17	0.08
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.12	0.19	0.1

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	1.54	2.71	1.64
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Analytical Report Number: 24-026885
Project / Site name: Tetrosyl, Bury

Lab Sample Number	236951	236952	236953
Sample Reference	TS-SP-Ley-S1	TS-SP-Ley-S2	TS-SP-Ley-S3
Sample Number	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied
Date Sampled	20/06/2024	20/06/2024	20/06/2024
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.6	9.1	9.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	37	33	35
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24	25	25
Lead (aqua regia extractable)	mg/kg	1	MCERTS	26	33	30
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	32	28	29
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	65	69	74

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	< 10	< 10

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10	< 10	< 10

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0

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

Analytical Report Number : 24-026885

Project / Site name: Tetrosyl, Bury

* 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 *
236951	TS-SP-Ley-S1	None Supplied	None Supplied	Brown clay with vegetation
236952	TS-SP-Ley-S2	None Supplied	None Supplied	Brown clay and loam with gravel and vegetation
236953	TS-SP-Ley-S3	None Supplied	None Supplied	Brown clay with gravel and vegetation

Analytical Report Number : 24-026885

Project / Site name: Tetrosyl, Bury

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
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	D/W	MCERTS
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	NONE

Analytical Report Number : 24-026885
Project / Site name: Tetrosyl, Bury

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

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 30°C.

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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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

The result for sum should be interpreted with caution

Topsoil Validation Record

Job number	R2174	Depth ref:	R2174-R12-v2 Final		Quality ref:		R2174-R12-v2 Final			Other documents attached		✓		
Date	26.04.24	Area use:	Garden			landscaped			stockpile			other		
Site name / location	Waldmers Wood, Bury	Size area (m):	5x6 (Plots 181-183)	Approx. Area (m²):	90m²	Approx. Depth Top (m):	0.6m	Approx. Volume Top (m³):	54m³	Approx. depth Sub (m):	n/a	Approx. Volume Sub (m³):	n/a	
Plot/ location:	Plots 181-184		7x4 (Plot 184)		28m²		0.6m		16.8 m³					
Compiled by:	CM	Number depth entries required			4 (1 per plot); 4 entries provided.		Number samples required:			3 TS (1 per 250m³ TS, minimum 3 samples per source); 3 provided.				

Quality Validation		Inspection date/time:	4.04.24	Inspected by:	CM	Photographed:	✓
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Source Topsoil	1.	✓	Leyland Test Track
Description Topsoil	2.	✓	Dark brown, slightly gravelly, CLAY with frequent rootlets.
Sample Topsoil	3.	✓	3 samples were collected from stockpile at destination Site and submitted for SGP Standard Suite testing (ref: 24-012749).
Source Subsoil	4.	x	n/a
Description Subsoil	5.	x	n/a
Sample Subsoil	6.	x	n/a

Topsoil Validation Record



Topsoil Results Summary – Leyland (24-012749)

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NAD	NAD	Yes
Arsenic	37	10-19	Yes
Cadmium	11	<1	Yes
Chromium (total)	910	17-33	Yes
Chromium VI	6	<1	Yes
Copper	2,400	19-35	Yes
Lead	200	30-60	Yes
Mercury	40	<1	Yes
Nickel	180	12-26	Yes
Zinc	3,700	48-88	Yes
Naphthalene	2.3	<1	Yes
Acenaphthene	210	<1	Yes
Acenaphthylene	170	<1	Yes
Fluorene	170	<1	Yes
Phenanthrene	95	<1-0.1	Yes
Anthracene	2,400	<1	Yes
Fluoranthene	280	<1-0.17	Yes
Pyrene	620	<1-0.14	Yes
Benzo(a)anthracene	7.2	<1-0.07	Yes
Chrysene	15	<1-0.09	Yes
Benzo(b)fluoranthene	2.6	<1-0.08	Yes
Benzo(k)fluoranthene	77	<1-0.05	Yes
Benzo(a)pyrene	2.2	<1-0.09	Yes
Indeno(123cd) pyrene	27	<1-0.21	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Dibenzo(ah) anthracene	0.24	<1	Yes
Benzo(ghi) perylene	320	<1-0.17	Yes
Aliphatic C5-C6	42	<1	Yes
Aliphatic C6-C8	100	<1	Yes
Aliphatic C8-C10	27	<1	Yes
Aliphatic C10-C12	130	<1	Yes
Aliphatic C12-C16	1,100	<1	Yes
Aliphatic C16-C21	65,000	<1	Yes
Aliphatic C21-C35	65,000	<1	Yes
Aromatic C6-C7	70	<1	Yes
Aromatic C7-C8	130	0.05-0.036	Yes
Aromatic C8-C10	34	<1	Yes
Aromatic C10-C12	74	<1	Yes
Aromatic C12-C16	140	<1	Yes
Aromatic C16-C21	260	<1	Yes
Aromatic C21-C35	1,100	<1	Yes
Benzene	0.08	<1	Yes
Toluene	130	27-50	Yes
Ethyl-benzene	47	<1	Yes
m/p-xylene	56	<1	Yes
o-xylene	60	<1	Yes

Soil Standards are primarily adopted from the published LQM/CIEH Suitable 4 Use Levels (S4ULs); the C4SL criteria for lead has also been adopted.
The appropriate land use is residential (1% SOM initially assumed for conservative assessment unless stated otherwise).

Topsoil Validation Record



Depth Validation	Inspection date/time:	26.04.24	Inspected by:	CM	Photographed:	✓
Plot 181	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	N/A					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets.				

Photograph (location)



Photograph (depth profile)



Photograph (soil type)



Topsoil Validation Record



Depth Validation	Inspection date/time:	26.04.24	Inspected by:	CM	Photographed:	✓
Plot 182	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	n/a					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets.				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record

Depth Validation	Inspection date/time:	26.04.24	Inspected by:	CM	Photographed:	✓
Plot 183	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	n/a					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets.				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



Depth Validation	Inspection date/time:	26.04.24	Inspected by:	CM	Photographed:	✓
Plot 184	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	n/a					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets.				

Photograph (location)



Photograph (depth profile)



Photograph (soil type)



Topsoil Validation Record

Summary

Soil PASSED testing for quality and depth.

An additional inspection visit IS NOT required.

SGP Staff:	C McHugh BSc GradIEMA	Signed:	<i>C. McHugh</i>	29.04.24
SGP Staff:	D Wayland BSc MSc AssocMCIWM MCIWEM C.WEM	Signed:	<i>D. Wayland</i>	29.04.24

Guide notes:

1.	Source Topsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
2.	Description Topsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
3.	Sample Topsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number
4.	Source Subsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
5.	Description Subsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
6.	Sample Subsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number



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Analytical Report Number : 24-012749

Project / Site name:	Waldmers Wood, Bury	Samples received on:	08/04/2024
Your job number:	R2174	Samples instructed on/ Analysis started on:	08/04/2024
Your order number:		Analysis completed by:	11/04/2024
Report Issue Number:	1	Report issued on:	12/04/2024
Samples Analysed:	3 soil samples		

Signed: _____

Anna Goc
PL Head of Reporting Team
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

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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.



Analytical Report Number: 24-012749
Project / Site name: Waldmers Wood, Bury

Lab Sample Number				163903	163904	163905
Sample Reference				TS-SP-S1	TS-SP-S2	TS-SP-S3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				04/04/2024	04/04/2024	04/04/2024
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	20	19	18
Total mass of sample received	kg	0.1	NONE	0.8	0.8	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EWS	EWS	EWS

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	6.9	6.8	6.7
Organic Matter (automated)	%	0.1	MCERTS	3	2.9	4.1

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.1	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.17	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.14	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.07	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.09	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.08	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.09	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.21	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.17	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	19	11
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	33	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	19	35	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	30	60	36
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	12	26	13
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	48	88	53



Analytical Report Number: 24-012749
Project / Site name: Waldmers Wood, Bury

Lab Sample Number				163903	163904	163905
Sample Reference				TS-SP-S1	TS-SP-S2	TS-SP-S3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				04/04/2024	04/04/2024	04/04/2024
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	< 10	< 10

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	0.05	0.036	0.027
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	< 10	< 10

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	50	35	27
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0

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



Analytical Report Number : 24-012749
Project / Site name: Waldmers Wood, Bury

* 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 *
163903	TS-SP-S1	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation
163904	TS-SP-S2	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation
163905	TS-SP-S3	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation



Analytical Report Number : 24-012749
Project / Site name: Waldmers Wood, Bury

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
Speciated EPA-16 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	D/W	MCERTS
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

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 aravimetrically 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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Topsoil Validation Record

Job number	R2174	Depth ref:	R2174-R12-v2 Final			Quality ref:		R2174-R12-v2 Final			Other documents attached		✓	
Date	22.05.24	Area use:	Garden			landscaped			stockpile			other		
Site name / location	Waldmers Wood, Bury	Size area (m):	5x6	Approx. Area (m²):	120m²	Approx. Depth Top (m):	0.6m	Approx. Volume Top (m³):	72m³	Approx. depth Sub (m):	n/a	Approx. Volume Sub (m³):	n/a	
Plot/ location:	Plots 185-188	Number depth entries required			4 (1 per plot); 4 entries provided.		Number samples required:			3 TS (1 per 250m³ TS, minimum 3 samples per source); 3 provided.				
Compiled by:	CM													

Quality Validation		Inspection date/time:	4.04.24	Inspected by:	CM	Photographed:	✓
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Source Topsoil	1.	✓	Barratt Development: Centurian Way (Leyland Test Track)
Description Topsoil	2.	✓	Dark brown, slightly gravelly, CLAY with frequent rootlets.
Sample Topsoil	3.	✓	3 samples were collected from stockpile at destination Site and submitted for SGP Standard Suite testing (ref: 24-012749).
Source Subsoil	4.	x	n/a
Description Subsoil	5.	x	n/a
Sample Subsoil	6.	x	n/a

Topsoil Validation Record



Topsoil Results Summary – Leyland (24-012749)

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NAD	NAD	Yes
Arsenic	37	10-19	Yes
Cadmium	11	<1	Yes
Chromium (total)	910	17-33	Yes
Chromium VI	6	<1	Yes
Copper	2,400	19-35	Yes
Lead	200	30-60	Yes
Mercury	40	<1	Yes
Nickel	180	12-26	Yes
Zinc	3,700	48-88	Yes
Naphthalene	2.3	<1	Yes
Acenaphthene	210	<1	Yes
Acenaphthylene	170	<1	Yes
Fluorene	170	<1	Yes
Phenanthrene	95	<1-0.1	Yes
Anthracene	2,400	<1	Yes
Fluoranthene	280	<1-0.17	Yes
Pyrene	620	<1-0.14	Yes
Benzo(a)anthracene	7.2	<1-0.07	Yes
Chrysene	15	<1-0.09	Yes
Benzo(b)fluoranthene	2.6	<1-0.08	Yes
Benzo(k)fluoranthene	77	<1-0.05	Yes
Benzo(a)pyrene	2.2	<1-0.09	Yes
Indeno(123cd) pyrene	27	<1-0.21	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Dibenzo(ah) anthracene	0.24	<1	Yes
Benzo(ghi) perylene	320	<1-0.17	Yes
Aliphatic C5-C6	42	<1	Yes
Aliphatic C6-C8	100	<1	Yes
Aliphatic C8-C10	27	<1	Yes
Aliphatic C10-C12	130	<1	Yes
Aliphatic C12-C16	1,100	<1	Yes
Aliphatic C16-C21	65,000	<1	Yes
Aliphatic C21-C35	65,000	<1	Yes
Aromatic C6-C7	70	<1	Yes
Aromatic C7-C8	130	0.05-0.036	Yes
Aromatic C8-C10	34	<1	Yes
Aromatic C10-C12	74	<1	Yes
Aromatic C12-C16	140	<1	Yes
Aromatic C16-C21	260	<1	Yes
Aromatic C21-C35	1,100	<1	Yes
Benzene	0.08	<1	Yes
Toluene	130	27-50	Yes
Ethyl-benzene	47	<1	Yes
m/p-xylene	56	<1	Yes
o-xylene	60	<1	Yes

Soil Standards are primarily adopted from the published LQM/CIEH Sutable 4 Use Levels (S4ULs); the C4SL criteria for lead has also been adopted.
The appropriate land use is residential (1% SOM initially assumed for conservative assessment unless stated otherwise).

Topsoil Validation Record



Depth Validation	Inspection date/time:	22.05.24	Inspected by:	CM	Photographed:	✓
Plot 185	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	N/A					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets.				
		<i>Soil cover extends beyond 600 mm, so geotextile not observed (see photos provided by developer which confirms presence)</i>				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record

Depth Validation	Inspection date/time:	22.05.24	Inspected by:	CM	Photographed:	✓
Plot 186	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	n/a					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets.				
<i>Soil cover extends beyond 600 mm, so geotextile not observed (see photos provided by developer which confirms presence)</i>						
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



Depth Validation	Inspection date/time:	22.05.24	Inspected by:	CM	Photographed:	✓
Plot 187	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	n/a					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets. <i>Soil cover extends beyond 600 mm, so geotextile not observed (see photos provided by developer which confirms presence)</i>				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



Depth Validation	Inspection date/time:	22.05.24	Inspected by:	CM	Photographed:	✓
Plot 188	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	n/a					
Soil profile/description	0->0.6m	Dark brown, slightly gravelly, CLAY with frequent rootlets.				
		<i>Soil cover extends beyond 600 mm, so geotextile not observed (see photos provided by developer which confirms presence)</i>				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



Photographs provided for developer, Barratt Homes, of membrane installation over Plots 185-186.



Topsoil Validation Record

Summary

Soil PASSED testing for quality and depth.

An additional inspection visit IS NOT required.

SGP Staff:	C McHugh BSc GradIEMA	Signed:		24.05.24
SGP Staff:	D Wayland BSc MSc AssocMCIWM MCIWEM C.WEM	Signed:		24.05.24

Guide notes:

1.	Source Topsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
2.	Description Topsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
3.	Sample Topsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number
4.	Source Subsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
5.	Description Subsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
6.	Sample Subsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number



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Analytical Report Number : 24-012749

Project / Site name:	Waldmers Wood, Bury	Samples received on:	08/04/2024
Your job number:	R2174	Samples instructed on/ Analysis started on:	08/04/2024
Your order number:		Analysis completed by:	11/04/2024
Report Issue Number:	1	Report issued on:	12/04/2024
Samples Analysed:	3 soil samples		

Signed: _____

Anna Goc
PL Head of Reporting Team
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

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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.



Analytical Report Number: 24-012749
Project / Site name: Waldmers Wood, Bury

Lab Sample Number				163903	163904	163905
Sample Reference				TS-SP-S1	TS-SP-S2	TS-SP-S3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				04/04/2024	04/04/2024	04/04/2024
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	20	19	18
Total mass of sample received	kg	0.1	NONE	0.8	0.8	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EWS	EWS	EWS

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	6.9	6.8	6.7
Organic Matter (automated)	%	0.1	MCERTS	3	2.9	4.1

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.1	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.17	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.14	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.07	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.09	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.08	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.09	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.21	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.17	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	19	11
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	33	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	19	35	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	30	60	36
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	12	26	13
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	48	88	53



Analytical Report Number: 24-012749
Project / Site name: Waldmers Wood, Bury

Lab Sample Number				163903	163904	163905
Sample Reference				TS-SP-S1	TS-SP-S2	TS-SP-S3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				04/04/2024	04/04/2024	04/04/2024
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	< 10	< 10

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	0.05	0.036	0.027
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	< 10	< 10

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	50	35	27
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0

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



Analytical Report Number : 24-012749
Project / Site name: Waldmers Wood, Bury

* 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 *
163903	TS-SP-S1	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation
163904	TS-SP-S2	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation
163905	TS-SP-S3	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation



Analytical Report Number : 24-012749
Project / Site name: Waldmers Wood, Bury

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
Speciated EPA-16 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	D/W	MCERTS
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

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 aravimetrically 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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total



Topsoil Validation Record

Job number	R2174	Depth ref:	R2174-R12-v2 Final		Quality ref:		R2174-R12-v2 Final			Other documents attached		✓		
Date	01.08.25	Area use:	Garden			landscaped			stockpile			other		
Site name / location	Waldmers Wood, Bury	Size area (m):	Irregular	Approx. Area (m²):	72	Approx. Depth Top (m):	0.75	Approx. Volume Top (m³):	54	Approx. Depth Sub (m):	n/a	Approx. Volume Sub (m³):	n/a	
Plot/ location:	Plots 189													
Compiled by:	MJ	Number depth entries required			1 (1 per plot); 1 entry provided.		Number samples required:			3 TS (1 per 250m³ TS, minimum 3 samples per source); 15 TS samples provided.				

Quality Validation		Inspection date/time:	04.04.24, 20.05.24, 20.06.25, 18.02.25, 27.02.25, 14.05.25	Inspected by:	CM, MJ	Photographed:	✓
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Source Topsoil	1.	✓	Leyland Test Track
Description Topsoil	2.	✓	Dark brown, slightly gravelly, CLAY with frequent rootlets.
Sample Topsoil	3.	✓	3 samples were collected from stockpile at destination Site and submitted for SGP Standard Suite testing (ref: 24-012749). A further 2 samples collected from stockpile at destination Site on 20.05.24 (lab ref: 24-017879). An additional 3 samples were taken from stockpile on 20.06.24 (lab ref: 24-026885). One further sample taken from Plot 230 on 18.02.25 (lab ref: 25-008120). Two samples taken from stockpile on 27.02.25 (lab ref: 25-01063) and an additional four samples were taken from stockpile on 14.05.25 (lab ref: 25-025275)
Source Subsoil	4.	x	Not used
Description Subsoil	5.	x	n/a
Sample Subsoil	6.	x	n/a

Topsoil Validation Record



Topsoil Results Summary – Leyland Test Track

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NAD	NAD	Yes
Arsenic	37	7.9-19	Yes
Cadmium	11	<0.2-0.3	Yes
Chromium (total)	910	17-40	Yes
Chromium VI	6	<1.2-<1.8	Yes
Copper	2,400	19-35	Yes
Lead	200	24-60	Yes
Mercury	40	<0.3	Yes
Nickel	180	12-35	Yes
Zinc	3,700	48-88	Yes
Naphthalene	2.3	<0.05-0.06	Yes
Acenaphthene	210	<0.05-0.23	Yes
Acenaphthylene	170	<0.05	Yes
Fluorene	170	<0.05-0.64	Yes
Phenanthrene	95	<0.05-0.48	Yes
Anthracene	2,400	<0.05-1.3	Yes
Fluoranthene	280	<0.05-1.2	Yes
Pyrene	620	<0.05-1.2	Yes
Benzo(a)anthracene	7.2	<0.05-0.55	Yes
Chrysene	15	<0.05-0.65	Yes
Benzo(b)fluoranthene	2.6	<0.05-0.69	Yes
Benzo(k)fluoranthene	77	<0.05-0.35	Yes
Benzo(a)pyrene	2.2	<0.05-0.63	Yes
Indeno(123cd) pyrene	27	<0.05-0.29	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Dibenzo(ah) anthracene	0.24	<0.05	Yes
Benzo(ghi) perylene	320	<0.05-0.33	Yes
Aliphatic C5-C6	42	<0.02	Yes
Aliphatic C6-C8	100	<0.02	Yes
Aliphatic C8-C10	27	<0.05	Yes
Aliphatic C10-C12	130	<1-4.4	Yes
Aliphatic C12-C16	1,100	<2-14	Yes
Aliphatic C16-C21	65,000	<8-21	Yes
Aliphatic C21-C35	65,000	<8-49	Yes
Aromatic C6-C7	70	<0.01	Yes
Aromatic C7-C8	130	0.05-0.036	Yes
Aromatic C8-C10	34	<0.05	Yes
Aromatic C10-C12	74	<1-4.1	Yes
Aromatic C12-C16	140	<2-7.6	Yes
Aromatic C16-C21	260	<10	Yes
Aromatic C21-C35	1,100	<10-26	Yes
Benzene	0.08	<5	Yes
Toluene	130	<5-50	Yes
Ethyl-benzene	47	<5	Yes
m/p-xylene	56	<5	Yes
o-xylene	60	<5	Yes

Soil Standards are primarily adopted from the published LQM/CIEH Sutable 4 Use Levels (S4ULs); the C4SL criteria for lead has also been adopted.
The appropriate land use is residential (1% SOM initially assumed for conservative assessment unless stated otherwise).

Topsoil Validation Record



Depth Validation	Inspection date/time:	31.07.25	Inspected by:	MJ	Photographed:	✓
Plot 189	Required Depth (mm)	600	Measured Depth (mm)	750	PASS	
Source Topsoil	Leyland Test Track					
Source Subsoil	n/a					
Soil profile/description	0.0-0.6m	Dark brown, slightly gravelly, CLAY with frequent subangular-rounded cobble.				
	0.6m	(Soil cover extends beyond 0.8m so geotextile not visible in this plot) – Terram placement shown on developer provided photograph below				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



Developer photo showing placement of terram in garden of Plot 189.



Topsoil Validation Record

Summary

Soil PASSED testing for quality and depth.

An additional inspection visit IS NOT required.

SGP Staff:	M Jones BSc MSc MEnvSc	Signed:		01.08.25
SGP Member:	D Wayland BSc MSC AssocMCIWM MCIWEM C.WEM	Signed:		04.08.25

Guide notes:

1.	Source Topsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
2.	Description Topsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
3.	Sample Topsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number
4.	Source Subsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
5.	Description Subsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
6.	Sample Subsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number



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Analytical Report Number : 24-012749

Project / Site name:	Waldmers Wood, Bury	Samples received on:	08/04/2024
Your job number:	R2174	Samples instructed on/ Analysis started on:	08/04/2024
Your order number:		Analysis completed by:	11/04/2024
Report Issue Number:	1	Report issued on:	12/04/2024
Samples Analysed:	3 soil samples		

Signed: _____

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

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

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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

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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.



Analytical Report Number: 24-012749
Project / Site name: Waldmers Wood, Bury

Lab Sample Number				163903	163904	163905
Sample Reference				TS-SP-S1	TS-SP-S2	TS-SP-S3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				04/04/2024	04/04/2024	04/04/2024
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	20	19	18
Total mass of sample received	kg	0.1	NONE	0.8	0.8	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EWS	EWS	EWS

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	6.9	6.8	6.7
Organic Matter (automated)	%	0.1	MCERTS	3	2.9	4.1

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.1	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.17	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.14	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.07	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.09	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.08	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.09	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.21	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.17	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	19	11
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	33	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	19	35	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	30	60	36
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	12	26	13
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	48	88	53



Analytical Report Number: 24-012749
Project / Site name: Waldmers Wood, Bury

Lab Sample Number				163903	163904	163905
Sample Reference				TS-SP-S1	TS-SP-S2	TS-SP-S3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				04/04/2024	04/04/2024	04/04/2024
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	< 10	< 10

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	0.05	0.036	0.027
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	< 10	< 10

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	50	35	27
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0

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



Analytical Report Number : 24-012749
Project / Site name: Waldmers Wood, Bury

* 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 *
163903	TS-SP-S1	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation
163904	TS-SP-S2	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation
163905	TS-SP-S3	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation



Analytical Report Number : 24-012749
Project / Site name: Waldmers Wood, Bury

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
Speciated EPA-16 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	D/W	MCERTS
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

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 aravimetrically 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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Analytical Report Number : 24-017879

Project / Site name:	R2174 Waldmers Wood Leyland Topsoil	Samples received on:	07/05/2024
Your job number:		Samples instructed on/ Analysis started on:	07/05/2024
Your order number:		Analysis completed by:	11/05/2024
Report Issue Number:	1	Report issued on:	13/05/2024
Samples Analysed:	2 soil samples		



Signed: _____

Anna Goc
PL Head of Reporting Team
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

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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.

Analytical Report Number: 24-017879
Project / Site name: R2174 Waldmers Wood Leyland Topsoil

Lab Sample Number				189769	189770
Sample Reference				TS-SP-S1 (ley)	TS-SP-S2 (ley)
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				02/05/2024	02/05/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Stone Content	%	0.1	NONE	19.9	39.5
Moisture Content	%	0.01	NONE	18	15
Total mass of sample received	kg	0.1	NONE	0.8	0.7

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MBI	MBI

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.5	7.8
Organic Matter (automated)	%	0.1	MCERTS	4.8	4.3

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.06
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.26	0.31
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.09
Fluoranthene	mg/kg	0.05	MCERTS	0.5	0.64
Pyrene	mg/kg	0.05	MCERTS	0.46	0.56
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.32
Chrysene	mg/kg	0.05	MCERTS	0.29	0.4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.35	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.24	0.29
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.14	0.17
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.16

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	2.23	3.06
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.6	7.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	31	21
Lead (aqua regia extractable)	mg/kg	1	MCERTS	34	24
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	25	19
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	69	52

Analytical Report Number: 24-017879
Project / Site name: R2174 Waldmers Wood Leyland Topsoil

Lab Sample Number	189769	189770
Sample Reference	TS-SP-S1 (ley)	TS-SP-S2 (ley)
Sample Number	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied
Date Sampled	02/05/2024	02/05/2024
Time Taken	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection
		Accreditation Status

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	3.1
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	7.2
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	9.4
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	37
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	57

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	26
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	26

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0 ^	< 5.0 ^
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0

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

Analytical Report Number : 24-017879

Project / Site name: R2174 Waldmers Wood Leyland Topsoil

* 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 *
189769	TS-SP-S1 (ley)	None Supplied	None Supplied	Brown loam and clay with vegetation and stones
189770	TS-SP-S2 (ley)	None Supplied	None Supplied	Brown loam and clay with vegetation and stones

Analytical Report Number : 24-017879
Project / Site name: R2174 Waldmers Wood Leyland Topsoil

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
Speciated EPA-16 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	D/W	MCERTS
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

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 30°C.

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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics

Analytical Report Number : 24-017879
Project / Site name: R2174 Waldmers Wood Leyland Topsoil

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
#1	EH_2D_Total but with humics mathematically subtracted				
#2	EH_2D_Total but with fatty acids mathematically subtracted				
-	Operator - understore to separate acronyms (exception for +)				
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total				

^ - Data reported unaccredited due to quality control parameter failure associated with this result; The result should be considered as being deviating and may be compromised.



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Analytical Report Number : 24-026885

Project / Site name:	Tetrosyl, Bury	Samples received on:	25/06/2024
Your job number:	R2174	Samples instructed on / Analysis started on:	25/06/2024
Your order number:		Analysis completed by:	02/07/2024
Report Issue Number:	1	Report issued on:	02/07/2024
Samples Analysed:	3 soil samples		

Signed: 

Dominika Liana
Junior 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

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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.

Analytical Report Number: 24-026885
Project / Site name: Tetrosyl, Bury

Lab Sample Number	236951	236952	236953
Sample Reference	TS-SP-Ley-S1	TS-SP-Ley-S2	TS-SP-Ley-S3
Sample Number	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied
Date Sampled	20/06/2024	20/06/2024	20/06/2024
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	19	20	19
Total mass of sample received	kg	0.1	NONE	1.3	1.4	1.5

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KJK	KJK	KJK

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.6	7.5	7.6
Organic Matter (automated)	%	0.1	MCERTS	4	5.9	5.6

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.08	0.08
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.17	0.24	0.14
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.27	0.5	0.28
Pyrene	mg/kg	0.05	MCERTS	0.24	0.47	0.26
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.13	0.23	0.13
Chrysene	mg/kg	0.05	MCERTS	0.18	0.31	0.15
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.2	0.35	0.18
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.09	0.16	0.09
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.16
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.1	0.17	0.08
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.12	0.19	0.1

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	1.54	2.71	1.64
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Analytical Report Number: 24-026885
Project / Site name: Tetrosyl, Bury

Lab Sample Number	236951	236952	236953
Sample Reference	TS-SP-Ley-S1	TS-SP-Ley-S2	TS-SP-Ley-S3
Sample Number	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied
Date Sampled	20/06/2024	20/06/2024	20/06/2024
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.6	9.1	9.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	37	33	35
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24	25	25
Lead (aqua regia extractable)	mg/kg	1	MCERTS	26	33	30
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	32	28	29
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	65	69	74

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	< 10	< 10

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10	< 10	< 10

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0

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

Analytical Report Number : 24-026885

Project / Site name: Tetrosyl, Bury

* 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 *
236951	TS-SP-Ley-S1	None Supplied	None Supplied	Brown clay with vegetation
236952	TS-SP-Ley-S2	None Supplied	None Supplied	Brown clay and loam with gravel and vegetation
236953	TS-SP-Ley-S3	None Supplied	None Supplied	Brown clay with gravel and vegetation

Analytical Report Number : 24-026885

Project / Site name: Tetrosyl, Bury

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
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	D/W	MCERTS
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	NONE

Analytical Report Number : 24-026885
Project / Site name: Tetrosyl, Bury

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

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 30°C.

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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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

The result for sum should be interpreted with caution



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Analytical Report Number : 25-008120

Project / Site name:	Tetrosyl - Leyland Import	Samples received on:	20/02/2025
Your job number:	R2174	Samples instructed on / Analysis started on:	20/02/2025
Your order number:		Analysis completed by:	27/02/2025
Report Issue Number:	1	Report issued on:	28/02/2025
Samples Analysed:	1 soil sample		

Signed: _____

Anna Goc
PL Head of Reporting Team
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.

Analytical Report Number: 25-008120
Project / Site name: Tetrosyl - Leyland Import

Lab Sample Number				458451
Sample Reference				Plot 230
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				None Supplied
Date Sampled				18/02/2025
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	30
Total mass of sample received	kg	0.1	NONE	0.6

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KSZ
Analysis completed	N/A	N/A	N/A	25/02/2025

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.1
Organic Matter (automated)	%	0.1	MCERTS	5.5

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	0.17
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.25
Pyrene	mg/kg	0.05	MCERTS	0.22
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.14
Chrysene	mg/kg	0.05	MCERTS	0.16
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.18
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.12
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.08
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.09

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	1.46
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	20
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.6
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	50
Lead (aqua regia extractable)	mg/kg	1	MCERTS	97
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	17
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	88

Analytical Report Number: 25-008120
Project / Site name: Tetrosyl - Leyland Import

Lab Sample Number					458451
Sample Reference					Plot 230
Sample Number					None Supplied
Water Matrix					N/A
Depth (m)					None Supplied
Date Sampled					18/02/2025
Time Taken					None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

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 >EC5 - EC35 _{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 >EC5 - EC35 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10

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 : 25-008120

Project / Site name: Tetrosyl - Leyland Import

* 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 *
458451	Plot 230	None Supplied	None Supplied	Brown clay with gravel and vegetation

Analytical Report Number : 25-008120
Project / Site name: Tetrosyl - Leyland Import

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
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
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
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS

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



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Analytical Report Number : 25-010163

Project / Site name:	Tetrosyl Leyland TS Import	Samples received on:	03/03/2025
Your job number:	R2174	Samples instructed on / Analysis started on:	03/03/2025
Your order number:		Analysis completed by:	10/03/2025
Report Issue Number:	1	Report issued on:	10/03/2025
Samples Analysed:	3 soil samples		

Signed: _____

Anna Goc
PL Head of Reporting Team
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
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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.

Analytical Report Number: 25-010163
Project / Site name: Tetrosyl Leyland TS Import

Lab Sample Number	468697	468698	468699
Sample Reference	TS-S1	TS-S2	TS-S3
Sample Number	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A
Depth (m)	None Supplied	None Supplied	None Supplied
Date Sampled	27/02/2025	27/02/2025	27/02/2025
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	23	20	20
Total mass of sample received	kg	0.1	NONE	0.6	0.5	0.6

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KMC	KMC	KMC
Analysis completed	N/A	N/A	N/A	10/03/2025	10/03/2025	10/03/2025

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.8	7.9	7.9
Organic Matter (automated)	%	0.1	MCERTS	5.9	5.4	5.3

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.06
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.08
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.17	0.16	0.48
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.1
Fluoranthene	mg/kg	0.05	MCERTS	0.36	0.32	0.75
Pyrene	mg/kg	0.05	MCERTS	0.35	0.3	0.67
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.19	0.18	0.34
Chrysene	mg/kg	0.05	MCERTS	0.2	0.19	0.35
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.23	0.26	0.4
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.12	0.09	0.21
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.22	0.21	0.36
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.13	0.11	0.15
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.14	0.11	0.18

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	2.12	1.94	4.18
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.1	10	10
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.3	0.3
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	37	40	39
Copper (aqua regia extractable)	mg/kg	1	MCERTS	31	34	31
Lead (aqua regia extractable)	mg/kg	1	MCERTS	36	35	37
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	33	35	34
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	73	87	75

Analytical Report Number: 25-010163
Project / Site name: Tetrosyl Leyland TS Import

Lab Sample Number	468697	468698	468699
Sample Reference	TS-S1	TS-S2	TS-S3
Sample Number	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A
Depth (m)	None Supplied	None Supplied	None Supplied
Date Sampled	27/02/2025	27/02/2025	27/02/2025
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	17	< 8.0	11
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	17	< 10	11

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	4.4	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	18	11	12
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	22	11	12

VOCs

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

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



Analytical Report Number : 25-010163

Project / Site name: Tetrosyl Leyland TS Import

* 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 *
468697	TS-S1	None Supplied	None Supplied	Brown clay
468698	TS-S2	None Supplied	None Supplied	Brown clay
468699	TS-S3	None Supplied	None Supplied	Brown clay

Analytical Report Number : 25-010163

Project / Site name: Tetrosyl Leyland TS Import

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
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
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
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry	In-house method	L080-PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS

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 30°C.

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

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Analytical Report Number : 25-025275

Project / Site name:	Tetrosyl-Leyland import	Samples received on:	16/05/2025
Your job number:	R2174	Samples instructed on / Analysis started on:	16/05/2025
Your order number:		Analysis completed by:	27/05/2025
Report Issue Number:	1	Report issued on:	27/05/2025
Samples Analysed:	4 soil samples		



Signed: _____

Anna Goc
PL Head of Reporting Team
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

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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.

Analytical Report Number: 25-025275
Project / Site name: Tetrosyl-Leyland import

Lab Sample Number	548099	548100	548101	548102
Sample Reference	TS-S1	TS-S2	TS-S3	TS-S4
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	14/05/2025	14/05/2025	14/05/2025	14/05/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Stone Content	%	0.1	NONE	< 0.1	4.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	0.5	0.46	0.27	0.56
Total mass of sample received	kg	0.1	NONE	0.8	0.8	0.8	0.8

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	JWU	JWU	JWU	JWU
Analysis completed	N/A	N/A	N/A	26/05/2025	26/05/2025	26/05/2025	26/05/2025

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.1	7.7	7.8	7.6
Organic Matter (automated)	%	0.1	MCERTS	6	5.7	6.1	4.8

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.07	< 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	0.23	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.15	0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.31	1.2	0.52	0.32
Anthracene	mg/kg	0.05	MCERTS	0.06	0.18	0.15	0.07
Fluoranthene	mg/kg	0.05	MCERTS	0.71	1.3	0.99	0.68
Pyrene	mg/kg	0.05	MCERTS	0.67	1.2	0.89	0.63
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.34	0.55	0.42	0.33
Chrysene	mg/kg	0.05	MCERTS	0.42	0.65	0.48	0.4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.53	0.69	0.5	0.45
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.23	0.28	0.28	0.22
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.46	0.63	0.48	0.41
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.25	0.29	0.23	0.22
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	0.27	0.33	0.26	0.24

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	4.25	7.73	5.26	3.96
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9	8	8.3	8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	37	36	35	33
Copper (aqua regia extractable)	mg/kg	1	MCERTS	35	30	27	27
Lead (aqua regia extractable)	mg/kg	1	MCERTS	33	34	28	26
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	30	27	27	27
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	78	72	66	64

Analytical Report Number: 25-025275
Project / Site name: Tetrosyl-Leyland import

Lab Sample Number	548099	548100	548101	548102
Sample Reference	TS-S1	TS-S2	TS-S3	TS-S4
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	14/05/2025	14/05/2025	14/05/2025	14/05/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

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	1.7	1	4.4	3
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	11	7.8	14	13
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	16	12	21	18
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	46	30	47	49
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	75	51	87	82

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	1.4	< 1.0	4.1	< 1.0
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	2.9	< 2.0	7.6	< 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	12	< 10	17	14
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	16	< 10	29	14

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

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

Analytical Report Number : 25-025275

Project / Site name: Tetrosyl-Leyland import

* 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 *
548099	TS-S1	None Supplied	None Supplied	Brown clay and loam with gravel and vegetation
548100	TS-S2	None Supplied	None Supplied	Brown clay and loam with gravel and stones
548101	TS-S3	None Supplied	None Supplied	Brown clay and loam with gravel and vegetation
548102	TS-S4	None Supplied	None Supplied	Brown clay and loam with gravel and vegetation

Analytical Report Number : 25-025275
Project / Site name: Tetrosyl-Leyland import

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
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
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
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
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
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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS
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 300C.
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

Topsoil Validation Record

Job number	R2174	Depth ref:	R2174-R12-v2 Final		Quality ref:		R2174-R12-v2 Final		Other documents attached		✓		
Date	05.12.23	Area use:	Garden		landscaped		stockpile		other				
Site name / location	Waldmers Wood, Bury	Size area (m):	Irregular 4x5m approx.	Approx. Area (m²):	180m²	Approx. Depth Top (m):	0.6m	Approx. Volume Top (m³):	108m³	Approx. Depth Sub (m):	n/a	Approx. Volume Sub (m³):	n/a
Plot/ location:	Plots 161-163 & 152-153 & 157												
Compiled by:	MJ / CM	Number depth entries required			6 (1 per plot); 6 entries provided.		Number samples required:		3 TS (1 per 250m³ TS, minimum 3 samples per source); 22 TS samples provided.				

Quality Validation		Inspection date/time:	23.11.23	Inspected by:	MJ	Photographed:	✓
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Source Topsoil	1.	✓	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site).
Description Topsoil	2.	✓	Blackish brown slightly gravelly sandy clayey topsoil with grass roots.
Sample Topsoil	3.	✓	2 samples taken at stockpile on site (i2 Analytical Lab ref: 23-71343) following import and prior to placement. 20 samples collected from stockpile at source site - Rossendale Road, Burnley (Lab cert 23-64512-1) reported within letter R2688A-L02 (see attached).
Source Subsoil	4.	x	Not used
Description Subsoil	5.	x	n/a
Sample Subsoil	6.	x	n/a

Topsoil Validation Record



Topsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NAD	NAD	Yes
Arsenic	37	1.8-20	Yes
Cadmium	11	<0.1-1.2	Yes
Chromium (total)	910	5.0-54	Yes
Chromium VI	6	<1.2	Yes
Copper	2,400	8.1-76	Yes
Lead	200	16-190	Yes
Mercury	40	<0.05-0.40	Yes
Nickel	180	2.8-15	Yes
Zinc	3,700	17-210	Yes
Naphthalene	2.3	0.57-3.1	Yes*
Acenaphthene	210	0.92-3.8	Yes
Acenaphthylene	170	0.11-2.5	Yes
Fluorene	170	0.68-3.4	Yes
Phenanthrene	95	5.9-21	Yes
Anthracene	2,400	1.5-7.0	Yes
Fluoranthene	280	8.2-26	Yes
Pyrene	620	8.2-26	Yes
Benzo(a)anthracene	7.2	3.8-14	Yes*
Chrysene	15	5.7-13	Yes
Benzo(b)fluoranthene	2.6	4.5-13	Yes*
Benzo(k)fluoranthene	77	2.8-4.8	Yes
Benzo(a)pyrene	2.2	4.1-10	Yes*
Indeno(123cd) pyrene	27	1.8-6.8	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Dibenzo(ah) anthracene	0.24	0.39-1.9	Yes*
Benzo(ghi) perylene	320	2.3-6.1	Yes
Aliphatic C5-C6	42	<0.1	Yes
Aliphatic C6-C8	100	<0.1	Yes
Aliphatic C8-C10	27	<0.1	Yes
Aliphatic C10-C12	130	<1	Yes
Aliphatic C12-C16	1,100	<2	Yes
Aliphatic C16-C21	65,000	<8	Yes
Aliphatic C21-C35	65,000	<1-31	Yes
Aromatic C6-C7	70	<1	Yes
Aromatic C7-C8	130	<1	Yes
Aromatic C8-C10	34	<1	Yes
Aromatic C10-C12	74	<1-2.3	Yes
Aromatic C12-C16	140	<1-8.9	Yes
Aromatic C16-C21	260	22-130	Yes
Aromatic C21-C35	1,100	46-250	Yes
Benzene	0.08	<0.005	Yes
Toluene	130	<0.005	Yes
Ethyl-benzene	47	<0.005	Yes
m/p-xylene	56	<0.005	Yes
o-xylene	60	<0.005	Yes
*See Summary section			

Topsoil Validation Record

Depth Validation	Inspection date/time:	05.12.23	Inspected by:	MJ	Photographed:	✓
Plot 161	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site).					
Source Subsoil	n/a					
Soil profile/description	0.0-0.6m	Blackish brown slightly gravelly sandy clayey topsoil with grass roots.				
	0.6m	Base – Black woven geotextile				
Photograph (location)		Photograph (depth)		Photograph (soil type & geotextile)		
						

Topsoil Validation Record

Depth Validation	Inspection date/time:	05.12.23	Inspected by:	MJ	Photographed:	✓
Plot 162	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site).					
Source Subsoil	n/a					
Soil profile/description	0.0-0.6m	Blackish brown slightly gravelly sandy clayey topsoil with grass roots.				
	0.6m	Base – Black woven geotextile				
Photograph (location)		Photograph (depth)		Photograph (soil type & geotextile)		
						

Topsoil Validation Record

Depth Validation	Inspection date/time:	05.12.23	Inspected by:	MJ	Photographed:	✓
Plot 163	Required Depth (mm)	600	Measured Depth (mm)	700	PASS	
Source Topsoil	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site).					
Source Subsoil	n/a					
Soil profile/description	0.0-0.7m	Blackish brown slightly gravelly sandy clayey topsoil with grass roots.				
	0.7m	Base – Black woven geotextile				
Photograph (location)		Photograph (depth)		Photograph (soil type & geotextile)		
						

Topsoil Validation Record

Depth Validation	Inspection date/time:	05.12.23	Inspected by:	MJ	Photographed:	✓
Plot 152	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site).					
Source Subsoil	n/a					
Soil profile/description	0.0-0.6m	Blackish brown slightly gravelly sandy clayey topsoil with grass roots.				
	0.6m	Base – Black woven geotextile				
Photograph (location)		Photograph (depth)		Photograph (soil type & geotextile)		
						

Topsoil Validation Record

Depth Validation	Inspection date/time:	05.12.23	Inspected by:	MJ	Photographed:	✓
Plot 153	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site).					
Source Subsoil	n/a					
Soil profile/description	0.0-0.6m	Blackish brown slightly gravelly sandy clayey topsoil with grass roots.				
	0.6m	Base – Black woven geotextile				
Photograph (location)		Photograph (depth)		Photograph (soil type & geotextile)		
						

Topsoil Validation Record

Depth Validation	Inspection date/time:	05.12.23	Inspected by:	MJ	Photographed:	✓
Plot 157	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Barratt Homes development site off Rossendale Road, Burnley (well characterised Greenfield site).					
Source Subsoil	n/a					
Soil profile/description	0.0-0.6m	Blackish brown slightly gravelly sandy clayey topsoil with grass roots.				
	0.6m	Base – Black woven geotextile				
Photograph (location)		Photograph (depth)		Photograph (soil type & geotextile)		
						

Topsoil Validation Record

**Summary**

Exceedances of the adopted residential soils screening criteria have been detected for a number of PAHs: Benzo(b)fluoranthene (2 no.), Benzo(a)pyrene (2 no.) and Dibenzo(ah)anthracene (2 no.). However, as summarised in the 'Rossendale Road, Burnley: Stockpile A Validation & Assessment' letter (ref: R2688-L02, dated 7th November 2023 – attached), these exceedances have been attributed to the inclusion of coal within the soils and this has been confirmed with the completion of a PAH ratio plot. Considering the undeveloped nature of the source site, the absence of any other identifiable sources, as well as the descriptions of coal gravel within the soils the overall risk to human health from PAHs from fragments of coal is considered to be very low due to the sequestration of PAHs within a carbon or vitrified matrix. A copy of this report was sent to the EHO for approval prior to the movement and placement of soils within gardens and was duly approved on 28.11.2023. The soil is therefore considered suitable for use as garden soils.

An additional inspection visit IS NOT required.

SGP Staff:	C McHugh BSc GradIEMA	Signed:		05.12.23
SGP Member:	D Wayland BSc MSC AssocMCIWM MCIWEM C.WEM	Signed:		05.12.23

Guide notes:

1.	Source Topsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
2.	Description Topsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
3.	Sample Topsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number
4.	Source Subsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
5.	Description Subsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
6.	Sample Subsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number



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Analytical Report Number : 23-71343

Project / Site name:	Tetrosyl - Rossendale Road Import R2174	Samples received on:	27/11/2023
Your job number:	R2174	Samples instructed on / Analysis started on:	27/11/2023
Your order number:		Analysis completed by:	01/12/2023
Report Issue Number:	1	Report issued on:	01/12/2023
Samples Analysed:	2 soil samples		

Signed: *A. Czerwinska*

Agnieszka Czerwinska
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

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

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.

Analytical Report Number: 23-71343

Project / Site name: Tetrosyl - Rossendale Road Import R2174

Lab Sample Number				2891279	2891280
Sample Reference				TS-S1	TS-S2
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				23/11/2023	24/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	39	50
Total mass of sample received	kg	0.001	NONE	0.8	0.8

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	KSZ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7	6.8
Organic Matter (automated)	%	0.1	MCERTS	9.4	15

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	3.1	0.84
Acenaphthylene	mg/kg	0.05	MCERTS	0.1	0.09
Acenaphthene	mg/kg	0.05	MCERTS	2.5	1.2
Fluorene	mg/kg	0.05	MCERTS	1.9	0.78
Phenanthrene	mg/kg	0.05	MCERTS	14	6.9
Anthracene	mg/kg	0.05	MCERTS	3.2	1.4
Fluoranthene	mg/kg	0.05	MCERTS	17	9.3
Pyrene	mg/kg	0.05	MCERTS	14	8.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	8.1	4.3
Chrysene	mg/kg	0.05	MCERTS	7	4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	7.6	5.1
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	3.5	1.6
Benzo(a)pyrene	mg/kg	0.05	MCERTS	7.2	4.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3.2	2.1
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.95	0.58
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.4	2.3

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	97.4	52.9
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	12
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	0.8
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35	28
Copper (aqua regia extractable)	mg/kg	1	MCERTS	37	51
Lead (aqua regia extractable)	mg/kg	1	MCERTS	87	99
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	14	14
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	99	130

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	48	70
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0

Analytical Report Number: 23-71343

Project / Site name: Tetrosyl - Rossendale Road Import R2174

Lab Sample Number				2891279	2891280
Sample Reference				TS-S1	TS-S2
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				23/11/2023	24/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS 1D AL}	mg/kg	0.02	NONE	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS 1D AL}	mg/kg	0.02	NONE	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS 1D AL}	mg/kg	0.05	NONE	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH CU 1D AL}	mg/kg	1	MCERTS	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH CU 1D AL}	mg/kg	2	MCERTS	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH CU 1D AL}	mg/kg	8	MCERTS	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH CU 1D AL}	mg/kg	8	MCERTS	31	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	38	< 10

TPH-CWG - Aromatic >EC5 - EC7 _{HS 1D AR}	mg/kg	0.01	NONE	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS 1D AR}	mg/kg	0.01	NONE	0.049	0.069
TPH-CWG - Aromatic >EC8 - EC10 _{HS 1D AR}	mg/kg	0.05	NONE	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH CU 1D AR}	mg/kg	1	MCERTS	1.8	2.3
TPH-CWG - Aromatic >EC12 - EC16 _{EH CU 1D AR}	mg/kg	2	MCERTS	6.7	8.6
TPH-CWG - Aromatic >EC16 - EC21 _{EH CU 1D AR}	mg/kg	10	MCERTS	22	28
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	61	46
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	91	85

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



Analytical Report Number : 23-71343
Project / Site name: Tetrosyl - Rossendale Road Import R2174

* 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 *
2891279	TS-S1	None Supplied	None Supplied	Brown clay and loam with gravel and plastic.
2891280	TS-S2	None Supplied	None Supplied	Brown loam and clay with vegetation.

Analytical Report Number : 23-71343

Project / Site name: Tetrosyl - Rossendale Road Import R2174

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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.	L038-PL	D	MCERTS
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	A001-PL	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
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.	L019-UK/PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser.	L080-PL	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.

Analytical Report Number : 23-71343

Project / Site name: Tetrosyl - Rossendale Road Import R2174

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total



Partnership No: OC 300776

Our Ref: R2688-L02

7th November 2023

Barratt Homes Manchester
1st Floor - Adamson House
106 Wilmslow Road
Didsbury
Manchester
M20 2YY
Dear Barratt Homes

Rossendale Road, Burnley: Stockpile A Validation & Assessment

Barratt Homes Manchester (BHM) are carrying out preparatory earthworks at the Brun Lea, Rossendale Road site, Burnley to prepare for residential development. Preparatory works have included the recovery of circa 1,000m³ of topsoil separated into stockpile A (see Appendix C).

BHM propose to reuse the topsoil recovered for garden areas of the ongoing development at Brun Lea Heights under an MMP to allow reuse as garden soils. To assess the suitability of the soils for this intended use prior to placing the soil in garden areas, BHM have instructed Smith Grant LLP (SGP) to carry out validation testing.

SGP Consultant C McHugh attended site on 23.10.23 and collected 20 samples from the topsoil stockpile at varying depths using an excavator and submitted samples for chemical analysis in accordance with the Remediation Strategy for the site. SGP achieved a sampling frequency of 1 per 50m³ in accordance with the strategy requirement for site-won soils. It is understood that BHM may also export some of topsoil to Waldmers Wood, Bury.

Samples were couriered to i2 Analytical, Watford within 24 hours of collections. Samples were placed in appropriate containers as provided by the laboratory and stored in a chilled cool box. Chemical analysis was scheduled for a generic suite of urban contaminants (asbestos, metals, hydrocarbons and PAHs), the results of which have been compared against generic soil assessment criteria for use in residential gardens with plant uptake (LQM/CIEH Suitable 4 Use Levels (S4ULs) and Category 4 Screening Levels (C4SL) for lead and benzo(a)pyrene). Due to the high SOM content of the samples (average of 6.9%) soil screening criteria based on 6% have been adopted.

Figure 1: Image of Stockpile A



Stockpile Assessment

The results of the topsoil stockpile are presented in the section below and are compared to the adopted screening criteria. Where exceedances are present, additional risk assessment is provided. A copy of the laboratory test certificate (ref.23-64512-1) is provided in Appendix A.

Topsoil Stockpile

Twenty samples (TS-S1 – TS-S20) were collected from the stockpile. The results are summarised in the table below:

Table 1. Summary of Topsoil Stockpile Results

Determinant	Range of Concentrations (mg/kg, unless specified)	Screening Criteria (mg/g, unless specified)	Exceedances
Asbestos (%)	NAD	NAD	None
Arsenic	11-16	LQM/CIEH S4UL 37	None
Cadmium	0.5-0.7	LQM/CIEH S4UL 11	None
Chromium	29-35	LQM/CIEH S4UL 910	None
Copper	33-53	LQM/CIEH S4UL 2400	None
Lead	70-220	LQM/CIEH S4UL 200	(1): TS-S20
Mercury	0.3-0.4	LQM/CIEH S4UL 40	None
Nickel	14-21	LQM/CIEH S4UL 130	None
Zinc	88-190	LQM/CIEH S4UL 3700	None
Naphthalene	0.3-2.4	LQM/CIEH S4UL 13	(1): TS-S11
Acenaphthylene	0.1-0.6	LQM/CIEH S4UL 920	None
Acenaphthene	0.7-4.1	LQM/CIEH S4UL 1100	None
Fluorene	0.5-2.9	LQM/CIEH S4UL 440	None
Phenanthrene	4.4-20.0	LQM/CIEH S4UL 440	None



Determinant	Range of Concentrations (mg/kg, unless specified)	Screening Criteria (mg/g, unless specified)	Exceedances
Fluoranthene	6.2-23.0	LQM/CIEH S4UL 890	None
Anthracene	0.9-5.0	LQM/CIEH S4UL 11,000	None
Pyrene	5.4-20.0	LQM/CIEH S4UL 2000	None
Benzo(a)anthracene	2.8-10.0	LQM/CIEH S4UL 13	(2): TS-S11 & TS-S20
Chrysene	2.8-9.7	LQM/CIEH S4UL 27	None
Benzo(b)fluoranthene	3.4-10	LQM/CIEH S4UL 3.7	(17): TS S1 – TS-S5 & TS-S7 & TS-S9 - TS-S14 & TS-S16 - TS-S20
Benzo(k)fluoranthene	1.2-5.0	LQM/CIEH S4UL 100	None
Benzo(a)pyrene	2.8-9.8	C4SL 5	(18): TS-S1 – TS-S5 & TS-S7 & TS-S9 – TS-S20
Indeno(123cd) pyrene	1.4-4.9	S4UL 41	None
Dibenzo(ah)anthracene	0.4-1.2	LQM/CIEH S4UL 0.3	(20): TS-S1 – TS-S20
Benzo(ghi)perylene	1.5-5.5	LQM/CIEH S4UL 350	None
aliphatic >C5-C7	<1	LQM/CIEH S4UL 42	None
aliphatic >C7-C8	<1	LQM/CIEH S4UL 100	None
aliphatic >C8-C10	<1	LQM/CIEH S4UL 27	None
aliphatic >C10-C12	<1	LQM/CIEH S4UL 130	None
aliphatic >C12-C16	2-5.4	LQM/CIEH S4UL 1100	None
aliphatic >C16-C21	8	LQM/CIEH S4UL 5000	None
aliphatic >C21-C35	8-36	LQM/CIEH S4UL 5000	None
aromatic >C5-C7	<1	LQM/CIEH S4UL 70	None
aromatic >C7-C8	<1	LQM/CIEH S4UL 130	None
aromatic >C8-C10	<1	LQM/CIEH S4UL 34	None
aromatic >C10-C12	1-3.1	LQM/CIEH S4UL 74	None
aromatic >C12-C16	2-12	LQM/CIEH S4UL 140	None
aromatic >C16-C21	10-72	LQM/CIEH S4UL 260	None
aromatic >C21-C35	27-120	LQM/CIEH S4UL 1100	None
Benzene	<1	LQM/CIEH S4UL 0.087	None
Toluene	<1	LQM/CIEH S4UL 130	None
Ethylbenzene	<1	LQM/CIEH S4UL 47	None
Xylenes	<1	LQM/CIEH S4UL 59	None

A single minor lead exceedance was recorded with a concentration of 220 mg/kg (sample: T1-S20), above the assessment criteria of 200 mg/kg.

There were multiple PAH exceedances recorded within the topsoil stockpile A results:

- Naphthalene – single exceedance recorded with a concentration of 2.4 mg/kg (sample: TS-S11).
- Benzo(a)anthracene – 2 exceedances recorded at 9.2 mg/kg (sample: TS-S11) and 10.0 mg/kg (samples TS-S20).



- Benzo(f)fluoranthene – 17 exceedances were recorded with a maximum concentration of 10.0 mg/kg (sample: TS-S20).
- Benzo(a)pyrene – 18 exceedances were recorded with a maximum concentration of 9.8 mg/kg (sample: TS-S20).
- Dibenzo(ah)anthracene – 20 exceedances recorded dibenzo(ah)anthracene exceedances with a maximum concentration of 1.2mg/kg (sample: TS-S20).

Further Assessment

PAHs

To assess the potential source of the PAHs a ratio-cross plot has been undertaken, a copy of the plot is presented in Appendix B. All 20 samples confirmed a coal signature which is consistent with the findings and assessment undertaken on other stockpiles of site-won soils. The presence of coal fragments is not unexpected given the history of the site where former coal shafts have been identified and inclusions of gravel of coal have been reported. The overall risk to human health from exposure to PAHs within the fine fragments of coal is considered to be low due to the low bioavailability of the PAHs within the vitrified or carbon matrix of the coal.

Lead

A single very minor exceedance of lead was reported in sample TS-S20. There was no noticeable difference in the material from sample TS-S20 which consisted of brown loamy topsoil, consistent with the other samples. Given the absence of any significant anthropogenic inclusions with the shallow soils or history of industrial use other than mining, the minor occurrence of elevated lead may be attributed to the natural geology of the site and surrounding area. Reference is made to the British Geological Society (BGS) Natural Background Concentrations (NBC) which report that natural soils within the site area may range between 99.5 – 242 mg/kg; this is consistent with the reported concentrations.

Given the uniformity of the soil in the stockpile and the heterogeneity of the material that had been stripped, recovered and stockpiled, it is considered appropriate to treat the stockpile as a single averaging area. The average lead concentration is 90.15 mg/kg which is below the assessment criteria of 200 mg/kg.

Conclusions

It is concluded that stockpile A which consists of circa 1,000m³ of site-won topsoil has been sampled at the required frequency of 1 per 50m³ for site-won soils as per the approved Remediation Strategy.

Elevated PAHs have been reported with exceedances of benzo(a)pyrene, dibenzo(ah)anthracene, benzo(b)fluoranthene and benzo(a)anthracene when compared to the adopted assessment criteria for residential land use and based on 6% SOM content. Given the absence of made ground or any anthropogenic inclusions, a PAH cross-plot has been undertaken to establish the probable source with a coal signature reported for each sample. This is consistent with previous sampling and assessment works undertaken by SGP (R2688-L01) which reported near identical results. The presence of fine inclusions of coal were reported during previous site investigation works with a separate mining investigation confirming the presence of three shafts (Shaft A, B and C) on the Site.

The overall risk to human health from PAHs within fragments of coal is with the bioavailability of the PAHs limited due to the sequestration of PAHs within a carbon or vitrified matrix.

A single very minor exceedance of lead was reported (sample TS-S20), however the reported concentration of 220 mg/kg falls within the BGS Natural Background Concentrations (NBCs) of the site which range



between 99.5 – 242 mg/kg. Given the consistency of soils within the stockpile and the absence of any anthropogenic inclusions, the stockpile has been treated as a single averaging area with the average lead concentration below the assessment criteria of 200 mg/kg.

It is therefore considered following further assessment that the topsoil within Stockpile A is considered suitable for reuse as garden soils and has a low risk to human health. Due to the reported exceedances, approval by the Local Authority Contaminated Land Officer (CLO) will be required prior to the re-use of soils.

If any of the stockpile is to be exported to an additional Barratt site, the CLO for the receiving Site will also be required to approve this assessment. Movement of material should be completed under a declared Material Management Plan (MMP).

Recommendations

No further testing is recommended; however, this assessment should be provided to the Local Authority Contaminated Land Officer for approval prior to the soils being reused. If it is proposed to export all or part of the stockpile to another Barratt development, this assessment should also be provided to the CLO for the receiving site for approval. The movement of soils should be completed under an MMP.

Yours sincerely
for: Smith Grant LLP

A handwritten signature in black ink, appearing to read "C. McHugh".

Caitlin McHugh BSc GradIEMA
Graduate Consultant

Attached

Laboratory Certificate: 23-64512-1
PAH ratio cross plot analysis



APPENDIX A

Laboratory Certificate



Caitlin McHugh
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Analytical Report Number : 23-64512

Project / Site name:	Rosendale Road	Samples received on:	25/10/2023
Your job number:	R2688B	Samples instructed on / Analysis started on:	25/10/2023
Your order number:		Analysis completed by:	01/11/2023
Report Issue Number:	1	Report issued on:	02/11/2023
Samples Analysed:	20 soil samples		

Signed: _____

Joanna Szwarzak
Junior 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

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

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.

Analytical Report Number: 23-64512
Project / Site name: Rosendale Road

Lab Sample Number	2855334	2855335	2855336	2855337	2855338
Sample Reference	TS-S1	TS-S2	TS-S3	TS-S4	TS-S5
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.00	0.00	0.00	0.00	0.00
Date Sampled	23/10/2023	23/10/2023	23/10/2023	23/10/2023	23/10/2023
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	39	41
Total mass of sample received	kg	0.001	NONE	0.8	0.7

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	ASE	ASE	ASE	ASE	ASE

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7	7	6.5	6.5	6.6
Organic Matter	%	0.1	MCERTS	-	-	-	-	-
Organic Matter (automated)	%	0.1	MCERTS	11	10	9.6	8.4	9.9

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	1.2	0.76	1.4	0.4	0.62
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.06
Acenaphthene	mg/kg	0.05	MCERTS	2.5	1.6	1.4	1.4	1.5
Fluorene	mg/kg	0.05	MCERTS	1.8	1.1	1.1	1	0.96
Phenanthrene	mg/kg	0.05	MCERTS	14	9.1	9.1	7.6	7.7
Anthracene	mg/kg	0.05	MCERTS	3	1.9	1.6	1.5	1.5
Fluoranthene	mg/kg	0.05	MCERTS	16	11	10	9.2	9.6
Pyrene	mg/kg	0.05	MCERTS	14	9.8	8.9	7.9	8.1
Benzo(a)anthracene	mg/kg	0.05	MCERTS	6.8	4.9	4.7	4.3	4.1
Chrysene	mg/kg	0.05	MCERTS	6.3	4.4	4.3	3.7	4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	7.2	5.7	5.4	4.8	4.9
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	2.7	1.5	1.6	1.5	1.5
Benzo(a)pyrene	mg/kg	0.05	MCERTS	5.9	4.3	4.4	3.7	3.7
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3.1	2.1	1.9	1.8	1.8
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.68	0.49	0.48	0.41	0.56
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.2	2.4	2.3	1.9	2

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	87.4	61.3	58.9	51.1	52.5
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	14	14	11	15
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7	0.7	0.6	0.5	0.6
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	33	35	33	29	32
Copper (aqua regia extractable)	mg/kg	1	MCERTS	40	39	43	33	40
Lead (aqua regia extractable)	mg/kg	1	MCERTS	86	86	83	70	82
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	16	17	19	18	17
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	110	100	100	100

Monoaromatics & Oxygenates

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	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Analytical Report Number: 23-64512
Project / Site name: Rosendale Road

Lab Sample Number	2855334	2855335	2855336	2855337	2855338
Sample Reference	TS-S1	TS-S2	TS-S3	TS-S4	TS-S5
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.00	0.00	0.00	0.00	0.00
Date Sampled	23/10/2023	23/10/2023	23/10/2023	23/10/2023	23/10/2023
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS 1D AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS 1D AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS 1D AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH CU 1D AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH CU 1D AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH CU 1D AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH CU 1D AL}	mg/kg	8	MCERTS	22	20	< 8.0	18	8.2
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	23	22	< 10	18	< 10

TPH-CWG - Aromatic >EC5 - EC7 _{HS 1D AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS 1D AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC8 - EC10 _{HS 1D AR}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH CU 1D AR}	mg/kg	1	MCERTS	1.2	1.1	< 1.0	< 1.0	1.3
TPH-CWG - Aromatic >EC12 - EC16 _{EH CU 1D AR}	mg/kg	2	MCERTS	7.9	5.3	2.7	3.5	5.8
TPH-CWG - Aromatic >EC16 - EC21 _{EH CU 1D AR}	mg/kg	10	MCERTS	38	19	18	15	20
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	51	32	37	35	27
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	97	58	57	53	54

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

Analytical Report Number: 23-64512
Project / Site name: Rosendale Road

Lab Sample Number	2855339	2855340	2855341	2855342	2855343
Sample Reference	TS-S6	TS-S7	TS-S8	TS-S9	TS-S10
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.80-1.00	2.00	1.50	0.50-0.60	2.50-3.00
Date Sampled	23/10/2023	23/10/2023	23/10/2023	23/10/2023	23/10/2023
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	39	36
Total mass of sample received	kg	0.001	NONE	0.8	0.9

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	ASE	ASE	ASE	DSA	DSA

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.5	7.2	7.4	7.4	7.9
Organic Matter	%	0.1	MCERTS	-	-	-	14	-
Organic Matter (automated)	%	0.1	MCERTS	10	10	9	-	8.2

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.34	0.32	0.25	0.33	0.74
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.06	0.05	0.08	0.06
Acenaphthene	mg/kg	0.05	MCERTS	0.68	0.85	0.75	1	1.9
Fluorene	mg/kg	0.05	MCERTS	0.51	0.58	0.55	0.75	1.3
Phenanthrene	mg/kg	0.05	MCERTS	4.5	5.2	4.4	7.3	11
Anthracene	mg/kg	0.05	MCERTS	0.96	1.1	0.91	1.4	2
Fluoranthene	mg/kg	0.05	MCERTS	6.4	7.1	6.2	10	11
Pyrene	mg/kg	0.05	MCERTS	5.7	6.3	5.4	8.6	9.7
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.2	3.4	2.8	4.4	4.7
Chrysene	mg/kg	0.05	MCERTS	2.8	3.1	2.8	4.2	4.4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	3.5	3.7	3.4	4.9	5.3
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	1.3	1.6	1.2	2.1	1.7
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3	3.4	2.8	4.5	4.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.6	1.5	1.4	2	2
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.39	0.35	0.39	0.45	0.49
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.6	1.7	1.5	2.4	2.2

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	36.4	40.3	34.7	54.4	63.2
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	12	16	13	15
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7	0.6	0.7	0.7	0.6
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	33	30	35	32	32
Copper (aqua regia extractable)	mg/kg	1	MCERTS	39	39	34	39	41
Lead (aqua regia extractable)	mg/kg	1	MCERTS	88	81	86	83	87
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	0.4	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	17	16	15	18
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	100	110	110	88

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	29	< 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	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Analytical Report Number: 23-64512
Project / Site name: Rosendale Road

Lab Sample Number				2855339	2855340	2855341	2855342	2855343
Sample Reference				TS-S6	TS-S7	TS-S8	TS-S9	TS-S10
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80-1.00	2.00	1.50	0.50-0.60	2.50-3.00
Date Sampled				23/10/2023	23/10/2023	23/10/2023	23/10/2023	23/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 _{HS 1D AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS 1D AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS 1D AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH CU 1D AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH CU 1D AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH CU 1D AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH CU 1D AL}	mg/kg	8	MCERTS	< 8.0	9.1	9.3	14	8.2
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	< 10	< 10	14	< 10
TPH-CWG - Aromatic >EC5 - EC7 _{HS 1D AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS 1D AR}	mg/kg	0.01	NONE	< 0.010	0.031	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC8 - EC10 _{HS 1D AR}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH CU 1D AR}	mg/kg	1	MCERTS	1.3	< 1.0	< 1.0	< 1.0	1.9
TPH-CWG - Aromatic >EC12 - EC16 _{EH CU 1D AR}	mg/kg	2	MCERTS	5.7	5	3.1	< 2.0	9.8
TPH-CWG - Aromatic >EC16 - EC21 _{EH CU 1D AR}	mg/kg	10	MCERTS	16	22	18	< 10	26
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	35	45	39	31	40
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	58	72	60	40	78

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

Analytical Report Number: 23-64512
Project / Site name: Rosendale Road

Lab Sample Number				2855344	2855345	2855346	2855347	2855348
Sample Reference				TS-S11	TS-S12	TS-S13	TS-S14	TS-S15
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.50	None Supplied	1.50	1.50	3.00
Date Sampled				23/10/2023	23/10/2023	23/10/2023	23/10/2023	23/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	34	38	37	40	34
Total mass of sample received	kg	0.001	NONE	0.9	0.8	0.9	0.8	0.7

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSA	DSA	DSA	DSA	DSA

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.6	7.1	7.2	7	7
Organic Matter	%	0.1	MCERTS	-	-	-	-	-
Organic Matter (automated)	%	0.1	MCERTS	8.9	9.9	9.8	11	8.2

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	2.4	0.67	0.56	1.8	0.59
Acenaphthylene	mg/kg	0.05	MCERTS	0.13	0.06	0.05	0.08	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	4.1	1.4	1.3	2.1	0.93
Fluorene	mg/kg	0.05	MCERTS	2.9	0.92	0.92	1.5	0.69
Phenanthrene	mg/kg	0.05	MCERTS	20	7.2	7.1	12	5.7
Anthracene	mg/kg	0.05	MCERTS	4.2	1.5	1.6	2.4	1.1
Fluoranthene	mg/kg	0.05	MCERTS	22	9.2	8.7	13	7
Pyrene	mg/kg	0.05	MCERTS	18	8.1	7.5	11	6.1
Benzo(a)anthracene	mg/kg	0.05	MCERTS	9.2	4.4	3.9	5.7	3.4
Chrysene	mg/kg	0.05	MCERTS	8.2	3.8	3.5	5.3	3.1
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	9.5	4.9	4.1	6.1	3.7
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	3.8	1.7	1.8	2.4	1.6
Benzo(a)pyrene	mg/kg	0.05	MCERTS	8.6	4	3.5	5.2	3.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3.7	2	1.7	2.4	1.5
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1	0.46	0.4	0.59	0.39
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	4.1	2.2	1.9	2.6	1.7

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	121	52.5	48.5	73.5	40.5
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	13	13	12	13
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7	0.6	0.6	0.6	0.6
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35	31	32	30	35
Copper (aqua regia extractable)	mg/kg	1	MCERTS	41	36	37	36	40
Lead (aqua regia extractable)	mg/kg	1	MCERTS	88	82	82	80	88
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	21	15	16	15	17
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	99	98	100	99

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	41	< 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	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Analytical Report Number: 23-64512
Project / Site name: Rosendale Road

Lab Sample Number				2855344	2855345	2855346	2855347	2855348
Sample Reference				TS-S11	TS-S12	TS-S13	TS-S14	TS-S15
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.50	None Supplied	1.50	1.50	3.00
Date Sampled				23/10/2023	23/10/2023	23/10/2023	23/10/2023	23/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 _{HS 1D AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS 1D AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS 1D AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH CU 1D AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH CU 1D AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH CU 1D AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH CU 1D AL}	mg/kg	8	MCERTS	9.5	< 8.0	< 8.0	< 8.0	8.8
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 _{HS 1D AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS 1D AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC8 - EC10 _{HS 1D AR}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH CU 1D AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	1.4	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH CU 1D AR}	mg/kg	2	MCERTS	6.2	6	6.1	8.9	2.7
TPH-CWG - Aromatic >EC16 - EC21 _{EH CU 1D AR}	mg/kg	10	MCERTS	31	19	18	30	19
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	50	41	35	53	34
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	87	67	61	93	57

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

Analytical Report Number: 23-64512
Project / Site name: Rosendale Road

Lab Sample Number	2855349				2855350	2855351	2855352	2855353
Sample Reference	TS-S16				TS-S17	TS-S18	TS-S19	TS-S20
Sample Number	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	3.00				1.50-2.00	2.00	0.00	1.00
Date Sampled	23/10/2023				23/10/2023	23/10/2023	23/10/2023	23/10/2023
Time Taken	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	32	37	38	29	35
Total mass of sample received	kg	0.001	NONE	0.8	0.9	0.8	0.7	0.9

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSA	KWB	KWB	KWB	KWB

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.8	7.1	7	7.4	7.1
Organic Matter	%	0.1	MCERTS	-	-	-	-	-
Organic Matter (automated)	%	0.1	MCERTS	7	9.2	10	9.9	5.8

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.27	0.56	0.6	0.41	1.6
Acenaphthylene	mg/kg	0.05	MCERTS	0.63	0.08	0.1	0.05	0.09
Acenaphthene	mg/kg	0.05	MCERTS	0.72	1.6	1.3	1.3	3.4
Fluorene	mg/kg	0.05	MCERTS	1.3	1.1	1.1	0.83	2.5
Phenanthrene	mg/kg	0.05	MCERTS	9.4	9.1	10	7	19
Anthracene	mg/kg	0.05	MCERTS	2.4	1.8	2.2	1.6	5
Fluoranthene	mg/kg	0.05	MCERTS	12	12	12	8.6	23
Pyrene	mg/kg	0.05	MCERTS	10	10	11	7.6	20
Benzo(a)anthracene	mg/kg	0.05	MCERTS	5.1	5.3	5.2	3.8	10
Chrysene	mg/kg	0.05	MCERTS	4.8	4.6	5.2	3.8	9.7
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	4.9	6.1	5.2	3.8	10
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	1.7	1.9	2.7	1.9	5
Benzo(a)pyrene	mg/kg	0.05	MCERTS	4.3	4.8	4.9	3.4	9.8
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2.1	2.2	2.5	1.8	4.9
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.66	0.5	0.68	0.47	1.2
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.5	2.6	2.8	2	5.5

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	62.6	63.8	68	48.3	131
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	12	13	13	15
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.6	0.7	0.7	0.6	0.7
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35	33	32	32	29
Copper (aqua regia extractable)	mg/kg	1	MCERTS	42	43	39	37	53
Lead (aqua regia extractable)	mg/kg	1	MCERTS	73	88	90	80	220
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.4	< 0.3	< 0.3	0.4
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	20	16	16	14	15
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	97	180	100	100	190

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	12	8.1	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

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Project / Site name: Rosendale Road

Lab Sample Number				2855349	2855350	2855351	2855352	2855353
Sample Reference				TS-S16	TS-S17	TS-S18	TS-S19	TS-S20
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				3.00	1.50-2.00	2.00	0.00	1.00
Date Sampled				23/10/2023	23/10/2023	23/10/2023	23/10/2023	23/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	5.4	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	8	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	36	9.9	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	49	10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	NONE	< 0.010	0.013	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	3.1	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	11	2.4	2.3	4	12
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	53	17	19	21	72
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	71	32	34	39	120
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	140	52	55	64	210

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

Analytical Report Number : 23-64512

Project / Site name: Rosendale Road

* 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 *
2855334	TS-S1	None Supplied	0	Brown loam and clay with gravel and vegetation.
2855335	TS-S2	None Supplied	0	Brown loam and clay with gravel and vegetation.
2855336	TS-S3	None Supplied	0	Brown loam and clay with gravel and vegetation.
2855337	TS-S4	None Supplied	0	Brown loam and clay with gravel and vegetation.
2855338	TS-S5	None Supplied	0	Brown loam and clay with gravel and vegetation.
2855339	TS-S6	None Supplied	0.80-1.00	Brown loam and clay with gravel and vegetation.
2855340	TS-S7	None Supplied	2	Brown clay and loam with gravel and vegetation.
2855341	TS-S8	None Supplied	1.5	Brown clay and sand with gravel and vegetation.
2855342	TS-S9	None Supplied	0.50-0.60	Brown clay and sand with gravel and vegetation.
2855343	TS-S10	None Supplied	2.50-3.00	Brown clay and sand with gravel and vegetation.
2855344	TS-S11	None Supplied	2.5	Brown clay and sand with gravel and vegetation.
2855345	TS-S12	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation.
2855346	TS-S13	None Supplied	1.5	Brown clay and sand with gravel and vegetation.
2855347	TS-S14	None Supplied	1.5	Brown clay and sand with gravel and vegetation.
2855348	TS-S15	None Supplied	3	Brown clay and loam with gravel and vegetation.
2855349	TS-S16	None Supplied	3	Brown clay and loam with gravel and vegetation.
2855350	TS-S17	None Supplied	1.50-2.00	Brown clay and sand with gravel and vegetation.
2855351	TS-S18	None Supplied	2	Brown clay and sand with gravel and vegetation.
2855352	TS-S19	None Supplied	0	Brown loam with gravel and vegetation.
2855353	TS-S20	None Supplied	1	Brown loam and clay with gravel and vegetation.

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Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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.	L038-PL	D	MCERTS
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	A001-PL	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Organic matter in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L023-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
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.	L019-UK/PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser.	L080-PL	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).

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.

Analytical Report Number : 23-64512
Project / Site name: Rosendale Road

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total



APPENDIX B

PAH Ratio Cross Plot Analysis

Job name	Rossendale Road
Job no.	R2688A
Date:	03.11.23
Author:	CM
Laboratory:	I2 Analytical
Lab. Reference:	23-64512



PAH concentrations

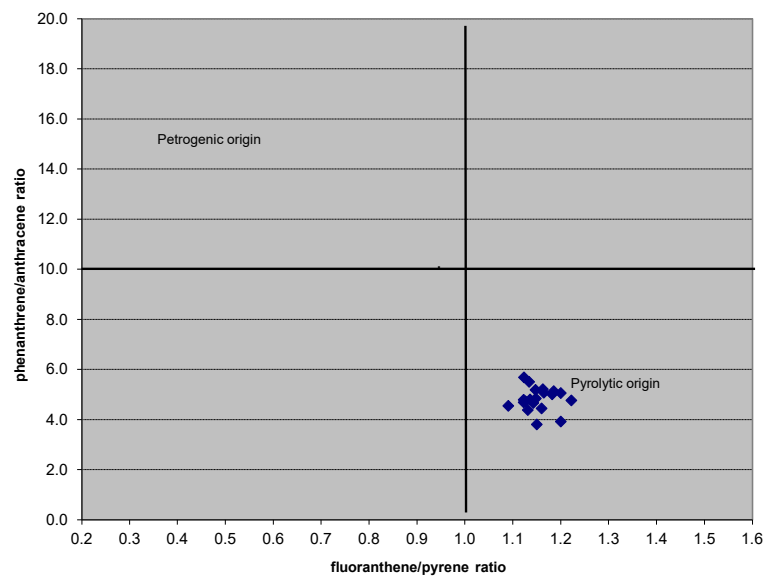
sample identity	TS-S1	TS-S2	TS-S3	TS-S4	TS-S5	TS-S6	TS-S7	TS-S8	TS-S9	TS-S10	TS-S11	TS-S12	TS-S13	TS-S14	TS-S15	TS-S16	TS-S17	TS-S18	TS-S19	TS-S20
phenanthrene	14	9.1	9.1	7.6	7.7	4.5	5.2	4.4	7.3	11	20	7.2	7.1	12	5.7	9.4	9.1	10	7	19
anthracene	3	1.9	1.6	1.5	1.5	0.96	1.1	0.91	1.4	2	4.2	1.5	1.6	2.4	1.1	2.4	1.8	2.2	1.6	5
fluoranthene	16	11	10	9.2	9.6	6.4	7.1	6.2	10	11	22	9.2	8.7	13	7	12	12	12	8.6	23
pyrene	14	9.8	8.9	7.9	8.1	5.7	6.3	5.4	8.6	9.7	18	8.1	7.5	11	6.1	10	10	11	7.6	20
benz(a)anthracene	6.8	4.9	4.7	4.3	4.1	3.2	3.4	2.8	4.4	4.7	9.2	4.4	3.9	5.7	3.4	5.1	5.3	5.2	3.8	10
chrysene	6.3	4.4	4.3	3.7	4	2.8	3.1	2.8	4.2	4.4	8.2	3.8	3.5	5.3	3.1	4.8	4.6	5.2	3.8	9.7

PAH units	mg/kg
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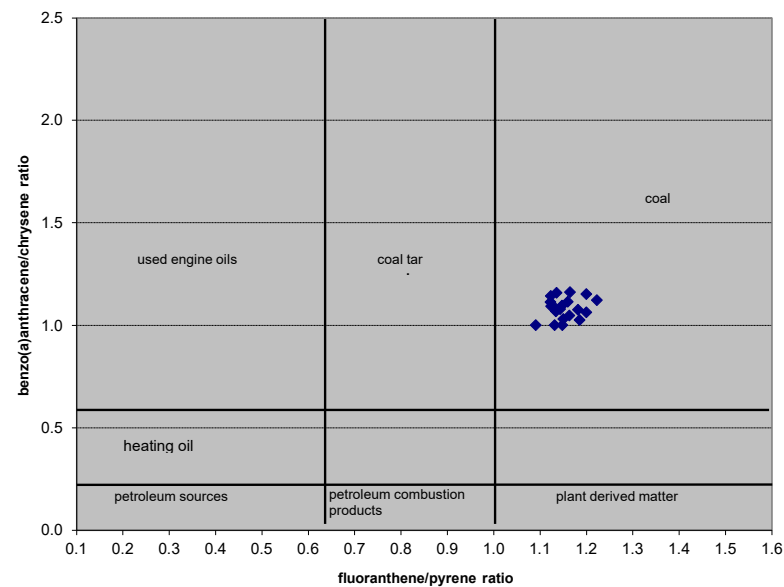
PAH ratios

phe/ant	4.667	4.789	5.688	5.067	5.133	4.688	4.727	4.835	5.214	5.500	4.762	4.800	4.438	5.000	5.182	3.917	5.056	4.545	4.375	3.800
flu/pyr	1.143	1.122	1.124	1.165	1.185	1.123	1.127	1.148	1.163	1.134	1.222	1.136	1.160	1.182	1.148	1.200	1.200	1.091	1.132	1.150
baa/chr	1.079	1.114	1.093	1.162	1.025	1.143	1.097	1.000	1.048	1.068	1.122	1.158	1.114	1.075	1.097	1.063	1.152	1.000	1.000	1.031

PAH source diagnosis



PAH source diagnosis



APPENDIX C

Topsoil Validation Letter and Certificate (Rossendale Road)

Topsoil Validation Record

Job number	R2688A	Quality ref:	30267-4 (ALM Consult)				Other documents attached				✓		
Date	17.11.23	Area use:	Garden		landscaped		Stockpile		other				
Site name / location	Rossendale Road, Burnley	Size area (m):	n/a	Approx. Area (m ²):	n/a	Approx. Depth Top (m):	n/a	Approx. Volume Top (m ³):	1,000 m ³	Approx. Depth Sub (m):	n/a	Approx. Volume Sub (m ³):	n/a
Stockpile ref:	Stockpile A	Number depth entries required		n/a		Number samples required:		20 (1 per 50m ³ for site-recovered topsoil, minimum 3 samples per source), 20 provided.					
Compiled by:	CM												

Quality Validation		Inspection date/time:	08.11.23	Inspected by:	CM	Photographed:	✓
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Source Topsoil	1.	✓	Site recovered.
Description Topsoil	2.	✓	Dark brown clayey loam, with frequent rootlets. Rare inclusions of gravel; fine to coarse of mixed lithology.
Sample Topsoil	3.	✓	20 samples collected from stockpile by SGP on 08.11.23 (Lab ref: 23-68007; samples: TS-S1 – TS-S20).
Source Subsoil	4.	x	n/a
Description Subsoil	5.	x	n/a
Sample Subsoil	6.	x	n/a

Topsoil Validation Record



Topsoil Results Summary (23-68007-1)

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NAD	NAD	Yes
Arsenic	37	6-19	Yes
Cadmium	11	0.5-0.7	Yes
Chromium	910	28-120	Yes
Chromium VI	6	<1	Yes
Copper	2,400	15-64	Yes
Lead	200	35-190	Yes
Mercury	40	0.5	Yes
Nickel	130	9.7-20	Yes
Zinc	3,700	50-120	Yes
Naphthalene	2.3 (1% SOM) 13 (SOM 6%)	0.1-3.1	Yes*
Acenaphthene	210	0.1-0.3	Yes
Acenaphthylene	170	0.2-3.9	Yes
Fluorene	170	0.1-2.4	Yes
Phenanthrene	95	0.4-20	Yes
Anthracene	2400	0.1-4.7	Yes
Fluoranthene	280	0.6-24	Yes
Pyrene	620	0.6-21	Yes
Benzo(a) anthracene	7.2 (1% SOM) 13 (6% SOM)	0.3-9.7	Yes*
Chrysene	15	0.3-9.8	Yes
Benzo(b) fluoranthene	2.6 (1% SOM) 3.7% (6% SOM)	0.3-10	Yes*
Benzo(k) fluoranthene	77	0.1-4.4	Yes
Benzo(a) pyrene	2.2 (1% SOM) 3 (6% SOM)	0.3-8.6	Yes*

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	0.2-4.2	Yes
Dibenzo(ah) anthracene	0.3 (6% SOM)	0.1-1.2	Yes*
Benzo(ghi) perylene	320	0.2-4.9	Yes
Aliphatic C5-C6	42	<1	Yes
Aliphatic C6-C8	100	<1	Yes
Aliphatic C8-C10	27	<1	Yes
Aliphatic C10-C12	130	<1-1.6	Yes
Aliphatic C12-C16	1,100	2.2-12	Yes
Aliphatic C16-C21	5,000	9.7-14	Yes
Aliphatic C21-C35	5,000	9.3-55	Yes
Aromatic C6-C7	70	<1	Yes
Aromatic C7-C8	130	<1-0.3	Yes
Aromatic C8-C10	34	<1	Yes
Aromatic C10-C12	74	<1-3.9	Yes
Aromatic C12-C16	140	3.3-20	Yes
Aromatic C16-C21	260	13-84	Yes
Aromatic C21-C35	1,100	13-110	Yes
Organic matter (%)	9.5% (Av.)	7.8 (Av.)	-

Soil Standards are primarily adopted from the published LQM/CIEH Sutable 4 Use Levels (S4ULs); the C4SL criteria for lead has also been adopted.

The appropriate land use is residential (1% SOM initially assumed for conservative assessment unless stated otherwise)

*See summary

Further Assessment of PAH Exceedance

As presented in the table above, several exceedances of the adopted screening criteria has been reported for the PAHs Naphthalene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(a)pyrene, and Dibenzo(ah) anthracene (samples@ TS-S2 - TS-S4 & TS-S9 – TS-S11 & TS-S14 – TS-S19; Further assessment of the significance of the exceedance was therefore carried out to determine whether the material is suitable for its proposed use (see 'Screening Criteria Exceedance Significance' summary below) which indicates that it is, but this is subject to approval by Local Authority as this is a deviation from the approved Remediation Strategy.

SOM Content

The assessment criteria for PAH is based on an SOM content of 1%, however the average SOM content of the topsoil is 7.8%, it is therefore considered appropriate to base the PAH assessment criteria on this. This results in the following increase in the criteria:

- Naphthalene: 2.2 mg/kg increased to: 13 mg/kg = no exceedances
- Benzo(a)anthracene: 7.2 mg/kg increased to 13 mg/kg = no exceedances
- Benzo(b)fluoranthene: 2.6 mg/kg increased to 3.7 mg/kg = **13 exceedances**
- Benzo(a)pyrene: 2.2 mg/kg increased to 3 mg/kg (appropriate to use C4SL of 5 mg/kg in planning scenario) = **4 exceedances**
- Dibenzo(ah)anthracene: 0.24 mg/kg increased to 0.3 mg/kg = **13 exceedances**

Taking into account the SOM, the number of exceedances reduces to samples: TS-S2, -S3, -S4, -S8, -S9, -S10, -S11, -S14, -S15, -S16, -S17, -S18, -S19, -S20 (14 Samples)

Sources Analysis

To assess the potential source of the PAHs, a PAH ratio-cross plot has been undertaken (appended to this certificate). The analysis suggests a coal signature which is consistent with the sampling and assessment undertaken during the initial site investigation works by SGP (R2688-R01-v4) and more recent stockpile assessments (R2688-L01; 29.06.23) where near identical results were obtained. As part of the previous site investigation works and reporting a detailed historical review confirmed that the site has remained undeveloped throughout its history. The report (R2688-R01-v4) included a Coal Authority and Coal Mining Risk Assessment Report which confirmed there was the potential for shallow mineworkings to be present. A mining investigation was completed and identified the presence of three shafts (Shaft A, B and C) as well as the presence of grey shale with coal within 8 of the 14 mining entries extending from the surface.

As part of the SGP works trial-pitting was carried out across the site. No made ground deposits were encountered within the shallow geology typically consisting of gravelly sandy clayey topsoil overlying a gravelly clay with partings of sand and fine to medium coal. Samples of the shallow soil were also collected during this initial investigation and also reported exceedances of the same PAHs.

Based on the review of information within R2688-R01-v1 there is no identifiable sources of coal tar present on the site. No made ground was present and no industrial works (other than coal mining) have taken place on the site. The presence of coal tars is therefore unlikely to have been present. It is considered that it is most likely attributed to inclusions of coal as is more clearly shown within the other corresponding ratio plots. This is more consistent with the history of the site and the recorded ground conditions where fine inclusions of coal have been recorded.

Risk Assessment Conclusion

The overall risk to human health from PAHs within fine fragments of coal is very low due to the sequestration of PAHs within a carbon or vitrified matrix which results in a low bioavailability. It is also important to acknowledge that previous assessments of site-won topsoil have been completed as per that outlined within this certificate and which have received regulatory approval. It is concluded that the soil is suitable for reuse as garden soils, however it is recommended that regulatory approval is received.

Topsoil Validation Record

Topsoil Validation	Inspection date/time:	08.11.23	Inspected by:	CM	Photographed:	✓
Source Topsoil	Site recovered.					
Source Subsoil	n/a					
Soil description	Dark brown clayey loam, with frequent rootlets. Rare inclusions of gravel; fine to coarse of mixed lithology.					

Photograph (Topsoil Stockpile A)



Topsoil Validation Record

Summary

Minor elevated PAH exceedances were recorded within the stockpiled topsoil following the use of criteria (based on 6% SOM) appropriate to the average SOM content of the soil. Further assessment has been undertaken to establish the source of the PAHs which has been confirmed as coal. This is consistent with previous reporting during the initial site investigation and during more recent sampling and assessment of site-won topsoil stockpiles. The overall risk to human health due to the presence of minor elevated PAHs due to the presence of coal fragments is considered to be very low given the low bioavailability of PAHs which are sequestered within a carbon or vitrified matrix.

It is therefore concluded that the topsoil within Stockpile A is suitable for reuse as garden soils on the site or for export under an MMP for reuse on other developments. It is however recommended that this assessment is provided to the Local Authority Contaminated Land Officer for the receiving site to confirm that they agree.

SGP Staff:	C McHugh BSc GradIEMA	Signed:		17.11.23
SGP Staff:	D Wayland BSc MSc AssocCIWM MCIWEM C.WEM	Signed:		17.11.23

Guide notes:

1.	Source Topsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
2.	Description Topsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
3.	Sample Topsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number
4.	Source Subsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
5.	Description Subsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
6.	Sample Subsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number



Job name	Rossendale Road
Job no.	R2688A
Date:	03.11.23
Author:	CM
Laboratory:	I2 Analytical
Lab. Reference:	23-64512



PAH concentrations

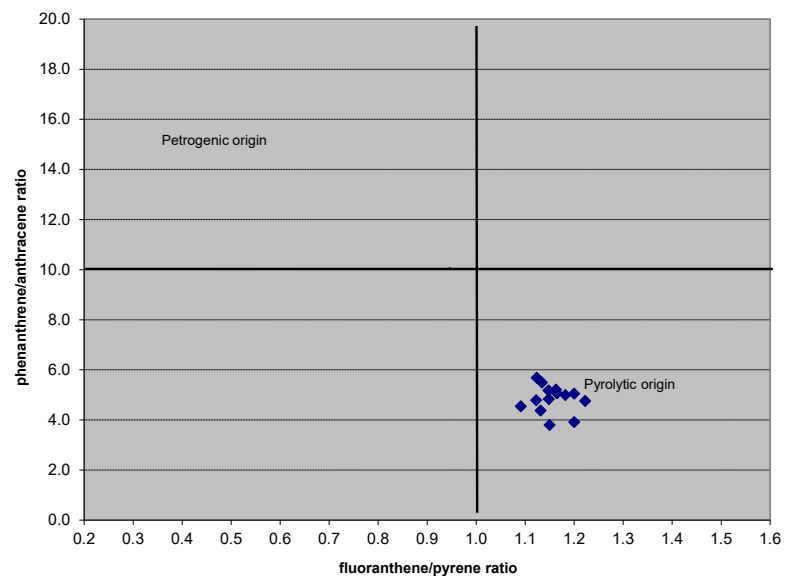
sample identity	TS-S2	TS-S3	TS-S4	TS-S8	TS-S9	TS-S10	TS-S11	TS-S14	TS-S15	TS-S16	TS-S17	TS-S18	TS-S19	TS-S20					
phenanthrene	9.1	9.1	7.6	4.4	7.3	11	20	12	5.7	9.4	9.1	10	7	19					
anthracene	1.9	1.6	1.5	0.91	1.4	2	4.2	2.4	1.1	2.4	1.8	2.2	1.6	5					
fluoranthene	11	10	9.2	6.2	10	11	22	13	7	12	12	12	8.6	23					
pyrene	9.8	8.9	7.9	5.4	8.6	9.7	18	11	6.1	10	10	11	7.6	20					
benz(a)anthracene	4.9	4.7	4.3	2.8	4.4	4.7	9.2	5.7	3.4	5.1	5.3	5.2	3.8	10					
chrysene	4.4	4.3	3.7	2.8	4.2	4.4	8.2	5.3	3.1	4.8	4.6	5.2	3.8	9.7					

PAH units	mg/kg
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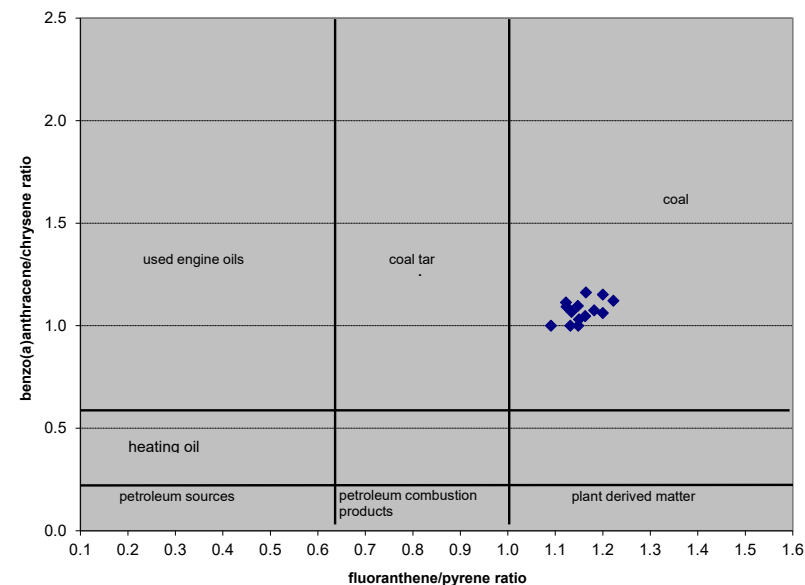
PAH ratios

phe/ant	4.789	5.688	5.067	4.835	5.214	5.500	4.762	5.000	5.182	3.917	5.056	4.545	4.375	3.800					
flu/pyr	1.122	1.124	1.165	1.148	1.163	1.134	1.222	1.182	1.148	1.200	1.200	1.091	1.132	1.150					
baa/chr	1.114	1.093	1.162	1.000	1.048	1.068	1.122	1.075	1.097	1.063	1.152	1.000	1.000	1.031					

PAH source diagnosis



PAH source diagnosis





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Analytical Report Number : 23-68007

Project / Site name:	Rossendale Road	Samples received on:	10/11/2023
Your job number:	R2688A	Samples instructed on / Analysis started on:	10/11/2023
Your order number:		Analysis completed by:	21/11/2023
Report Issue Number:	1	Report issued on:	21/11/2023
Samples Analysed:	20 soil samples		

Signed: _____

Anna Goc
PL Head of Reporting Team
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

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

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.

Analytical Report Number: 23-68007
Project / Site name: Rossendale Road

Lab Sample Number				2873899	2873900	2873901	2873902	2873903
Sample Reference				TS-S1	TS-S2	TS-S3	TS-S4	TS-S5
Sample Number				Surface	Surface	Surface	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	0.30	0.50
Date Sampled				08/11/2023	08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	21	38	41	38	30
Total mass of sample received	kg	0.001	NONE	0.9	1	0.9	1.1	1.1

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSO	DSO	DSO	DSO	DSO

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.9	6.6	7.3	7.2	6.8
Organic Matter (automated)	%	0.1	MCERTS	5.4	8.8	10	9.3	4.7

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.15	1.4	0.41	0.49	0.36
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.08	< 0.05	0.06	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.4	2.8	1.4	1.2	0.47
Fluorene	mg/kg	0.05	MCERTS	0.23	1.9	0.83	0.79	0.3
Phenanthrene	mg/kg	0.05	MCERTS	2.5	15	7.6	7.1	2.5
Anthracene	mg/kg	0.05	MCERTS	0.53	3.3	1.4	1.3	0.5
Fluoranthene	mg/kg	0.05	MCERTS	2.9	18	9.9	9.2	3.1
Pyrene	mg/kg	0.05	MCERTS	2.6	15	8.7	7.9	2.7
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.3	8.1	4.5	4.1	1.5
Chrysene	mg/kg	0.05	MCERTS	1.5	8.2	4.6	4.2	1.6
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.7	9.1	5.7	5.6	1.8
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.48	3.7	1.8	1.4	0.74
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.4	8.5	4.8	4.6	1.6
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.65	3.4	2	1.9	0.76
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.17	0.82	0.52	0.49	0.19
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.84	3.6	2.2	2.1	0.86

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	17.3	102	56.3	52.4	18.8
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	19	13	10	12	9.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.1	0.5	0.5	0.5	< 0.2
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	120	34	29	30	38
Copper (aqua regia extractable)	mg/kg	1	MCERTS	64	62	33	39	26
Lead (aqua regia extractable)	mg/kg	1	MCERTS	140	83	78	90	48
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.5	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	20	13	12	13	14
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	92	81	110	65

Monoaromatics & Oxygenates

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	79
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Analytical Report Number: 23-68007
Project / Site name: Rossendale Road

Lab Sample Number	2873899	2873900	2873901	2873902	2873903
Sample Reference	TS-S1	TS-S2	TS-S3	TS-S4	TS-S5
Sample Number	Surface	Surface	Surface	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied	0.30	0.50
Date Sampled	08/11/2023	08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS 1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS 1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS 1D_AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU 1D_AL}	mg/kg	1	MCERTS	< 1.0	1.6	< 1.0	< 1.0	1.1
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU 1D_AL}	mg/kg	2	MCERTS	< 2.0	5.8	6.4	12	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU 1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	14	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU 1D_AL}	mg/kg	8	MCERTS	11	19	37	52	11
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS 1D_AL}	mg/kg	10	NONE	13	27	46	78	15

TPH-CWG - Aromatic >EC5 - EC7 _{HS 1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS 1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	0.074
TPH-CWG - Aromatic >EC8 - EC10 _{HS 1D_AR}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU 1D_AR}	mg/kg	1	MCERTS	< 1.0	2.1	3	1.1	2.2
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU 1D_AR}	mg/kg	2	MCERTS	3.9	9.8	11	9.2	6
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU 1D_AR}	mg/kg	10	MCERTS	15	30	29	43	13
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU 1D_AR}	mg/kg	10	MCERTS	28	38	40	60	13
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS 1D_AR}	mg/kg	10	NONE	47	80	83	110	34

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

Analytical Report Number: 23-68007
Project / Site name: Rossendale Road

Lab Sample Number	2873904				2873905	2873906	2873907	2873908
Sample Reference	TS-S6				TS-S7	TS-S8	TS-S9	TS-S10
Sample Number	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	1.00				1.50	1.00	2.00	2.50
Date Sampled	08/11/2023				08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	28	29	31	36	34
Total mass of sample received	kg	0.001	NONE	1.1	1	0.9	1	1

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSO	DSO	DSO	DSO	DSO

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.9	6.7	6.8	6.9	6.2
Organic Matter (automated)	%	0.1	MCERTS	5.7	3.6	8.2	8.6	6.1

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.23	0.07	0.15	3.1	1.5
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.26	0.09
Acenaphthene	mg/kg	0.05	MCERTS	0.62	0.2	0.7	1	2.9
Fluorene	mg/kg	0.05	MCERTS	0.4	0.13	0.43	0.76	1.9
Phenanthrene	mg/kg	0.05	MCERTS	3.7	1.3	4.3	5.3	15
Anthracene	mg/kg	0.05	MCERTS	0.63	0.25	0.81	1	2.9
Fluoranthene	mg/kg	0.05	MCERTS	4.8	1.6	5.9	7	16
Pyrene	mg/kg	0.05	MCERTS	4.1	1.5	5.2	6.1	14
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.2	0.79	2.7	3.2	6.8
Chrysene	mg/kg	0.05	MCERTS	2.2	0.89	2.8	3.2	6.9
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	2.6	0.99	3.3	3.9	8
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.76	0.29	1.1	1.4	2.7
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.3	0.76	2.9	3.3	6.8
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.95	0.34	1.3	1.5	3
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.22	0.08	0.34	0.35	0.67
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.1	0.44	1.5	1.7	3.2

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	26.7	9.6	33.2	43.1	93.1
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.6	6	14	12	12
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35	41	33	38	31
Copper (aqua regia extractable)	mg/kg	1	MCERTS	29	19	41	38	36
Lead (aqua regia extractable)	mg/kg	1	MCERTS	55	37	70	76	190
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	16	11	20	15	12
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	73	50	95	92	84

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	72	51	100
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

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Lab Sample Number				2873904	2873905	2873906	2873907	2873908
Sample Reference				TS-S6	TS-S7	TS-S8	TS-S9	TS-S10
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	1.50	1.00	2.00	2.50
Date Sampled				08/11/2023	08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 _{HS 1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS 1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS 1D_AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU 1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	1.3	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU 1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	6.1	2.7
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU 1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU 1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	16	26	9.7
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS 1D_AL}	mg/kg	10	NONE	< 10	< 10	18	38	15
TPH-CWG - Aromatic >EC5 - EC7 _{HS 1D_AR}				< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS 1D_AR}				< 0.010	< 0.010	0.07	0.045	0.097
TPH-CWG - Aromatic >EC8 - EC10 _{HS 1D_AR}				< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU 1D_AR}				< 1.0	< 1.0	1.2	3.9	1.7
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU 1D_AR}				3.3	< 2.0	6.1	12	12
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU 1D_AR}				15	< 10	18	24	45
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU 1D_AR}				21	< 10	20	35	51
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS 1D_AR}				40	14	46	74	110

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

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Lab Sample Number	2873909				2873910	2873911	2873912	2873913
Sample Reference	TS-S11				TS-S12	TS-S13	TS-S14	TS-S15
Sample Number	None Supplied				None Supplied	None Supplied	None Supplied	Surface
Depth (m)	0.50				1.00	3.00	0.50	None Supplied
Date Sampled	08/11/2023				08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	35	30	27	33	37
Total mass of sample received	kg	0.001	NONE	1	0.9	0.6	1.1	1

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EWS	EWS	EWS	EWS	EWS

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.8	6.8	7.1	7.1	6.6
Organic Matter (automated)	%	0.1	MCERTS	11	7.9	4.4	8.7	10

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.8	0.59	< 0.05	1.1	0.55
Acenaphthylene	mg/kg	0.05	MCERTS	0.07	0.05	< 0.05	0.12	0.07
Acenaphthene	mg/kg	0.05	MCERTS	1.9	1.5	< 0.05	2.9	1.2
Fluorene	mg/kg	0.05	MCERTS	1.2	1	< 0.05	2.1	0.8
Phenanthrene	mg/kg	0.05	MCERTS	9.9	7.8	0.43	18	7.1
Anthracene	mg/kg	0.05	MCERTS	1.8	1.7	0.09	3.8	1.3
Fluoranthene	mg/kg	0.05	MCERTS	12	8.7	0.62	20	9.3
Pyrene	mg/kg	0.05	MCERTS	9.8	7.5	0.57	17	8.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	4.6	3.9	0.3	8	4.2
Chrysene	mg/kg	0.05	MCERTS	4.8	4.1	0.32	8.1	4.3
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	5.6	4.4	0.4	8.2	5.2
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	2.1	1.9	0.12	3.6	2.2
Benzo(a)pyrene	mg/kg	0.05	MCERTS	4.7	4.1	0.34	7.5	5
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2	1.5	0.16	3.1	2
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.53	0.38	< 0.05	0.85	0.5
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.3	1.8	0.2	3.4	2.2

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	63.7	50.9	3.55	107	54.1
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	12	6.6	12	13
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.6	0.5	< 0.2	0.5	0.5
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	36	28	31	36
Copper (aqua regia extractable)	mg/kg	1	MCERTS	42	32	15	37	38
Lead (aqua regia extractable)	mg/kg	1	MCERTS	90	77	35	90	92
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	13	14	9.7	13	14
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	97	86	55	93	100

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	320	< 5.0	< 5.0	37
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

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Lab Sample Number				2873909	2873910	2873911	2873912	2873913
Sample Reference				TS-S11	TS-S12	TS-S13	TS-S14	TS-S15
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	Surface
Depth (m)				0.50	1.00	3.00	0.50	None Supplied
Date Sampled				08/11/2023	08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	2.6	4.3
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	20	9.3	< 8.0	19	26
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	22	10	< 10	24	35
TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}				mg/kg	0.01	NONE	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}				mg/kg	0.01	NONE	< 0.010	0.27
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}				mg/kg	0.05	NONE	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}				mg/kg	1	MCERTS	2.6	2.7
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}				mg/kg	2	MCERTS	8.1	11
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}				mg/kg	10	MCERTS	25	44
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}				mg/kg	10	MCERTS	46	66
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}				mg/kg	10	NONE	82	120
							25	170
							170	88

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

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Lab Sample Number	2873914				2873915	2873916	2873917	2873918
Sample Reference	TS-S16				TS-S17	TS-S18	TS-S19	TS-S20
Sample Number	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	1.50				1.00	0.50	0.20	1.00
Date Sampled	08/11/2023				08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	34	37	40	36	31
Total mass of sample received	kg	0.001	NONE	0.9	0.9	0.9	1	1.1

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	ASE	ASE	ASE	ASE	ASE

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.7	6.8	7.3	6.5	7.5
Organic Matter (automated)	%	0.1	MCERTS	8.4	10	9.8	8.5	6.6

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.46	1.4	0.46	0.34	0.2
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.08	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	1	3.9	1.7	1.1	0.7
Fluorene	mg/kg	0.05	MCERTS	0.69	2.4	1	0.73	0.48
Phenanthrene	mg/kg	0.05	MCERTS	5.8	20	8.1	6.9	4.1
Anthracene	mg/kg	0.05	MCERTS	1.2	4.7	1.7	1.4	0.74
Fluoranthene	mg/kg	0.05	MCERTS	7.2	24	10	9.3	4.6
Pyrene	mg/kg	0.05	MCERTS	6.4	21	8.9	8.3	4
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.4	9.7	4.5	4.3	2
Chrysene	mg/kg	0.05	MCERTS	3.4	9.8	4.2	4	1.8
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	4.1	10	5.2	4.7	2
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	1.4	4.4	1.7	1.7	0.89
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.7	8.6	4.1	3.9	1.6
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.6	4.2	1.8	2.1	0.83
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.39	1.1	0.52	0.47	0.23
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.7	4.9	2.1	2.1	0.93

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	42.2	130	56.1	51.3	25.1
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	14	14	12	10
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	0.6	0.6	0.5	< 0.2
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	37	32	37	38	37
Copper (aqua regia extractable)	mg/kg	1	MCERTS	39	50	44	40	36
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	99	95	78	61
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	14	14	14	14	13
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	99	110	110	97	70

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	24	67	97	< 5.0	240
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

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Lab Sample Number				2873914	2873915	2873916	2873917	2873918
Sample Reference				TS-S16	TS-S17	TS-S18	TS-S19	TS-S20
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.50	1.00	0.50	0.20	1.00
Date Sampled				08/11/2023	08/11/2023	08/11/2023	08/11/2023	08/11/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 _{HS 1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS 1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS 1D_AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU 1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU 1D_AL}	mg/kg	2	MCERTS	< 2.0	5.1	2.2	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU 1D_AL}	mg/kg	8	MCERTS	< 8.0	9.7	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU 1D_AL}	mg/kg	8	MCERTS	24	55	24	23	39
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS 1D_AL}	mg/kg	10	NONE	29	70	29	26	40
TPH-CWG - Aromatic >EC5 - EC7 _{HS 1D_AR}				< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS 1D_AR}				0.021	0.056	0.087	< 0.010	0.24
TPH-CWG - Aromatic >EC8 - EC10 _{HS 1D_AR}				< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU 1D_AR}				1.5	2.7	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU 1D_AR}				7.3	20	6.4	8	6.6
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU 1D_AR}				31	84	40	38	17
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU 1D_AR}				47	110	69	72	44
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS 1D_AR}				87	220	120	120	68

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

Analytical Report Number : 23-68007

Project / Site name: Rossendale Road

* 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 *
2873899	TS-S1	Surface	None Supplied	Brown clay and sand with gravel and vegetation.
2873900	TS-S2	Surface	None Supplied	Brown clay and sand with gravel and vegetation.
2873901	TS-S3	Surface	None Supplied	Brown clay and loam with vegetation.
2873902	TS-S4	None Supplied	0.3	Brown clay and loam with vegetation.
2873903	TS-S5	None Supplied	0.5	Brown clay with vegetation.
2873904	TS-S6	None Supplied	1	Brown clay and loam with vegetation.
2873905	TS-S7	None Supplied	1.5	Brown clay and loam with vegetation.
2873906	TS-S8	None Supplied	1	Brown clay and loam with vegetation.
2873907	TS-S9	None Supplied	2	Brown clay and loam with vegetation.
2873908	TS-S10	None Supplied	2.5	Brown clay and loam with vegetation.
2873909	TS-S11	None Supplied	0.5	Brown clay and loam with vegetation.
2873910	TS-S12	None Supplied	1	Brown clay and loam with vegetation.
2873911	TS-S13	None Supplied	3	Brown clay with vegetation.
2873912	TS-S14	None Supplied	0.5	Brown clay with vegetation.
2873913	TS-S15	Surface	None Supplied	Brown clay and loam with vegetation.
2873914	TS-S16	None Supplied	1.5	Brown clay and loam with vegetation.
2873915	TS-S17	None Supplied	1	Brown clay and loam with vegetation.
2873916	TS-S18	None Supplied	0.5	Brown clay and loam with vegetation.
2873917	TS-S19	None Supplied	0.2	Brown clay and loam with vegetation.
2873918	TS-S20	None Supplied	1	Brown clay and loam with vegetation.

Analytical Report Number : 23-68007
Project / Site name: Rossendale Road

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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.	L038-PL	D	MCERTS
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	A001-PL	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
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.	L019-UK/PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser.	L080-PL	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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted

Analytical Report Number : 23-68007
Project / Site name: Rossendale Road

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
#2	EH_2D_Total but with fatty acids mathematically subtracted				
-	Operator - understore to separate acronyms (exception for +)				
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total				

APPENDIX D

Materials Management Plan and Declarations



Definition of Waste Code of Practice Declaration Receipt

This Declaration has been submitted to the Environment Agency under the Definition of Waste Code of Practice (DoW CoP).

You are reminded that if materials are not used in accordance with the Materials Management Plan or risk assessment, or if it is discovered that materials were not suitable for use, were used in excessive quantity or in such a manner as to harm human health or pollute the environment, the Environment Agency may conclude that those materials were discarded and were waste.

You are also reminded that a Verification Report must be prepared on completion of the work as set out in the Remediation Strategy / Design Statement covering the site. This Verification Report must be provided to the Environment Agency upon request.

This receipt relates to the following Declaration -

1. References	
Your Reference for this Declaration	MMPv2 Tetrosyl Phase 1b-QP Declaration
Related declaration references	2023-11-10 15:06:27
3. Site of Origin	N/A
4. Direct Transfer	Checked
5. Cluster Project (including use of a fixed Soil Treatment Facility as a Hub site)	N/A
2. Proposed Volumes	
Proposed Volumes in m ³	1000
Additional comments on Proposed Volumes	
4. Direct Transfer	
4a. Route A: Direct use of clean naturally occurring soils with elevated levels of naturally occurring substances on another development site.	N/A
4b. Route B: Direct use of clean naturally occurring soils on another development site.	Checked
4c. Donor Sites	
Donor Site #1	



Site Address	Donor Site 2: Leyland Test Track (Centurion Village) Longmeanygate, Leyland, Lancashire PR26 6TD
Company	Barratt Homes Manchester (A trading name of BDW Trading Ltd)
Developer company address	4 Brindley Road Manchester M16 9HQ
Name	Ryan Jones
Email	ryan.jones@barratthomes.co.uk
Telephone	0161 8720161
4d. Receiver Sites	
Receiver Site #1	
Site Address	Bevis Green Works, Mill Road, Bury BL9 6RE
Company	Barratt Homes Manchester (A trading name of BDW Trading Ltd)
Developer company address	4 Brindley Road Manchester M16 9HQ
Name	Ryan Jones
Email	ryan.jones@barratthomes.co.uk
Telephone	0161 872 0161
6. Local Authorities / Regulators	
6a. Local Authorities	
Local Authority #1	
Receiver Site Local Authority	Bury Metropolitan Borough Council
Local Authority Address	Environmental Health Town Hall Knowsley Street Bury BL9 0SW
Lead Contact Name	Rebecca Jones
Lead Contact Role	Environmental Protection Officer
Lead Contact Address (if different from above)	
Lead Contact Email	rebecca.jones@bury.gov.uk
Lead Contact Telephone	0161 253 6392
Receiver Site Agency	Warrington



Agency Address	Richard Fairclough House Knutsford Road Latchford, Warrington Cheshire WA4 1HT
Contact Telephone	02030251059
Contact Email	gmmcwasteenquiries@environment- agency.gov.uk sylvia.whittingham@environment- agency.gov.uk

7. Lines of Evidence

Reference for the Materials Management Plan	Smith Grant: R2174 MMP Tetrosyl Phase 1b V2.0 of 11/06/24
Reference for the Risk Assessment	Receiver: MMP App C2 - Stage 1 and 2 Geo-environmental Ground Investigation - R2688-R01-v3 of October 2019 Donor 2: Combined Phase 1 and Phase 2 Geo-environmental Assessment Leyland Test Track, Moss Side Industrial Park, Leyland. Ref 28039/001/9614(2). Date May 2012. Smith Grant: Leyland Test Track: Topsoil Assessment. Our Ref: R2910b-L01 Date 8th June 2021
Reference for either Remediation Strategy or Design Statement	MMP App C1 - Phase 1B Remediation Strategy - R2174-R12-v2 of January 2023
Reference for the Verification Plan	MMP App C1 - Phase 1B Remediation Strategy - R2174-R12-v2 of January 2023. See section 5.2. Import / Site-Won & Formation Sampling Requirements & Verification testing of all soils (subsoil and topsoil) for use within the cover system.
Company	Smith Grant LLP
Address	Bryn Estyn Business Centre, Bryn Estyn Road, Wrexham, LL13 9TY
Name	Megan Jones
Email	megan.jones@smithgrant.co.uk
Telephone	T: 01978 822367 M: 07943 792644
Expected production date for the Verification Report.	2025-10-31 00:00:00



7gi. Location plans	Receiving site: MMP App A1 - Location Plan – 00071215 – Plan showing the location of the site with the surrounding environs. App A2 - Topographical Survey Plan – 00214357 – Topographical survey of the site showing original levels. App A3 - 456-ED-05_Remediation_TEN_Remediation Phasing Plan_F - Planning Layout showing proposed garden and soft landscaped areas where soils to be placed. Donor site: App A4 - BH.AB.63 Rossendale Road, Burnley - As Built Survey – Topographical plan of donor site 1 and location plan in Donor SI report in MMP App C3a.
7gii. Schematics	MMP App D1-Schematic of material movement
7giii. Desk Top Study	Receiver: MMP App C2 - Stage 1 and 2 Geo-environmental Ground Investigation - R2688-R01-v3 of October 2019 Donor 2: Combined Phase 1 and Phase 2 Geo-environmental Assessment Leyland Test Track, Moss Side Industrial Park, Leyland. Ref 28039/001/9614(2). Date May 2012
7giv. Mass balance calculations	MMP App G1- RE EXTERNAL_Waldmers Wood Phase 1B MMP Volumes.pdf and MMP Box 19
7gv. Contingency arrangements	See MP Box 21a to 21d which fulfils the requirements of the DoWCoP system
7gvi. Tracking system	See MMP Box 22a to 22e and Box 23 plus tracking sheet which fulfil the requirements listed in paragraph 3.12 of the DoWCoP system
a) The Local Authority	Checked
b) Environment Agency	Checked
c) Natural Resources Wales	N/A
d) Other relevant environmental regulatory bodies	N/A



Reference the correspondence with the Local Authority	MMP App F2: The LA approved the reuse of topsoil recovered from donor site 1 (Rossendale Road) for reuse on the destination site. "Based on the information submitted, this Section is satisfied that the topsoil is suitable for use." See Letter from Bury Council of 6 July 2023 Reference CL584.120623.1
Reference the correspondence with the Environment Agency	MMP App F2 - EA Response to SGP report scope (20201114) "The outline remediation strategy appears to be reasonable in its proposals for how the works will be carried out." The Remediation Strategy states that DoWCoP will be used - See EA email from Sylvia Whittingham of EA.
I have reviewed the planning consent including planning conditions	Checked
Planning Reference (State either the reference or Not Applicable.)	2019/00235578
a) The Local Authority	Checked
b) Environment Agency	Checked
c) Natural Resources Wales	N/A
d) Other relevant environmental regulatory bodies	N/A
Please list correspondence reviewed above	See Box 7h above plus letter from the council of 12 June 2023 Reference CL584.120623.1 indicating discharge of conditions and for Phase 1b area with some requirements for a 6F2/crush layer required for the cover system in the garden areas.
Planning consent not required	N/A

8. QP Declaration

8a. QP Name	Chris Eccles
8b. QP Number	QP020



8c. I satisfy the Qualified Person requirements set out in Appendix 6 of the Definition of Waste: Development Industry Code of Practice to complete this Declaration.	Checked
8d. I have reviewed the Materials Management Plan for the above project.	Checked
8e. I have reviewed the Risk Assessment.	Checked
8f. I have reviewed the Remediation Strategy/Design Statement covering the above site.	Checked
8g. I have requested correspondence / documentation relating to the development and how that relates to the use of materials.	Checked
8h. The risk assessment assesses human health and environmental risks in relation to the proposed uses of all the materials in the MMP. The risk assessment concludes that the objectives of preventing harm to human health and pollution of the environment will be met if materials are used in the proposed manner	Checked
8i. The Local Authority, the Environment Agency / Natural Resources Wales and other relevant environmental regulatory bodies have not objected to the proposed development / land remediation on the basis that the use of any material is likely to cause harm to human health or pollution of the environment. [This confirmation should be given regardless of whether planning consent is required for the activity. Also see paragraph 3.37 of the CoP.].	Checked
8j. The EA/NRW have not objected to the reuse of materials on the grounds that it a.) constitutes a waste management operation or b.) has had a previous application for an environmental permit for waste recovery refused (on the grounds that the project represents waste disposal).	Checked
8k. The project does not involve land-spreading / agricultural re-profiling.	Checked



DoW CoP

Sustainable Reuse of Soils
A CL:AIRE Initiative

2024-06-11 16:14:49

8l. The project has not yet commenced; this is not a retrospective application of the DoW CoP.

Checked



Materials Management Plan (MMP) Form – June 2024

This form should be completed once the lines of evidence have been marshalled in relation to suitability for use, certainty of use and quantity required.

The answers to the questions posed within this form, together with the supporting information will constitute the MMP and must be provided to the Qualified Person.

A Qualified Person may comment on draft versions of this MMP but will not complete the Declaration until all the relevant documents, demonstrating lines of evidence have been provided for each site.

The person / organisation who will pay the Declaration fee should confirm that they have read and understand the Terms and Conditions relating to the payment of the Declaration fee to CL:AIRE. These can be found on the CL:AIRE website.

The person / organisation agreeing to pay the Declaration Fee - Name, organisation and contact details inc. email address -	Chris Eccles Eccles Associates Ltd Trimble House Bold Street Warrington Tel 07784 669127 Email: chris@ecclesassociates.co.uk
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✓ I confirm I have read and understood the Terms & Conditions.

Each question must be answered. If the question is not applicable please state this and provide a brief explanation.

1. Specify the scenario to which this MMP relates, as described in the Definition of Waste: Development Industry Code of Practice (DoW CoP) (1, 2, 3 or 4):

- ✗ 1. Reuse on the Site of Origin
- ✓ 2. Direct Transfer of clean naturally occurring soil / mineral materials
- ✗ 3. Cluster Project
- ✗ 4. Combination of any of the above

In the case of a combination of reuse scenarios, please describe it below (e.g. (i) Reuse on Site of Origin and Direct Transfer of clean naturally occurring unpolluted soils, (ii) Reuse on the Site of Origin with Direct Transfer of clean naturally occurring soil to x number of development sites etc:

(NB: A Declaration is required for reuse on the Site of Origin and for any 2-site arrangement i.e., there is no facility for a combination Declaration)

2. Organisation and name of person preparing this MMP *All information contained in this document and its appendices has been provided and confirmed as accurate by the person / organisation agreeing to pay the Declaration Fee named above. Smith Grant LLP and the individual preparing this MMP accept no responsibility for any inaccuracies on the basis of incorrect factual information provided to it and accept no liability for the actions of any party carried out outside of the provisions of the MMP.	Meg Jones BSc MSc AMIEnvSc Smith Grant LLP Bryn Estyn Business Centre, Bryn Estyn Road, Wrexham, LL13 9TY Tel: 01978 822367 Mobile: 07943 792644 Email: megan.jones@amithgrant.co.uk
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Document Control

Date issued	08.11.23
Summary of revision	11.06.24 - V2.0-Addition of donor site 2 (Leyland) (changes highlighted in yellow)

Insert additional lines to the table above for any subsequent revisions.

Note - revisions to the MMP do not trigger an additional Declaration by a Qualified Person unless an additional site is added to the project.

Revisions to the MMP must be recorded and summarised in the Document Control box above.

Site Details

3. Site / Project name(s)	Bevis Green Works, Mill Road, Bury BL9 6RE
Reuse / receiving site name:	Bevis Green Works, Mill Road, Bury BL9 6RE
Donor site name (if Direct Transfer)	Donor Site 1: Rossendale Road, Burnley
	Donor Site 2: Leyland Test Track (Centurion Village) Longmeanygate, Leyland, Lancashire PR26 6TD

Landowners

4a. Name of Landowner(s) (full address and contact details) – where excavated materials are to be reused	Barratt Homes Manchester (A trading name of BDW Trading Ltd) 4 Brindley Road Manchester M16 9HQ Tel: 0161 8720161 email: ryan.jones@barratthomes.co.uk
4b. Name of Landowner(s) (full address and contact details) – where excavated materials are arising from	Barratt Homes Manchester (A trading name of BDW Trading Ltd) 4 Brindley Road Manchester M16 9HQ Tel: 0161 8720161 email: ryan.jones@barratthomes.co.uk

Summary and objectives

5a. Provide a brief description of the planned project and how excavated materials are to be reused.	Following site preparatory earthworks, an application of topsoil and subsoil is required for gardens and soft landscaped Public Open Space areas. No recoverable topsoil or subsoil is present on the site of origin. Therefore, topsoil and subsoil material will be sourced from import from one or more external donor sites under <i>Direct Transfer</i> .
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General Plans and Schematics

6. Attach a location plan for the site(s) and a plan of the site(s) which identifies where different materials are to be excavated from, stockpile locations (if applicable), where materials are to be treated (if applicable) and where materials are to be reused.	<u>Plan Document Reference(s):</u> <u>Receiving site</u> <i>App A1 - Location Plan – 00071215</i> – Plan showing the location of the site with the surrounding environs. <i>App A2 - Topographical Survey Plan – 00214357</i> – Topographical survey of the site showing original levels. <i>App A3 - 456-ED-05_Remediation_TEN_Remediation Phasing Plan_F</i> - Planning Layout showing proposed garden and soft landscaped areas where soils to be placed. <u>Donor sites</u> <i>App A4 - BH.AB.63 Rossendale Road, Burnley - As Built Survey</i> – Topographical plan of donor site 1. <i>App A5 - Leyland Location Plan - 471-ED-24_Roads and Sewers_AFU_ Site Location Plan_A</i> – Location plan of donor site 2.
7. Attach a schematic of proposed materials movement. Where there is only one source area and one placement area briefly describe it. For all other projects, a schematic is required.	<u>Plan Document Reference(s):</u> <i>App D1-Schematic of material movement</i> - Material will be removed from temporary stockpiles directly into the various gardens and landscaped areas indicated on the development layout.

Parties Involved and Consultation – if more than one party please provide additional details for them and identify the location that they will be working e.g., where a site is zoned.

8a. Main earthworks contractor(s) (full address and contact details) – Where excavated materials are to be reused	<u>Site of Origin & Receiving Site:</u> Urban Regen Limited Langley Road, Pendlebury, Salford, M6 6FG Tel: 01204 595 933	
8b. Main earthworks contractor(s) (full address and contact details) - Where excavated materials are arising from	<u>Donor site 1 Rossendale Road, Burnley:</u> X & P McGuigan Civil Engineering Ltd The Old Pump House, Railway Road, Brinscall, Chorley, PR6 8UA	<u>Donor Site 2 Leyland Test Track (Centurion Village)</u> Westshield Limited Bredbury, Park Way, Bredbury, Stockport, SK6 2SN Email: scott.mcgowan@westshield.co.uk Mob: 07815 638499
9. Treatment contractor(s) (full address and contact details) – for treatment on site of origin, or at a Hub site within a fixed STF / Cluster Project	NA: No treatment required	
10. Where wastes and materials are to be transported between sites, provide details of the transport contractor(s) (full address, contact	Clive Hurt Sandham House Redrose Drive	

details and waste carrier's registration details (if applicable))	Lancashire Enterprise Business Park Leyland Lancashire PR26 6TJ Waste Carrier Licence Number CBDU77821
11. Provide Local Authority contact details (full address and named contacts) where excavated materials are to be reused	Rebecca Jones Environmental Protection Officer Environmental Health Town Hall Knowsley Street Bury BL9 0SW Tel: 0161 253 6392 Email: rebecca.jones@bury.gov.uk
12a. For the site where materials are to be reused and for Hub Site locations provide Environment Agency contact details (full address and named contacts):	Sylvia Whittingham Planning Advisor The Environment Agency Richard Fairclough House Knutsford Road Latchford, Warrington Cheshire WA4 1HT Office Tel: 02030251059 Email: sylvia.whittingham@environment-agency.gov.uk

For all Cluster Projects: 12b. Attach any relevant documentation from the EA relating to the excavation and reuse of the materials to demonstrate no objection to the proposals (see 3.37 of DoW CoP) If the EA has not been consulted please explain why (see paragraph 3.39 of the DoW CoP).	NA: Not a cluster project
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Lines of Evidence

There is no one single factor that can be used to decide that a substance or object is waste, or when it is, at what point it ceases to be waste; as complete a picture as possible has to be created.

The following sections require completion to ensure the correct decision is made.

If a requested item is not relevant it is important to clearly state why this is so (e.g. no planning permission required because permitted development status exists).

Suitable for use criteria

13. Please describe or provide copies of the required specification(s) for the materials to be reused on each site.	Document Reference(s) Site of origin: <u>App C1 - Phase 1B rem strat - R2174-R12-v2</u> <u>5.2. Import / Site-Won & Formation Sampling Requirements</u> <i>5.2.1. Verification testing of all soils (subsoil and topsoil) for use within the cover system will be subject to chemical testing to ensure suitability for use. Sampling should be undertaken by an independent consultant. The frequency of testing will be dependent on the provenance of the soil and will be completed as follows:</i> • <i>site won subsoil (if natural soils recovered from wider development): 1 sample per 50m³;</i>
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	• <i>imported topsoil / subsoil (well-characterised Greenfield source): 1 sample per 250m³;</i> • <i>imported topsoil / subsoil (unknown / well-characterised Brownfield source with evidence that extraction of suitable soils for transfer is feasible): 1 sample per 100m³; minimum of 3 samples to be collected from each source.</i> The compliance criteria is provided in Table 5.1 Garden Cover System Compliance Criteria which has not been reproduced here due to size.
Where contamination is suspected or known to be present 14a. Please provide copies of or relevant extracts from the risk assessment(s) that has been used to determine the specification for use on the site. This must relate to the place where materials are to be used. This must be in terms of (i) human health (ii) controlled waters and (iii) any other relevant receptors. If a risk assessment is not relevant for a particular receptor given the site setting please explain why below:	Document Reference(s) Site of origin: Document Reference(s) Donor Sites: <u>Donor site 1: Rossendale Road, Burnley</u> App C2d - Rossendale Road further testing - R2688 - L01 <i>Based on the review of information within R2688-R01-v1 there is no identifiable sources of coal tar present on the site. No made ground was present and no industrial works (other than coal mining) have taken place on the site. The presence of coal tars is therefore unlikely to have been present. It is considered that it is most likely attributed to inclusions of coal as is more clearly shown within the other corresponding ratio plots. This is more consistent with the history of the site and the recorded ground conditions where fine inclusions of coal have been recorded.</i> <i>The overall risk to human health from PAHs within fragments of coal is with the bioavailability of the PAHs limited due to the sequestration of PAHs within a carbon or vitrified matrix. It is therefore considered that the topsoil within stockpiles TS1, TS2, TS3 and TS6 would be suitable for reuse as garden soils, however this will require approval</i>

	<i>by the Local Authority Contaminated Land Officer where the soil is proposed to be exported to.</i> This was approved by the CLO as stated in section 14b. App C2e - Further TS testing - R2688 - L02 <i>It is therefore considered following further assessment that the topsoil within Stockpile A is considered suitable for reuse as garden soils and has a low risk to human health. Due to the reported exceedances, approval by the Local Authority Contaminated Land Officer (CLO) will be required prior to the re-use of soils.</i> <i>If any of the stockpile is to be exported to an additional Barratt site, the CLO for the receiving Site will also be required to approve this assessment. Movement of material should be completed under a declared Material Management Plan (MMP).</i> <u>Donor Site 2: App C3b – Leyland Test Track Topsoil Validation – R2910B-L01</u> <i>“It is concluded following sampling and further assessment that the stockpiled topsoil is suitable for reuse as garden soils and that the single lead exceedance is a localised incidence (outlier) which is not representative of the larger volume of soil.”</i>
14b. Please attach any relevant documentation from the LA relating to the excavation and reuse of the materials to demonstrate no objection (see 3.37 of the CoP)	Document Reference(s) <u>App F2 - CL584.060723.1</u> The LA approved the reuse of topsoil recovered from donor site 1 (Rossendale Road) for reuse on the destination site. <i>“Based on the information submitted, this Section is satisfied that the topsoil is suitable for use.”</i>

14c. Please attach any relevant documentation from the EA relating to the excavation and reuse of the materials to demonstrate no objection (see 3.37 and Table 2 of the CoP)	Document reference(s): <u>App F3 - EA Response to SGP report scope (20201114)</u> <i>"The outline remediation strategy appears to be reasonable in its proposals for how the works will be carried out. A detailed remedial strategy and method statements will be required prior to commencement of the remedial works to ensure that controlled waters are adequately protected by the proposed remedial measures."</i>
14d. Please attach any relevant documentation from any other regulators (if relevant) relating to the excavation and reuse of the materials to demonstrate no objection (see 3.37 of the CoP)	Document Reference(s): NA No other regulatory bodies relevant to scheme

Where contamination is not suspected	Document Reference(s): NA
15a. Please attach copies or relevant extracts from the Desk Top Study that demonstrates that there is no suspicion of contamination.	
15b. Please attach copies of or relevant extracts from the site investigation/testing reports that adequately characterise the clean materials to be used (if appropriate).	Document Reference(s): NA
15c. Please attach copies of any other relevant information (if available) confirming that land contamination is not an issue.	Document Reference(s): NA

NB: It is your responsibility to assess the nature of the material to be used and that it fits within the limitations of the scenario under which it is to be used

Certainty of use

Various lines of evidence are required to demonstrate that the materials are certain to be used. This includes:

- o The production of this MMP
- o An appropriate planning permission (or conditions that link with the reuse of the said materials)
- o An agreed Remediation Strategy(ies)
- o An agreed Design Statement(s)
- o Details of the contractual arrangements

Please identify in the following sections what lines of evidence relate to the site(s) **where the materials are to be used**.

16a. Planning Permission(s) relating to the site where materials are to be reused Please provide a copy of the relevant planning permission	Document Reference(s): <u>App B2 - 2019 Planning permission - 00235578</u> - Condition 4: <i>No development, other than site clearance, demolition, or works relating to site investigation remediation or ground works, shall commence unless and until:</i> • <i>A contaminated land Preliminary Risk Assessment report to assess the actual/potential contamination and/or ground gas/landfill gas risks at the site shall be submitted to, and approved in writing by, the Local Planning Authority;</i> • <i>Where actual/potential contamination and/or ground gas/landfill gas risks have been identified, detailed site investigation and suitable risk assessment shall be submitted to, and approved in writing by the Local Planning Authority;</i> • <i>Where remediation/protection measures is/are required, a detailed Remediation Strategy shall be submitted to, and approved in writing by, the Local Planning Authority.</i> Reason. <i>The scheme does not provide full details of the actual contamination and subsequent remediation, which is required to secure the satisfactory development of the site in terms of human health, controlled waters, ground gas and the wider environment and pursuant to National Planning Policy Framework Section 15 Conserving and enhancing the natural environment.</i>
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	- Condition 5: <i>Following the provisions of Condition 4 of this planning permission, where remediation is required, the approved Remediation Strategy must be carried out to the satisfaction of the Local Planning Authority within agreed timescales; and A Site Verification Report detailing the actions taken and conclusions at each stage of the remediation works, including substantiating evidence, shall be submitted to and approved in writing by the Local Planning Authority prior to the development being brought into use.</i> Reason. To secure the satisfactory development of the site in terms of human health, controlled waters and the wider environment and pursuant to National Planning Policy Framework Section 15 - Conserving and enhancing the natural environment.
16b. Explain how the reuse of the excavated materials fits within the planning permission(s) for each site.	Document Reference(s): <u>App G1- RE EXTERNAL Waldmers Wood Phase 1B MMP Volumes.pdf</u> Approximately 2,357m³ of topsoil is required to complete the remaining gardens on Phase 1B. To fulfil this, 2,037m³ will be imported from donor site 1 (Rossendale Road) and 320m³ will be imported from donor site 2 (Leyland Test Track).
16c. If planning permission is not required for any one site please explain why below e.g., permitted development, clean-up of a chemical spill, surrender of an Environmental Permit, re-contouring within the existing permission.	NA: Site has Planning Consent
Where contamination is suspected or is known to be present	Document Reference(s): App C1 - Phase 1B rem strat - R2174-R12-v2

17. Please provide a copy of any Remediation Strategy(ies) that have been agreed with relevant regulators.	
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Where contamination is not suspected 18. Please provide a copy of any Design Statement(s) that have been agreed (e.g., with the planning authority or in the case of permitted developments the client).	Document Reference(s): NA
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Quantity of Use

19. Please provide a breakdown of the excavated materials for each site and how much will be placed at each site or sub area of each site. Where this is not specific to a single readily identifiable source refer to an annotated plan, schematic or attach a tabulated summary.	Document Reference(s): <u>App G1- RE EXTERNAL Waldmers Wood Phase 1B MMP Volumes.pdf</u> Approximately 2,357m³ of topsoil is required to complete the remaining gardens on Phase 1B which will be imported from donor site 1 (Rossendale Road) and donor site 2 (Leyland Test Track). Total volume = 2,357m³
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20a. How has consolidation/compaction been considered in the above mass balance calculations?	In the garden / POS areas, the soils are being placed to a depth of 600mm and will not be subject to compaction, consolidation is considered likely to approximately equate to levels in the stockpiles so no net change in volume is anticipated: if more or less bulking than anticipated occurs the contingency arrangements in S.21 provide detail on how the resultant surplus/deficit will be managed.
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20b. How has loss due to treatment being considered in the above mass balance calculations (if applicable)?	No treatment required
20c. How has the addition of treatment materials been considered in the above mass balance calculations (if applicable)? Note - An exact figure is not required but one that is reasonable in the circumstances and can be justified if challenged.	No treatment required

Contingency arrangements

Explain what is to happen in the following situations and **identify the appropriate clauses** in the contract(s) (Such clauses must be provided to the Qualified Person, preferably as a summary document): or

21a. What is to happen to, and who is to pay for out of specification materials?	Removed from site as waste to licensed tip. Barratt Homes to be responsible for any additional costs due to out of specification materials. No contractual arrangements are required.
21b. What is to happen to, and who is to pay for any excess materials?	Where naturally occurring soil material is suitable for re-use, it will be made available for use on other developments or sold to other developers for re-use on their developments using a direct transfer MMP for the receiving site. Where this is not possible, the excess will be removed from site as waste to licensed tip. Barratt Homes to be responsible for any additional costs due to excess materials. No contractual arrangements are required.
21c. What happens if the project programme slips in relation to excavated materials or materials under -going treatment?	No treatment required, material may remain in stockpile until required for individual plot areas and be used over entire construction programme. No Changes to the MMP/process are required where the programme slips. Where the site involves the importation of soils, Barratt will only import soil as necessary and when required and stockpile in the plots where it is to be used

	under an amended MMP. Barratt Homes to be responsible for any additional costs due to programme slippage. No contractual arrangements are required.
21d. Other identified risk scenarios for the project (relating to excavated materials)?	Not anticipated: Materials will either be re-used for their intended purpose as garden soils / trench backfill or will be removed from site, either as waste or under a direct transfer MMP associated with a different receiving site.

The Tracking System

Where contamination is suspected or known to be present, state the procedures put in place to:

22a. For all sites, please describe the tracking system to be employed to monitor materials movements.	Materials are to be placed in specific, fenced-off stockpile areas, and moved directly from here to the garden and landscaped areas requiring soil cover system or to the trench requiring backfill. Soils placed as part of the soil cover system will be inspected and verified by an independent consultant while in stockpile and Barratt will maintain a record of which stockpile is placed in which gardens as part of their tracking system. This will include a detailed soil description which will be compared to the descriptions made of the source material and sample analysis at an appropriate frequency. A record of soil delivery orders, hauliers' tickets and acceptance records will be maintained to cover the transfer of the materials between the donor and receiving site. Imported materials will be transferred from the nominated temporary stockpiles directly to the open utility / service trenches for placement and compaction. An as-built record of the routing of all service and utility plans will be maintained. The tracking system adopted for the site cover soils element of the MMP will then be implemented as described above with the surplus removed as waste under the provisions of 21b above.
<i>Where contamination is suspected or known to be present, state the procedures put in place to:</i>	No treatment required

22b. Prevent contaminants not suitable for the treatment process being accepted	
Where contamination is suspected or known to be present, state the procedures put in place to:	Soils materials are to be placed in specific, fenced-off stockpile areas, within a separate fenced off area and moved directly from here to the garden areas requiring growing medium. No other site arisings are to be stored in the soil stockpile area & garden areas are to be subject to a final reduced level dig to the depth of the approved growing medium thickness to preclude inclusion of other arisings.
22c. Prevent cross contamination of materials not in need of treatment, wastes awaiting treatment and treated materials	
Where contamination is suspected or known to be present, state the procedures put in place to:	Soils testing will be requested by BM to be undertaken by an independent consultant to the prescribed frequencies and analysis suite as set out in the Enabling earthworks plans: This will generally be in stockpiles as described above. Soils placed as part of a growing medium to garden / landscaped areas will be inspected and verified by an independent consultant. This will include a detailed soil description which will be compared to the descriptions made of the source material, the validation certificate will form a permanent record of the movement and include details of the specific source of material used in each garden or landscaped area.
22d. Demonstrate that materials that do not require treatment and successfully treated materials reach their specific destination	
Where contamination is suspected or known to be present, state the procedures put in place to:	Waste testing will be requested by BM to be undertaken by an independent consultant to the appropriate frequencies and analysis suites in stockpiles in accordance with WM3. This will generally be in stockpiles as described above.
22e. Ensure that waste for off-site disposal or treatment is properly characterised and goes to the correct facility	

23. Please attach a copy of the tracking forms / control sheets that are to be used to monitor materials movements. To include transfer of loads on site into stockpiles prior to treatment (if applicable), stockpiled after treatment (if applicable), stockpiled awaiting use (as appropriate) and final placement.	Control sheets are relevant to stockpiles awaiting use and final placement: Document reference(s) App E1/App E2 are examples of the forms used by BM to request independent testing of materials for re-use on the site or export as waste or direct transfer under a different MMP (App E1), to request soils be removed as waste or direct transfer under a different MMP (App E2). There is only one materials movement planned – From the topsoil stockpiles to the garden areas. Barratt will maintain records of all transfer documentation (Hauliers tickets).
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<i>For Hub Sites within Cluster Projects & where materials need treatment before reuse</i> 24. Please attach a copy of the Environmental Permit covering the treatment process. Alternatively, if the treatment is covered by a Mobile Plant Permit and associated Deployment Form, attach a copy of the EA agreement to the Deployment Form.	NA Not cluster project.
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Records

25. Where, and in what form, are records to be kept? Note – records e.g., transfer notes, delivery tickets, Desk Top Study, Site Investigation, Risk Assessment(s), Verification Report(s) need to be kept for at least 2 years after the completion of the works and production of the Verification Report	Copies of all the relevant information including the control sheets confirming testing and materials movement requests are to be held by Barratt for a minimum of two years, as will be all waste documentation associated with the site. The consultant carrying out the independent materials testing, and verification reporting will retain copies of all reports, drawings, and analysis results for a minimum of 6 years.
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Verification Plan

26. Provide or explain the Verification Plan which sets out how you will record the placement of materials and prove that excavated materials have been reused in the correct location and in the correct quantities within the development works (see 3.4 of the DoW CoP).	Document Ref(s): <i>App C1 - Phase 1B rem strat - R2174-R12-v2</i> App C1 outlines the verification requirements for the site. Smith Grant LLP on behalf of Barratt Manchester will produce the verification report for the use of imported topsoil and subsoil, incorporating: a) Summary of objectives and methods used b) Details of inspections to sample soils and summary of results c) Results of imported soils and risk assessment to confirm suitability for use / remediation strategy compliance. The contact at Smith Grant LLP for queries regarding the verification report is: Meg Jones (Tel: 01978 822367 :Email: megan.jones@smithgrant.co.uk)
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	These results will be compiled into a verification report for the whole site on completion of the works, the timing of this report is dependent on factors such as sales, but it is anticipated the report will be issued December 2024.
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