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Specialists



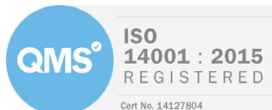
PHASE 3

REMEDIATION STRATEGY REPORT

job number	C3757/24/E/6619	date	03.05.2024
site address	Manchester Metropolitan University, Lower Ormond Road, Manchester, M15 6BX.		
written by	S. Alexander	checked by	R. Palmer
issued by	S. Alexander		



Please consider the environment before printing this report.



Environmental
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<ENVIRONMENTAL> <GEOTECHNICAL>

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Phase 3: Remediation Statement

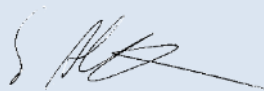
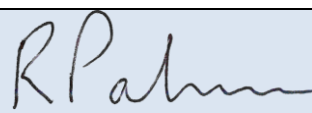
Location: **Manchester Metropolitan University**
Lower Ormond Road, Manchester, M15 6BX.

For: P Casey and Co. Limited

Report No. C3757/24/E/6619

Report date: May 2024

For and on behalf of **Rogers Geotechnical Services Ltd**

	
Scott Alexander BSc, FGS Senior Geo-environmental Engineer	Rob Palmer MSc FGS ACIEH Engineering Director

1. Introduction

It is understood that the footpaths around an open courtyard area within Manchester Metropolitan University are to be excavated and replaced as part of landscaping works. During the excavation works contamination was suspected along the southern portion of the footpath, therefore samples were collected from the site by a third party and sent for testing by Enviro lab Ltd. A copy of the sampling map is provided in Appendix 1. The samples were undertaken for soils testing of the following suite:

- Metals, Semi-metals and non-metals – arsenic, cadmium, copper, chromium (total and VI), lead, mercury, selenium, and zinc.
- Polyaromatic Hydrocarbon (PAH 16 congeners) and total PAH.
- Total TPH (>C6-C40) with ID interpretation. Copies of gas chromatographs were submitted for review alongside selected samples.
- Others – pH, moisture, and stone content.

The samples were analysed by RSK Environmental whereby samples TH5, TH6, TH7, and TH12 recovered from the south of the site were classified as hazardous waste.

The results of the soil samples subjected to testing were made available to Rogers Geotechnical Services (RGS) to review and to produce a remediation strategy as a result of the findings of the above. RGS reviewed the results of the samples and the results of the chemical testing undertaken on soil samples obtained during this investigation have been compared to the ATRISK soil screening values (SSVs) for a residential without plant uptake end use, as compiled by WS Atkins plc. As no organic matter content tests have been undertaken 1% threshold values have been used to represent the most onerous conditions. These values have been derived in such a way as to adhere to the principles within the revised CLEA model and include the most current release of the SGVs. A list of subscribers is provided within the website¹ and these include many local authorities.

¹ <http://www.atrisksoil.co.uk/pages/general/subscribers.asp>

During testing only Total TPH (>C6-C40) and the gas chromatography plots have been made available for review for a selected number of testing. To obtain a potential identification where samples may be contaminated the Total TPH results have been compared to the result of >C16-C20 where the gas chromatography plots indicate the highest peaks are between C16-C21 however the threshold for lighter petroleum hydrocarbons is significantly lower than this value. As the index material and baseline values for the chromatography plot are not available to analyse the results speciated derivation has not been possible. In addition to this, logs of the excavations including descriptions and depths of the samples tested are not available for the majority of the samples tested. No screening for identification of asbestos has been undertaken on any of the samples provided for review.

A copy of all the testing results along with comparison of the results of the testing, together with the data given above, can be found within Appendix 2. These results indicate the following:

Table 1: Summary of Contaminated Areas

Location	Depth (m)	Contaminants found to be exceeding SSVs (Residential without plant uptake)
TH1	0.5	PAHs – Chrysene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene, benzo(g,h,i)perylene.
TH2	N/A	PAHs – Indeno(1,2,3-c,d)pyrene, benzo(g,h,i)perylene.
TH3	N/A	PAHs – Chrysene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene, benzo(g,h,i)perylene.
TH4	N/A	None
TH5	N/A	PAHs – Naphthalene, fluorene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene, benzo(g,h,i)perylene. Total PAHs. Total TPHs.
TH6	N/A	PAHs – Naphthalene, fluorene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene, benzo(g,h,i)perylene. Total PAHs. Total TPHs.
TH7	N/A	PAHs – Chrysene, indeno(1,2,3-c,d)pyrene, benzo(g,h,i)perylene. Total TPHs.
TH8	0.5	None
TH9	0.5	None
TH10	0.5	PAHs – Chrysene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene, benzo(g,h,i)perylene.
TH11	0.5	PAHs – Naphthalene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene, benzo(g,h,i)perylene. Total PAHs.
TH12	N/A	PAHs – Naphthalene, phenanthrene, anthracene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene, benzo(g,h,i)perylene. Total PAHs.

Concentrations of chromium^{VI} were below the detection limits for the tests. Detectable levels of all other contaminants were recorded, but these fell below the associated At Risk Soil Screening Values other than those listed in the table above.

Matrix codes were provided by the Envirolab for each sample of which the samples were recorded as sand with stones and roots. No visible hydrocarbons were recorded on any of the samples thus it can be assumed that the samples will generally be absent of free product.

It should be appreciated that the soil screening values for PAHs and TPHs (where appropriate) represents vapour saturation limits. The inhalation of vapour pathway contributes less than 10% of total exposure, which is unlikely to significantly affect the combined assessment criterion². In view of this, the ATRISK soil SSVs notes that the users may wish to consider using a combined assessment criterion if free product is not observed, the values for which are also provided on the summary of contamination analysis. It is therefore considered that the criteria for no free product should be adopted for the PAHs and TPHs at this site. The results of the contaminants found to exceed these screening values are tabulated below:

Table 2: Summary of Areas Contaminated by PAHs & TPHs		
Location	Depth (m)	Contaminants found to be exceeding SSVs (Residential without Plant Uptake)
TH1	0.5	None
TH2	N/A	None
TH3	N/A	None
TH4	N/A	None
TH5	N/A	PAHs – Naphthalene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene. Total PAHs.
TH6	N/A	PAHs – Naphthalene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene. Total PAHs.
TH7	N/A	Total TPHs is equal to the threshold value.
TH8	0.5	None
TH9	0.5	None
TH10	0.5	None
TH11	0.5	PAHs – Naphthalene, pyrene, benzo(a)pyrene.
TH12	N/A	PAHs – Naphthalene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene. Total PAHs.

On the basis of the above information, the results of the investigation have concluded that the site is contaminated with respect to PAHs and locally TPHs. This contamination is isolated towards the south of the site local to samples TH5, TH6, TH7, TH11, and TH12. It is of note that considerable levels of contamination have been recorded in TH12, TH5, and TH6 with levels for PAHs between 10 times and 750 times the relevant threshold levels.

² Ref: ATRISK soil, SSVs derived using CLEA v1.071 for 1% SOM, Residential without home grown produce land use, 23.06.17.

2. Remediation Strategy

2.1 Remediation Objectives

Based on the results of the contamination testing it is considered that remediation will be required at the site as follows:

- To protect the site operatives during the construction process from the ingestion of soil or dust, dermal contact with the soil and inhalation of dust and vapours.
- To protect the end user and neighbours from the ingestion of soil or dust, dermal contact with the soil and inhalation of dust and vapours.
- To protect the plants from contaminated ground.
- To protect controlled waters from run off via drainage/sewers etc.

2.2 Development Requirements.

It is understood that the footpath is to be excavated and re-laid as part of landscaping and regeneration works of the University grounds. Given the location of the site where some full time residents may be present a residential without plant uptake end threshold use has been applied.

3. Scope

In order to fulfill the objectives defined above the following remedial strategy will be utilised. A pragmatic approach will be undertaken, with observational techniques being employed at each stage of the work. It is understood that the entire development is proposed to replace the existing pavements with a new pavement. It is recommended that to sever the pathways between sources and end receptors that beneath permanent hardstanding a minimum thickness of 400mm of clean material shall be placed overlain by hardstanding.

3.1 Groundworks

During the ground-works phase of the development, protection to the site operatives is required. The risk to site operatives is considered under the Health and Safety at Work Act 1974, together with regulations made under the act, which includes the Control of Substances Hazardous to Health (COSHH) regulations. Therefore the risks to site personnel will be considered under the Construction Design and Management (CDM) regulations at the planning stage and be included in the contractor's Health and Safety Plan and site specific Method Statements. These documents shall include the following main elements.

- Site operatives at all levels shall be made aware of the hazards of working with potentially contaminated soils.
- Due to the significant levels of contamination it is recommended that Photo-ionisation detectors are employed during excavation works to monitor levels of vapours in working areas to protect workers from exposure from hazardous vapours. If ambient levels of vapours exceed 5ppm then Respiratory Protective Equipment (RPE) should be made available to workers. Should ambient vapour levels exceed 10ppm then works should cease and spot monitoring every 15 minutes until vapour concentrations subside.

- Asbestos has not been screened during the testing phase, therefore measures such as dampening of excavations to avoid generation of dust, and dust suppressants be applied to tools and equipment to prevent dust generation. A watching brief should be employed by suitably qualified persons' to identify any potential Asbestos Containing Materials (ACMs). Should ACMs be suspected works in the area should cease, isolated, and Rogers Geotechnical Services contacted to collect samples and quantify risks.
- Personal hygiene facilities, including washing and messing, will be provided and site operatives will be encouraged to use them.
- Where work is undertaken in dry weather the site will be dampened down to avoid dust. In addition, dust masks will be provided to all site operatives for use in dry weather.
- Where vehicles are transferring soil to the landfill site they will be covered to prevent contamination of the surrounding area by dust.
- Any stockpiles of contaminated soil on site will be sheeted over to prevent excessive amounts of airborne dust.
- Where work is undertaken in wet weather, vehicle and wheel washing facilities will be provided to ensure that the vehicles leaving the site do not transfer contamination to surrounding areas.

On completion of the ground-works a careful site inspection of the sub-grade will take place. Should visual or olfactory evidence of contamination be revealed, then suitably qualified specialists will be consulted. Further testing and updates to the site specific ground model, risk assessment, and remediation strategy will be undertaken where necessary.

Where unexpected contamination, which has not been previously identified on the site, is encountered the following shall apply:

- Works shall cease in the immediate area and quarantined and Rogers Geotechnical Services contacted. The local authority shall also be contacted to advise of encountering previously unidentified contamination.
- The excavation shall be chased out as far as practicable and samples would need to be collected at a minimum rate of 1 sample for every 10m length for all sides of the excavation and 1 sample for every 100m² basal area.
- Material once classified, if classed as contaminated, shall be tested for Waste Acceptance Criteria (WAC) and removed from site.
- The excavation shall be infilled with suitably screened and tested imported material.

3.2 Construction

During the construction phase of the contract the following items are required to protect the end user from the potential contaminants revealed at this site. It is considered that the permanent hardstanding will sever the pathway from underlying existing made ground to end receptors at the surface.

- All pavements shall comprise clean inert granular sub-base shall be employed and constructed in line with the drawings 07505-CUR-00-XX-DR-D-75001_C01_PavementDetails. A copy of the technical drawings is presented in appendix 3.
- All materials imported to site shall be screened and tested in line with guidance set out in section 3.3.

3.3 Fill Materials

Any materials to be used as fill at the site, will be subjected to the following assessment to determine its suitability.

Fill materials will be initially screened, by a suitably qualified engineer, for the following.

- It is a suitable growing medium where is to be employed as such, including compliance with BS3883 (2007)
- It is free from obvious contamination i.e. visual or olfactory evidence
- It has not come from areas where Japanese Knotweed or other invasive or injurious plants are suspected to be growing
- It is not a statutory nuisance, such as being odorous
- It is free from unsuitable material i.e. whole bricks, brick ties, timber or glass.

It should also be appreciated that any fill will be subjected to validation testing to assess its suitability. The following table has been taken from YALPAG³ documentation and will be used in the first instance. Depending on the origin and nature of the material, not all fill will require the sampling frequency and testing indicated, although this will be in agreement with any regulatory bodies (such as the Local Authority).

Table 3: Validation Sampling and Testing		
Fill Type	Frequency	Minimum Determinands
Virgin Quarried Material	1 or 2 depending on the type of stone (to confirm the inert nature of the material)	Standard metals/metalloids (should include as a minimum As, Cd, Cr, CrVI, Cu, Hg, Ni, Pb, Se, Zn)
Crushed Hardcore, Stone, Brick	Minimum 1 per 500m ³	Standard metals/metalloids (as above), PAH (16 USEPA speciation), asbestos, Total TPH. Any additional analysis dependant on the history of the donor site (e.g. phenol, total cyanide, BTEX, MTBE).
Greenfield/ Manufactured Soils	Minimum 3 Dependent on source and receptor, between 1 per 50m ³ and 1 per 250m ³	Standard metals/metalloids (as above), PAH (16 USEPA speciation), asbestos, pH and soil organic matter (SOM) (or calculated from total organic carbon (TOC)).
Brownfield/ Screened Soils	Minimum 6 Dependent on source and receptor, between 1 per 50m ³ and 1 per 100m ³	Standard metals/ metalloids (as above), PAH (16 USEPA speciation), TPH (CWG banded), asbestos, pH and SOM (or calculated from TOC). Any additional analysis dependant on the history of the donor site (e.g. phenol, total cyanide, BTEX, MTBE).

It should be noted that screening values for the above regime have been included within Appendix 4 of this report. The screening values will need to be agreed with any regulatory bodies. It is anticipated, for example, that 1% SOM values will be employed for typical granular fill and 6% SOM for topsoil. However, organic matter testing will determine which screening values are appropriate for each material. Moreover, testing will comply with UKAS and MCERTS, where applicable, and undertaken by an accredited laboratory.

³ YALPAG Technical Guidance for Developers, Landowners and Consultants – Verification Requirements for Cover Systems V4.1 Appendix 1a, June 2021.

Where the material has been derived from a commercial company, certificates or other industry quality protocol compliance i.e. WRAP shall be obtained. However, it will be necessary to ensure that this documentation is specifically related to the material being imported, is no more than two months old and complies with the screening and frequency requirements given above.

Suitable fill materials will either be placed immediately or sufficiently quarantined to prevent cross-contamination. If it is necessary, the quarantined material will be placed on appropriate sheeting and covered to prevent it becoming mixed with contaminated soils or dust, or penetrated by mobile contaminants.

4. Verification Report

In order to demonstrate that the remediation has been sufficiently carried out and risks highlighted in the conceptual ground model are mitigated, a verification report will need to be produced and submitted to any statutory authorities.

The report will be produced by a suitably qualified engineer or engineers and will include the following:

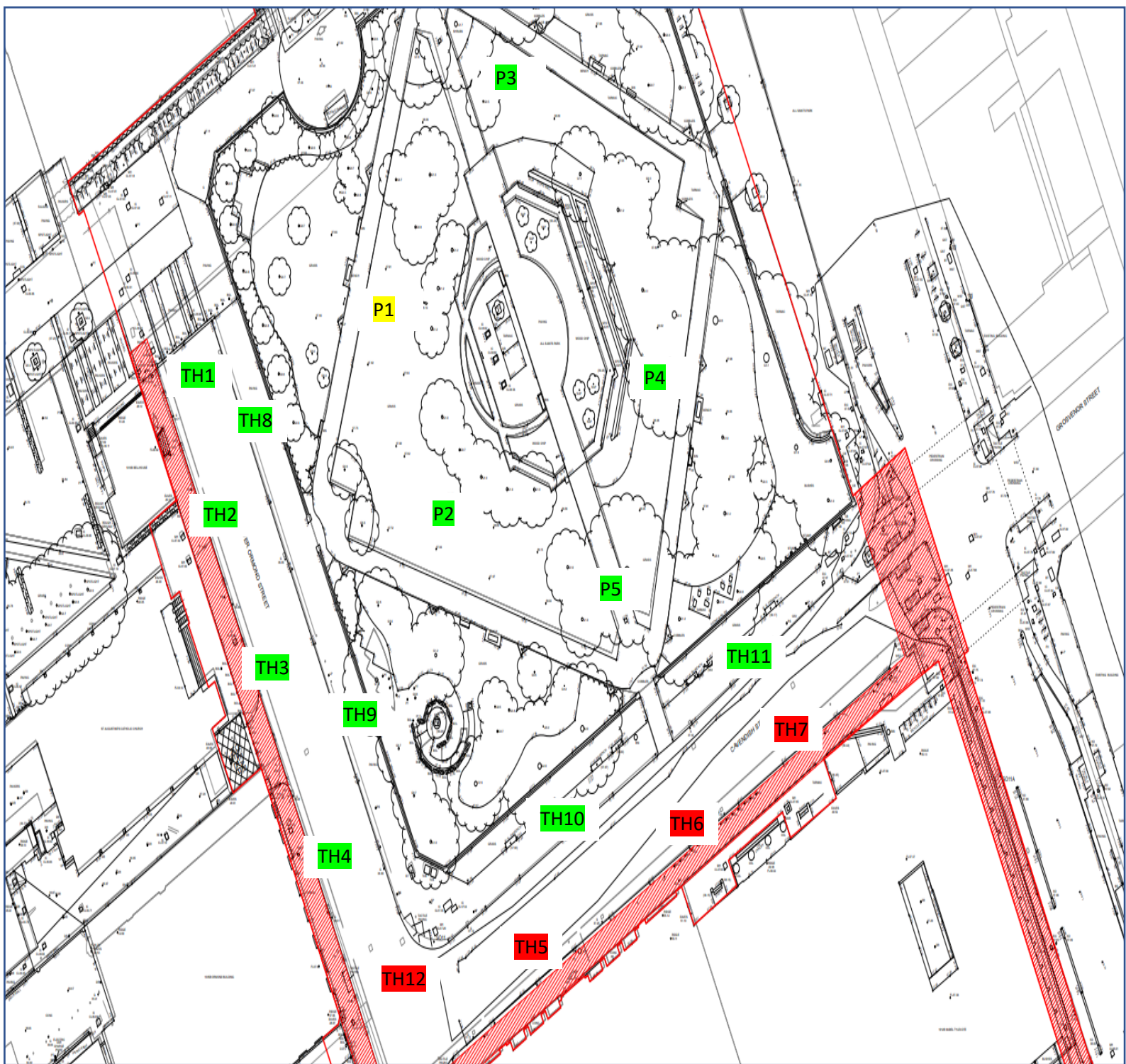
4.1 Imported Fill and Removal of Contaminated Made Ground

- Characterisation of the suitability of clean imported fill employed at the site including the derivation of the material, comments from a visual screen, the tests results of chemical screening, delivery tickets where appropriate and the conditions by which the clean material has been stored and handled on site.
- Photographic and logged evidence the clean material has been handled on site and placed in a sufficient thickness over the affected areas. This may be either at the time of placement or after placement by means of hand excavated trialpits. Photographs shall include visual site references or reference boards to prove the location and date taken. A measurement reference shall be visible in the photographs to substantiate the thickness of material placed.

We trust that this information is of interest, clearly Rogers Geotechnical Services Ltd would be happy to offer advice with respect to the above and assist where necessary.

Appendix 1

Site Plan



TH 1,2,3,4 formation 510mm, - existing, Tarmac 90mm, concrete 300mm, subsoil/6f2, mot 120mm.

TH 5,6,7,12 formation 510mm, - existing, Tarmac 80mm, Stone sets 160mm, subsoil 260mm (**hazardous**)

TH 8,9 formation 460mm, - existing, York stone 80/120mm lift and save for relaying, subsoil 360mm.

TH 10,11 formation 390mm, - existing, York stone 80/120mm lift and save for relaying, subsoil 290mm.

P1 possible hazardous

P2,3,4,5 ok

Appendix 2

Environmental Testing Results and Laboratory Reports

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 23/03026
Issue Number: 1

Date: 17 April, 2023

Client: P Casey & Co Ltd
Rydings Road
Wardle
Rochdale
OL12 9PS

Project Manager: (always use) Enviro Monitoring/Richard Charlesworth
Project Name: Manchester Metropolitan University
Project Ref: L2186
Order No: C005812
Date Samples Received: 28/03/23
Date Instructions Received: 30/03/23
Date Analysis Completed: 17/04/23

Approved by:



Gemma Berrisford
Client Manager

Envirolab Job Number: 23/03026

Client Project Name: Manchester Metropolitan University

Client Project Ref: L2186

Lab Sample ID	23/03026/2	23/03026/3	23/03026/4	23/03026/5	23/03026/6			Units	Limit of Detection	Method ref
Client Sample No	Tarmac									
Client Sample ID	SMTH 1	SMTH 1	SMTH 2	SMTH 3	SMTH 4					
Depth to Top										
Depth To Bottom										
Date Sampled	28-Mar-23	28-Mar-23	28-Mar-23	28-Mar-23	28-Mar-23					
Sample Type	Solid - Road Core / Tarmac	Soil	Soil	Soil	Soil					
Sample Matrix Code	7	4AB	4AB	4AB	4A					
Hazardous Waste Assessment	-	Appended	Appended	Appended	Appended					Assessment
% Moisture at <40C _A	-	6.1	8.4	9.5	16.3			% w/w	0.1	A-T-044
% Stones >10mm _A	-	38.5	52.3	39.1	13.8			% w/w	0.1	A-T-044
pH _D ^{M#}	-	11.31	10.90	10.14	11.40			pH	0.01	A-T-031s
Arsenic _D ^{M#}	-	6	6	8	4			mg/kg	1	A-T-024s
Cadmium _D ^{M#}	-	0.6	0.7	0.7	0.7			mg/kg	0.5	A-T-024s
Copper _D ^{M#}	-	16	38	28	9			mg/kg	1	A-T-024s
Chromium _D ^{M#}	-	12	10	10	13			mg/kg	1	A-T-024s
Chromium (hexavalent) _D	-	<1	<1	<1	<1			mg/kg	1	A-T-040s
Lead _D ^{M#}	-	20	18	93	13			mg/kg	1	A-T-024s
Mercury _D	-	0.33	<0.17	<0.17	<0.17			mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	-	11	17	14	11			mg/kg	1	A-T-024s
Selenium _D ^{M#}	-	<1	<1	<1	<1			mg/kg	1	A-T-024s
Zinc _D ^{M#}	-	25	26	23	28			mg/kg	5	A-T-024s

Envirolab Job Number: 23/03026

Client Project Name: Manchester Metropolitan University

Client Project Ref: L2186

Lab Sample ID	23/03026/2	23/03026/3	23/03026/4	23/03026/5	23/03026/6			Units	Limit of Detection	Method ref
Client Sample No	Tarmac									
Client Sample ID	SMTH 1	SMTH 1	SMTH 2	SMTH 3	SMTH 4					
Depth to Top										
Depth To Bottom										
Date Sampled	28-Mar-23	28-Mar-23	28-Mar-23	28-Mar-23	28-Mar-23					
Sample Type	Solid - Road Core / Tarmac	Soil	Soil	Soil	Soil					
Sample Matrix Code	7	4AB	4AB	4AB	4A					
PAH-16MS										
Acenaphthene _A ^{M#}	-	0.23	0.10	0.20	0.11			mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	-	0.01	<0.01	0.03	<0.01			mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	-	0.21	0.10	0.20	0.07			mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	-	0.43	0.31	0.52	0.07			mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	-	0.47	0.32	0.55	0.07			mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	-	0.51	0.39	0.63	0.08			mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	-	0.28	0.20	0.36	<0.05			mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	-	0.20	0.14	0.24	<0.07			mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	-	0.51	0.36	0.63	0.09			mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	-	0.05	<0.04	0.07	<0.04			mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	-	1.05	0.69	1.11	0.22			mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	-	0.14	0.05	0.14	0.06			mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	-	0.28	0.21	0.34	0.04			mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	-	0.83	0.07	0.28	0.26			mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	-	1.05	0.49	1.12	0.35			mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	-	0.95	0.60	1.07	0.19			mg/kg	0.07	A-T-019s
Total PAH-16MS _A ^{M#}	-	7.20	4.03	7.49	1.61			mg/kg	0.01	A-T-019s
TPH Total with ID + GC Trace										
TPH total (>C6-C40) _A ^{M#}	-	195	154	169	43			mg/kg	10	A-T-007s
TPH FID Chromatogram _A	-	Appended	Appended	Appended	Appended					A-T-007s
TPH ID Interpretation _A	-	C10-C44 hydrocarbons with some PAHs and other unknown hydrocarbons	C10-C44 hydrocarbons with some PAHs and other unknown hydrocarbons	C10-C44 hydrocarbons with some PAHs and other unknown hydrocarbons	C10-C44 hydrocarbons with some PAHs and other unknown hydrocarbons					A-T-007s
TARMAC Waste Disposal Suite										
Benzo(a)pyrene _A	<4.0	-	-	-	-			mg/kg	4	A-T-019 TAR

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.

The results reported herein relate only to the material supplied to the laboratory.

The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Subscript "A" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.

EPH CWG results have humics mathematically subtracted through instrument calculation

TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: P Casey & Co Ltd, Rydings Road, Wardle, Rochdale, OL12 9PS

Project No: 23/03026

Project: Manchester Metropolitan University

Date Received: 30/03/2023 (am)

Clients Project No: L2186

Cool Box Temperatures (°C): 10.7 & 11.4

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples $5 \pm 3^{\circ}\text{C}$), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	23/03026/2	23/03026/3	23/03026/4	23/03026/5	23/03026/6
Client Sample No	Tarmac				
Client Sample ID/Depth	SMTH 1	SMTH 1	SMTH 2	SMTH 3	SMTH 4
Date Sampled	28/03/23	28/03/23	28/03/23	28/03/23	28/03/23
A-T-007s		03/04/2023	03/04/2023	03/04/2023	03/04/2023
A-T-019 TAR	11/04/2023				
A-T-019s		06/04/2023	06/04/2023	06/04/2023	06/04/2023
A-T-024s		03/04/2023	03/04/2023	03/04/2023	03/04/2023
A-T-031s		03/04/2023	03/04/2023	03/04/2023	03/04/2023
A-T-040s		04/04/2023	04/04/2023	04/04/2023	04/04/2023
A-T-044		31/03/2023	31/03/2023	31/03/2023	31/03/2023
Assessment		17/04/2023	17/04/2023	17/04/2023	17/04/2023

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 23/03269
Issue Number: 1

Date: 18 April, 2023

Client: P Casey & Co Ltd
Rydings Road
Wardle
Rochdale
OL12 9PS

Project Manager: (always use) Enviro Monitoring/Lucy Bradley/ALWAYS
Project Name: Cavendish Street
Project Ref: Not specified
Order No: CO005812
Date Samples Received: 04/04/23
Date Instructions Received: 05/04/23
Date Analysis Completed: 18/04/23

Approved by:



Gemma Berrisford
Client Manager

Envirolab Job Number: 23/03269

Client Project Name: Cavendish Street

Client Project Ref: Not specified

Lab Sample ID	23/03269/1	23/03269/2	23/03269/3					Units	Limit of Detection	Method ref
Client Sample No	SMTH5	SMTH6	SMTH7							
Client Sample ID										
Depth to Top										
Depth To Bottom										
Date Sampled	31-Mar-23	31-Mar-23	31-Mar-23							
Sample Type	Soil	Soil	Soil							
Sample Matrix Code	4AB	4AB	4A							
Hazardous Waste Assessment	Appended	Appended	Appended							Assessment
% Moisture at <40C _A	9.9	9.2	3.1					% w/w	0.1	A-T-044
% Stones >10mm _A	12.1	28.0	44.3					% w/w	0.1	A-T-044
pH _D ^{M#}	8.90	8.89	9.38					pH	0.01	A-T-031s
Arsenic _D ^{M#}	8	6	1					mg/kg	1	A-T-024s
Cadmium _D ^{M#}	0.8	0.7	<0.5					mg/kg	0.5	A-T-024s
Copper _D ^{M#}	40	42	6					mg/kg	1	A-T-024s
Chromium _D ^{M#}	17	14	8					mg/kg	1	A-T-024s
Chromium (hexavalent) _D	<1	<1	<1					mg/kg	1	A-T-040s
Lead _D ^{M#}	47	98	8					mg/kg	1	A-T-024s
Mercury _D	0.54	1.01	2.50					mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	17	15	5					mg/kg	1	A-T-024s
Selenium _D ^{M#}	<1	<1	2					mg/kg	1	A-T-024s
Zinc _D ^{M#}	61	58	17					mg/kg	5	A-T-024s

Envirolab Job Number: 23/03269

Client Project Name: Cavendish Street

Client Project Ref: Not specified

Lab Sample ID	23/03269/1	23/03269/2	23/03269/3					Units	Limit of Detection	Method ref
Client Sample No	SMTH5	SMTH6	SMTH7							
Client Sample ID										
Depth to Top										
Depth To Bottom										
Date Sampled	31-Mar-23	31-Mar-23	31-Mar-23							
Sample Type	Soil	Soil	Soil							
Sample Matrix Code	4AB	4AB	4A							
PAH-16MS										
Acenaphthene _A ^{M#}	76.9	55.9	0.56					mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	<1.00	<1.00	<0.10					mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	62.8	45.3	0.61					mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	84.9	57.9	0.79					mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	84.1	53.8	0.80					mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	98.5	63.4	0.82					mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	52	32.2	0.59					mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	34.3	25.4	<0.70					mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	98.5	65	0.87					mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	11.1	7.68	<0.40					mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	238	160	1.83					mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	50.9	37.1	0.45					mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	57.8	36.5	0.59					mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	99.5	64.3	0.64					mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	279	199	2.67					mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	187	124	1.57					mg/kg	0.07	A-T-019s
Total PAH-16MS _A ^{M#}	1520	1030	12.8					mg/kg	0.01	A-T-019s
TPH Total with ID + GC Trace										
TPH total (>C6-C40) _A ^{M#}	6460	14200	1930					mg/kg	10	A-T-007s
TPH FID Chromatogram _A	Appended	Appended	Appended							A-T-007s
TPH ID Interpretation _A	C10-C44 with some PAHs and other unknown hydrocarbons	C10-C44 with some PAHs and other unknown hydrocarbons	C12-C44 hydrocarbons with unknown profile							A-T-007s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.

The results reported herein relate only to the material supplied to the laboratory.

The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

Key:

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NDP indicates No Determination Possible.

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Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Subscript ""^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.

EPH CWG results have humics mathematically subtracted through instrument calculation

TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these

humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: P Casey & Co Ltd, Rydings Road, Wardle, Rochdale, OL12 9PS

Project No: 23/03269

Project: Cavendish Street

Date Received: 05/04/2023 (am)

Clients Project No:

Cool Box Temperatures (°C): 11.4

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	23/03269/1	23/03269/2	23/03269/3
Client Sample No	SMTH5	SMTH6	SMTH7
Client Sample ID/Depth			
Date Sampled	31/03/23	31/03/23	31/03/23
A-T-007s	12/04/2023	12/04/2023	12/04/2023
A-T-019s	12/04/2023	12/04/2023	11/04/2023
A-T-024s	11/04/2023	11/04/2023	11/04/2023
A-T-031s	11/04/2023	11/04/2023	11/04/2023
A-T-040s	07/04/2023	07/04/2023	07/04/2023
A-T-044	11/04/2023	11/04/2023	11/04/2023
Assessment	18/04/2023	18/04/2023	18/04/2023

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 23/03362
Issue Number: 1

Date: 18 April, 2023

Client: P Casey & Co Ltd
Rydings Road
Wardle
Rochdale
OL12 9PS

Project Manager: (always use) Enviro Monitoring/Richard Charleswort
Project Name: Hazwaste Testing
Project Ref: Not specified
Order No: CO005812
Date Samples Received: 06/04/23
Date Instructions Received: 06/04/23
Date Analysis Completed: 18/04/23

Approved by:



Richard Wong
Client Manager

Envirolab Job Number: 23/03362

Client Project Name: Hazwaste Testing

Client Project Ref: Not specified

Lab Sample ID	23/03362/1	23/03362/2	23/03362/3	23/03362/4				Units	Limit of Detection	Method ref
Client Sample No	SMTH8	SMTH9	SMTH10	SMTH11						
Client Sample ID	Lower Ormand St. attenu tank	Lower Ormand St. attenu tank	Cavendish St. attenu tank	Cavendish St. attenu tank						
Depth to Top	0.50	0.50	0.50	0.50						
Depth To Bottom										
Date Sampled	05-Apr-23	05-Apr-23	05-Apr-23	05-Apr-23						
Sample Type	Soil	Soil	Soil	Soil						
Sample Matrix Code	4AE	4A	4AE	4AE						
Hazardous Waste Assessment	Appended	Appended	Appended	Appended						Assessment
% Moisture at <40C _A	17.3	16.0	17.2	14.6				% w/w	0.1	A-T-044
% Stones >10mm _A	<0.1	<0.1	<0.1	12.1				% w/w	0.1	A-T-044
pH _D ^{M#}	7.27	7.53	7.77	7.96				pH	0.01	A-T-031s
Arsenic _D ^{M#}	1	2	9	13				mg/kg	1	A-T-024s
Cadmium _D ^{M#}	<0.5	0.6	1.2	1.8				mg/kg	0.5	A-T-024s
Copper _D ^{M#}	15	15	62	88				mg/kg	1	A-T-024s
Chromium _D ^{M#}	14	12	17	17				mg/kg	1	A-T-024s
Chromium (hexavalent) _D	<1	<1	<1	<1				mg/kg	1	A-T-040s
Lead _D ^{M#}	51	33	177	217				mg/kg	1	A-T-024s
Mercury _D	<0.17	<0.17	2.17	<0.17				mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	11	10	17	20				mg/kg	1	A-T-024s
Selenium _D ^{M#}	<1	<1	<1	<1				mg/kg	1	A-T-024s
Zinc _D ^{M#}	30	25	51	69				mg/kg	5	A-T-024s

Envirolab Job Number: 23/03362

Client Project Name: Hazwaste Testing

Client Project Ref: Not specified

Lab Sample ID	23/03362/1	23/03362/2	23/03362/3	23/03362/4				Units	Limit of Detection	Method ref
Client Sample No	SMTH8	SMTH9	SMTH10	SMTH11						
Client Sample ID	Lower Ormand St. attenu tank	Lower Ormand St. attenu tank	Cavendish St. attenu tank	Cavendish St. attenu tank						
Depth to Top	0.50	0.50	0.50	0.50						
Depth To Bottom										
Date Sampled	05-Apr-23	05-Apr-23	05-Apr-23	05-Apr-23						
Sample Type	Soil	Soil	Soil	Soil						
Sample Matrix Code	4AE	4A	4AE	4AE						
PAH-16MS										
Acenaphthene _A ^{M#}	<0.01	<0.01	0.07	1.19				mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	<0.01	<0.01	0.02	0.25				mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	<0.02	<0.02	0.16	3.02				mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	0.05	<0.04	0.64	5.97				mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	0.06	<0.04	0.69	5.43				mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	0.07	<0.05	0.72	5.08				mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	<0.05	<0.05	0.41	2.53				mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	<0.07	<0.07	0.29	1.90				mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	<0.06	<0.06	0.77	5.95				mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	<0.04	<0.04	0.10	0.56				mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	<0.08	<0.08	1.23	14.8				mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	<0.01	<0.01	0.05	1.18				mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	0.04	<0.03	0.45	2.92				mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	<0.03	<0.03	<0.03	1.63				mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	<0.03	<0.03	0.79	11.8				mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	<0.07	<0.07	1.32	13.6				mg/kg	0.07	A-T-019s
Total PAH-16MS _A ^{M#}	0.22	<0.08	7.71	77.8				mg/kg	0.01	A-T-019s
TPH Total with ID + GC Trace										
TPH total (>C6-C40) _A ^{M#}	28	<10	82	564				mg/kg	10	A-T-007s
TPH FID Chromatogram _A	Appended	Appended	Appended	Appended						A-T-007s
TPH ID Interpretation _A	C15-C44 with some PAHs and other unknown hydrocarbons	C16-C44 hydrocarbons with unknown profile	C12-C44 with some PAHs and other unknown hydrocarbons	C10-C44 with some PAHs and other unknown hydrocarbons						A-T-007s

REPORT NOTES

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The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

Key:

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TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

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humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: P Casey & Co Ltd, Rydings Road, Wardle, Rochdale, OL12 9PS

Project No: 23/03362

Project: Hazwaste Testing

Date Received: 06/04/2023 (am)

Clients Project No:

Cool Box Temperatures (°C): 12.2

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	23/03362/1	23/03362/2	23/03362/3	23/03362/4
Client Sample No	SMTH8	SMTH9	SMTH10	SMTH11
Client Sample ID/Depth	Lower Ormand St. attenu tank 0.50m	Lower Ormand St. attenu tank 0.50m	Cavendish St. attenu tank 0.50m	Cavendish St. attenu tank 0.50m
Date Sampled	05/04/23	05/04/23	05/04/23	05/04/23
A-T-007s	12/04/2023	12/04/2023	12/04/2023	12/04/2023
A-T-019s	12/04/2023	12/04/2023	12/04/2023	12/04/2023
A-T-024s	12/04/2023	12/04/2023	12/04/2023	12/04/2023
A-T-031s	12/04/2023	12/04/2023	12/04/2023	12/04/2023
A-T-040s	12/04/2023	12/04/2023	12/04/2023	12/04/2023
A-T-044	12/04/2023	12/04/2023	12/04/2023	12/04/2023
Assessment	18/04/2023	18/04/2023	18/04/2023	18/04/2023

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 23/03809
Issue Number: 1

Date: 02 May, 2023

Client: P Casey & Co Ltd
Rydings Road
Wardle
Rochdale
OL12 9PS

Project Manager: Sam McCloskey
Project Name: All Saints Sample
Project Ref: Not specified
Order No: CO005812
Date Samples Received: 21/04/23
Date Instructions Received: 21/04/23
Date Analysis Completed: 02/05/23

Approved by:



Gemma Berrisford
Client Manager

Envirolab Job Number: 23/03809

Client Project Name: All Saints Sample

Client Project Ref: Not specified

Lab Sample ID	23/03809/1	23/03809/2						Units	Limit of Detection	Method ref
Client Sample No	SMTH12	P5								
Client Sample ID	Cavendish St/Lower Ormand St	Park Entrance of Cavendish St								
Depth to Top										
Depth To Bottom										
Date Sampled	21-Apr-23	21-Apr-23								
Sample Type	Soil	Soil								
Sample Matrix Code	1AB	1AB								
Hazardous Waste Assessment	Appended	Appended								Assessment
% Moisture at <40C _A	9.1	6.7						% w/w	0.1	A-T-044
% Stones >10mm _A	28.2	41.8						% w/w	0.1	A-T-044
pH _D ^{M#}	8.22	8.57						pH	0.01	A-T-031s
Arsenic _D ^{M#}	5	3						mg/kg	1	A-T-024s
Cadmium _D ^{M#}	0.8	0.6						mg/kg	0.5	A-T-024s
Copper _D ^{M#}	62	13						mg/kg	1	A-T-024s
Chromium _D ^{M#}	15	7						mg/kg	1	A-T-024s
Chromium (hexavalent) _D	<1	<1						mg/kg	1	A-T-040s
Lead _D ^{M#}	65	80						mg/kg	1	A-T-024s
Mercury _D	0.78	1.13						mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	14	9						mg/kg	1	A-T-024s
Selenium _D ^{M#}	<1	1						mg/kg	1	A-T-024s
Zinc _D ^{M#}	70	27						mg/kg	5	A-T-024s

Envirolab Job Number: 23/03809

Client Project Name: All Saints Sample

Client Project Ref: Not specified

Lab Sample ID	23/03809/1	23/03809/2								
Client Sample No	SMTH12	P5								
Client Sample ID	Cavendish St/Lower Ormand St	Park Entrance of Cavendish St								
Depth to Top										
Depth To Bottom										
Date Sampled	21-Apr-23	21-Apr-23								
Sample Type	Soil	Soil								
Sample Matrix Code	1AB	1AB								
PAH-16MS										
Acenaphthene _A ^{M#}	86.2	0.59						mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	0.83	1.47						mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	62	3.72						mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	89.5	8.74						mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	49.6	6.93						mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	54.8	6.83						mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	25.8	3.32						mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	26.9	2.90						mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	136	6.89						mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	7.10	0.82						mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	154	18.4						mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	52.5	1.44						mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	31.5	4.12						mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	85.9	0.44						mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	264	13.7						mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	142	16.6						mg/kg	0.07	A-T-019s
Total PAH-16MS _A ^{M#}	1270	96.9						mg/kg	0.01	A-T-019s
TPH Total with ID + GC Trace										
TPH total (>C6-C40) _A ^{M#}	19400	1020						mg/kg	10	A-T-007s
TPH FID Chromatogram _A	Appended	Appended								A-T-007s
TPH ID Interpretation _A	C8-C44 with some PAHs and other unknown hydrocarbons	C8-C44 with some PAHs and other unknown hydrocarbons								A-T-007s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.

The results reported herein relate only to the material supplied to the laboratory.

The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Subscript "A" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.

EPH CWG results have humics mathematically subtracted through instrument calculation

TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these

humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: P Casey & Co Ltd, Rydings Road, Wardle, Rochdale, OL12 9PS

Project No: 23/03809

Project: All Saints Sample

Date Received: 21/04/2023 (am)

Clients Project No:

Cool Box Temperatures (°C): 13.7

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

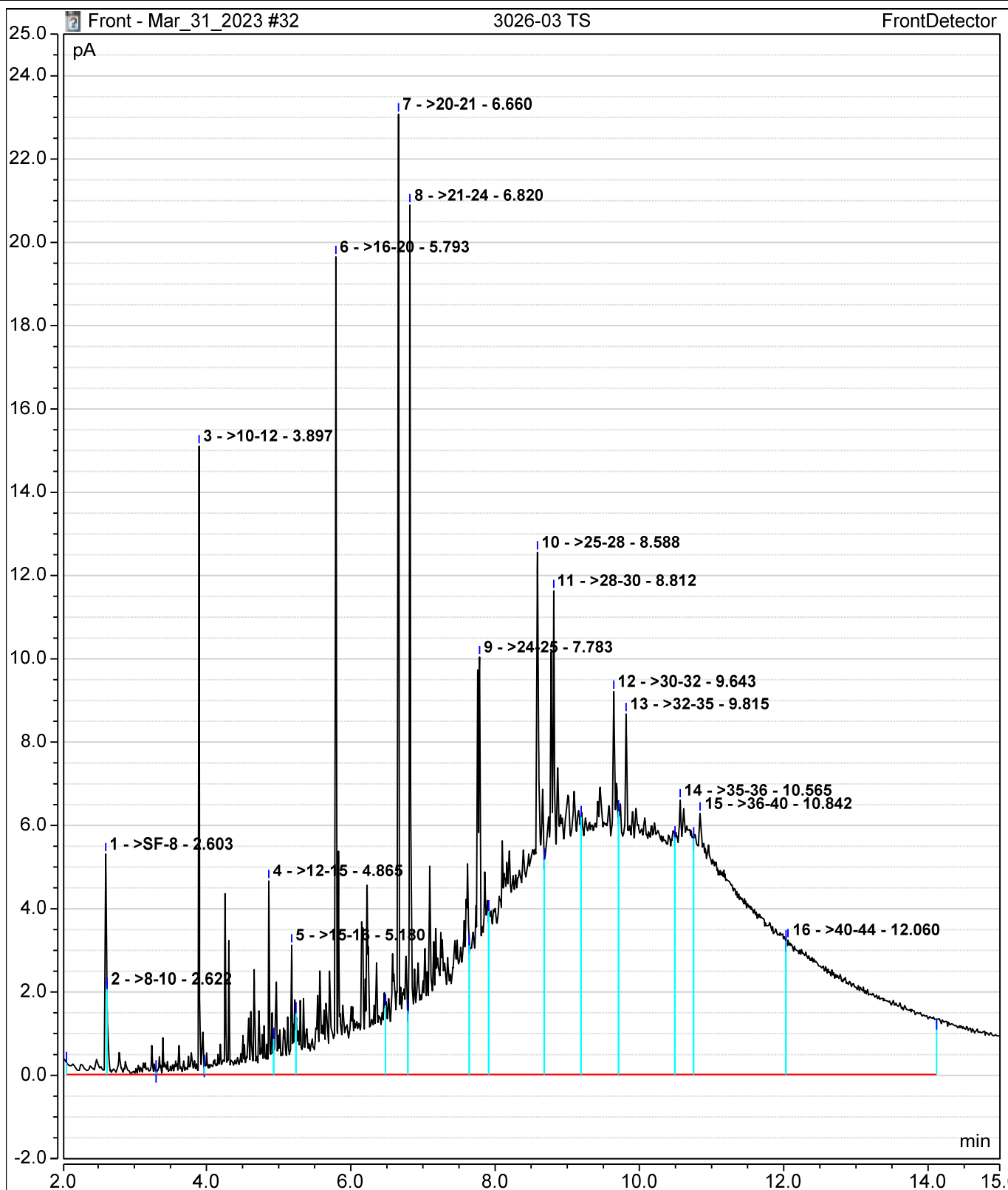
Envirolab Analysis Dates

Lab Sample ID	23/03809/1	23/03809/2
Client Sample No	SMTH12	P5
Client Sample ID/Depth	Cavendish St/Lower Ormand St	Park Entrance of Cavendish St
Date Sampled	21/04/23	21/04/23
A-T-007s	25/04/2023	25/04/2023
A-T-019s	25/04/2023	25/04/2023
A-T-024s	26/04/2023	26/04/2023
A-T-031s	26/04/2023	26/04/2023
A-T-040s	26/04/2023	26/04/2023
A-T-044	26/04/2023	26/04/2023
Assessment	02/05/2023	02/05/2023

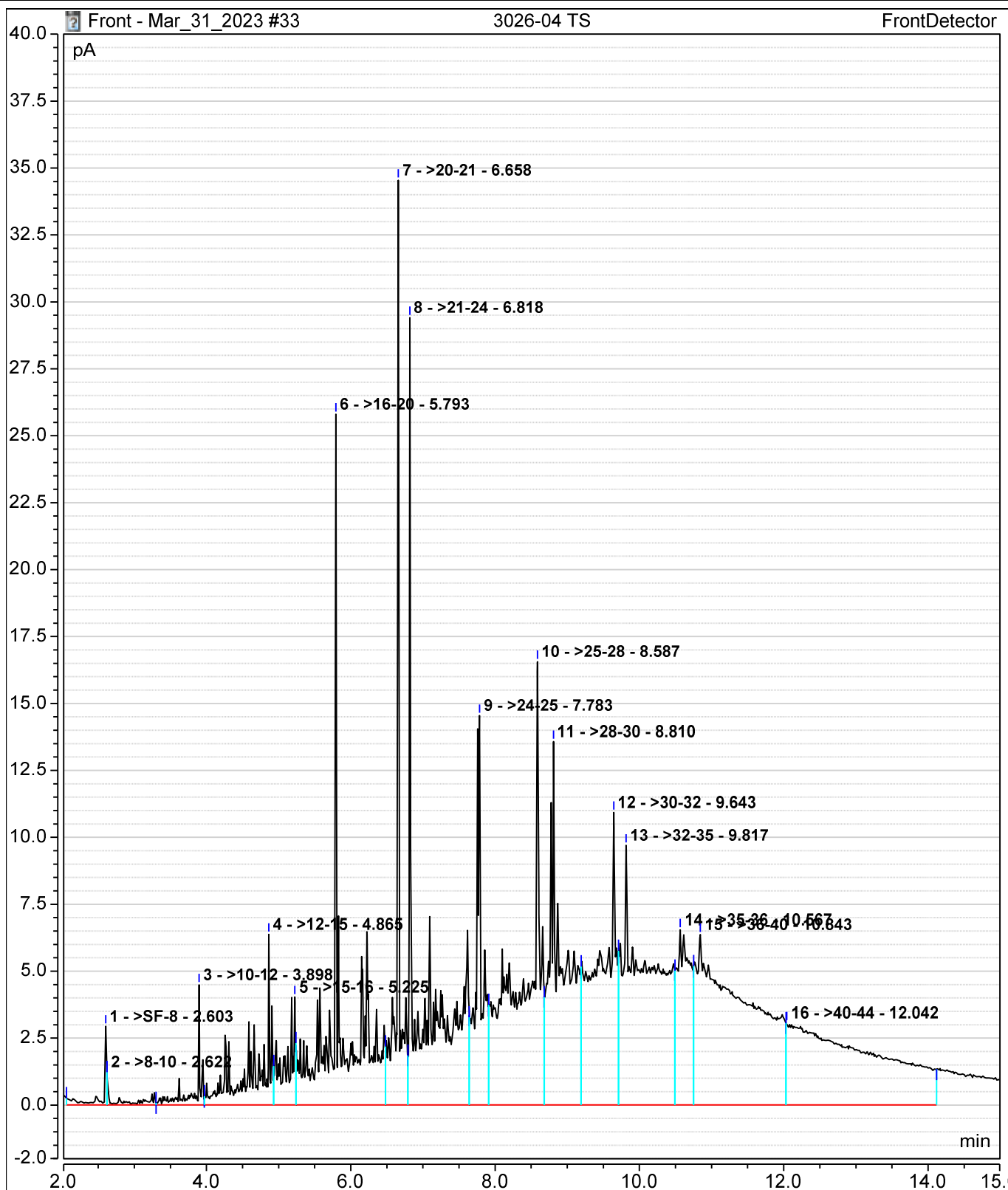
The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

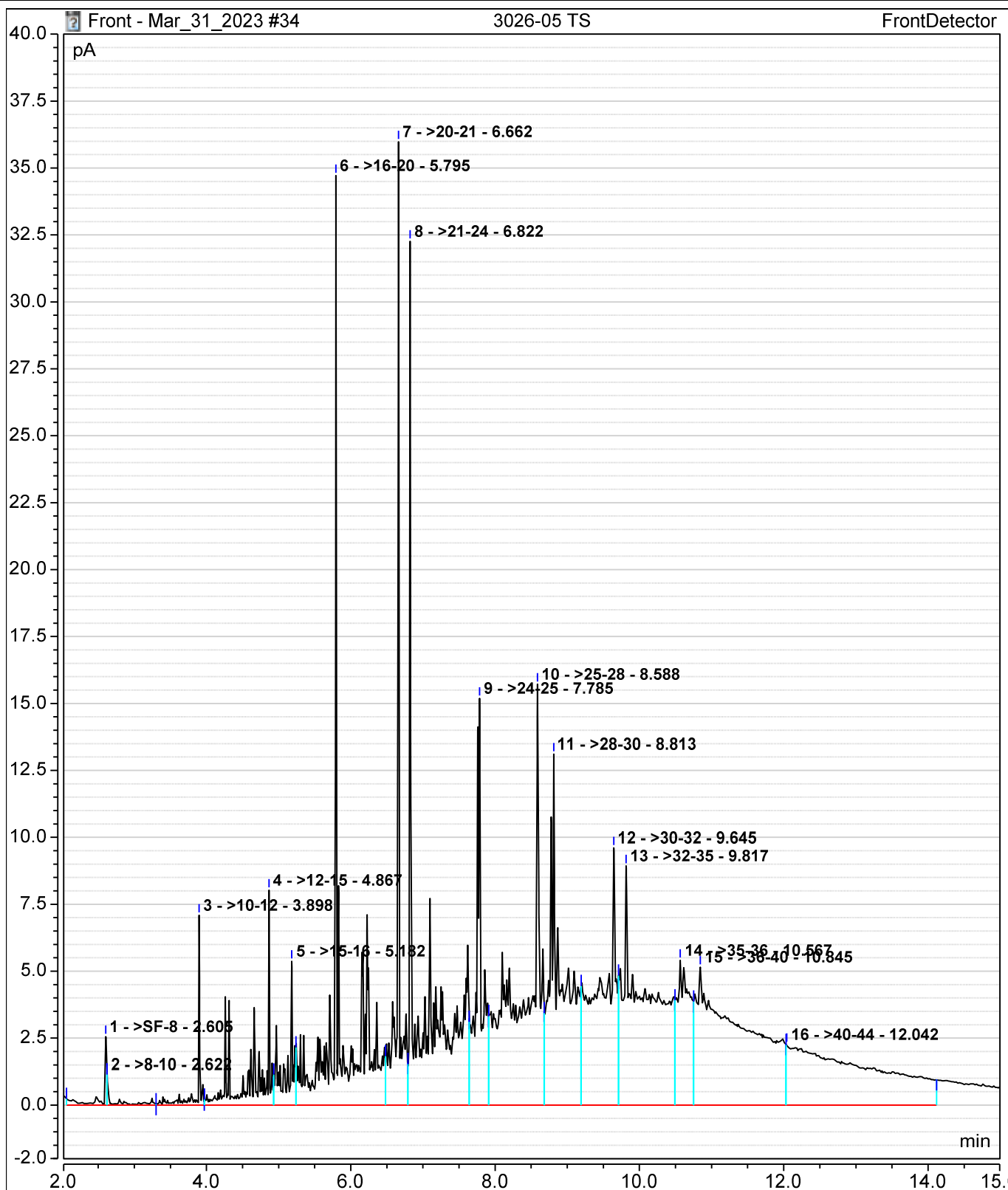
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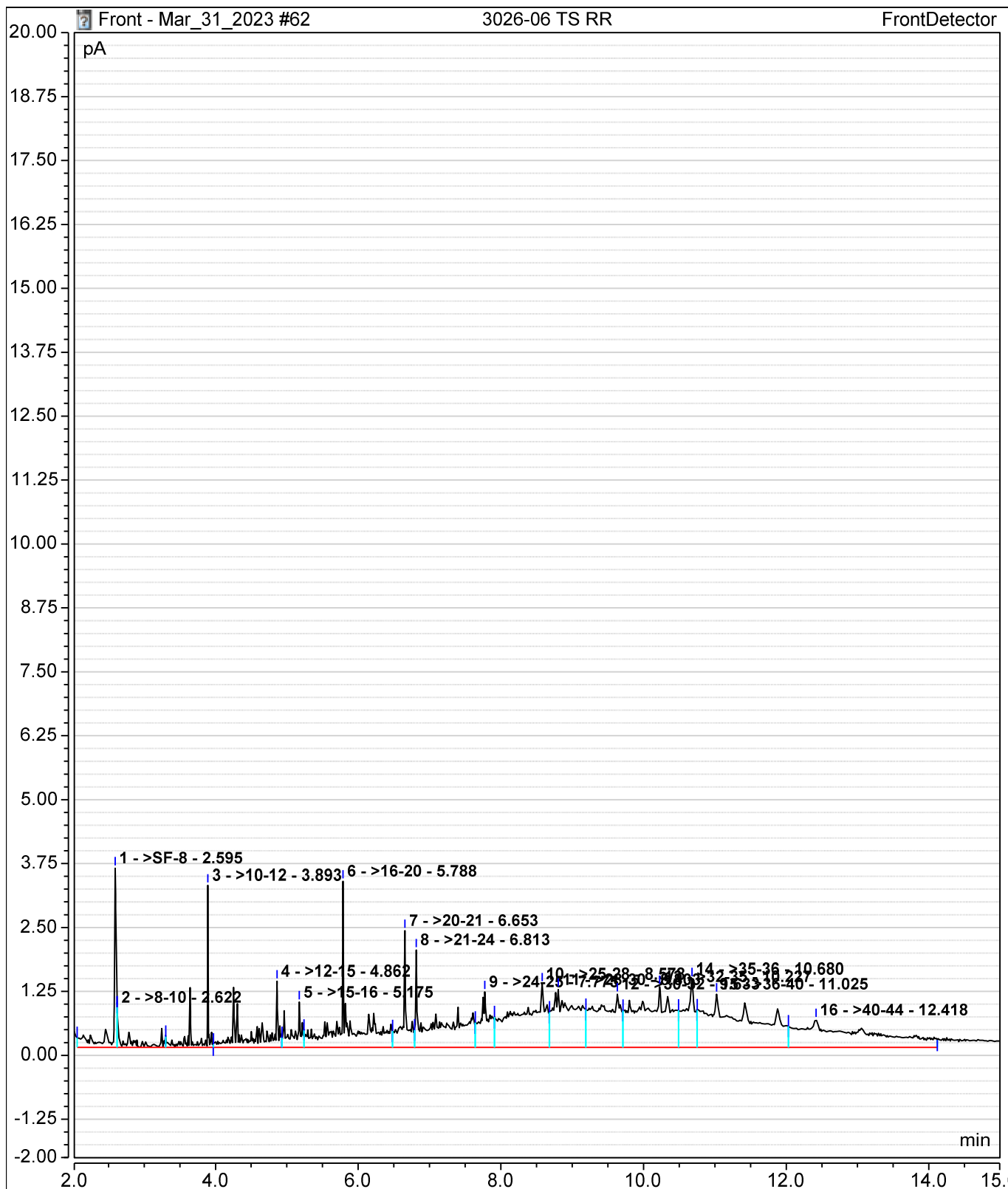
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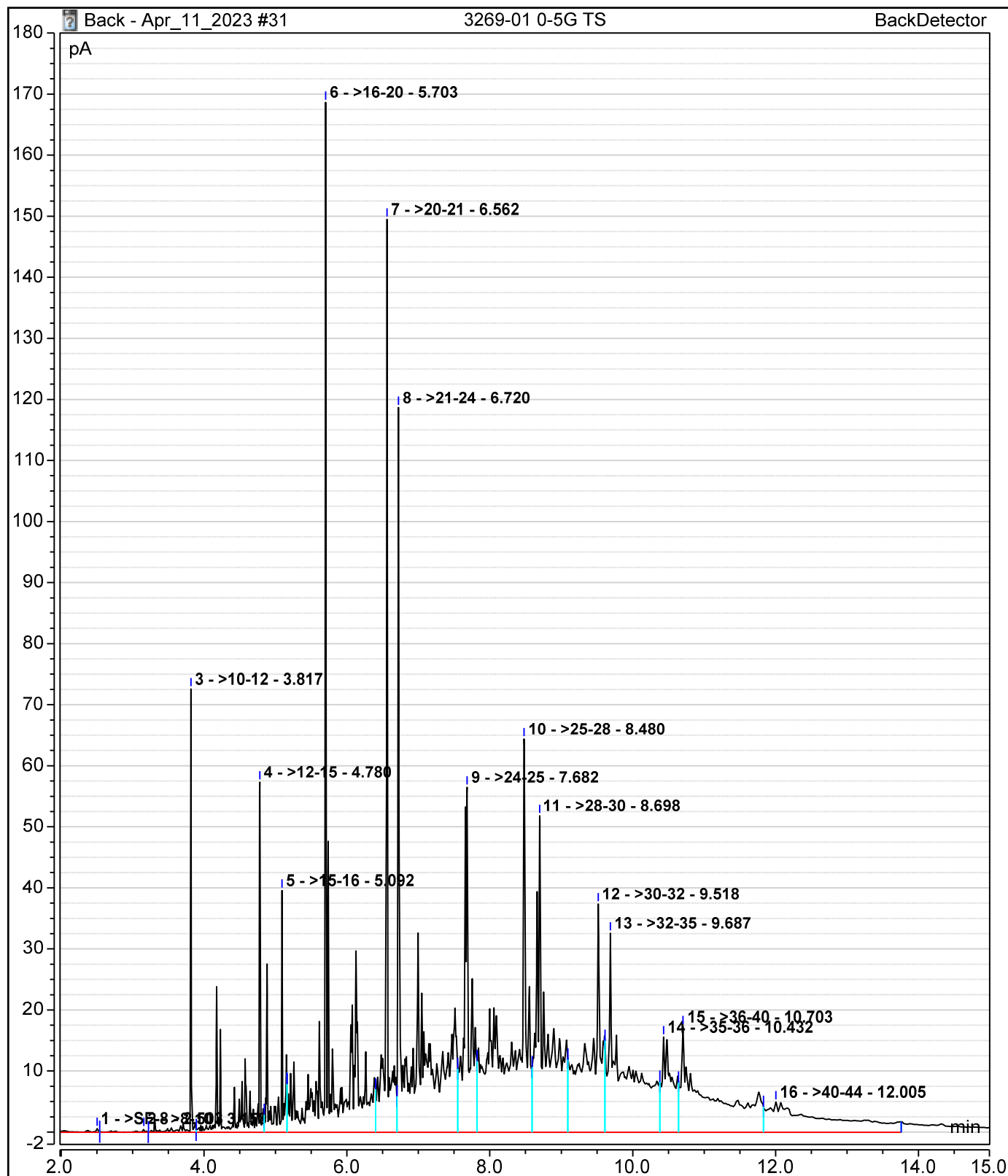
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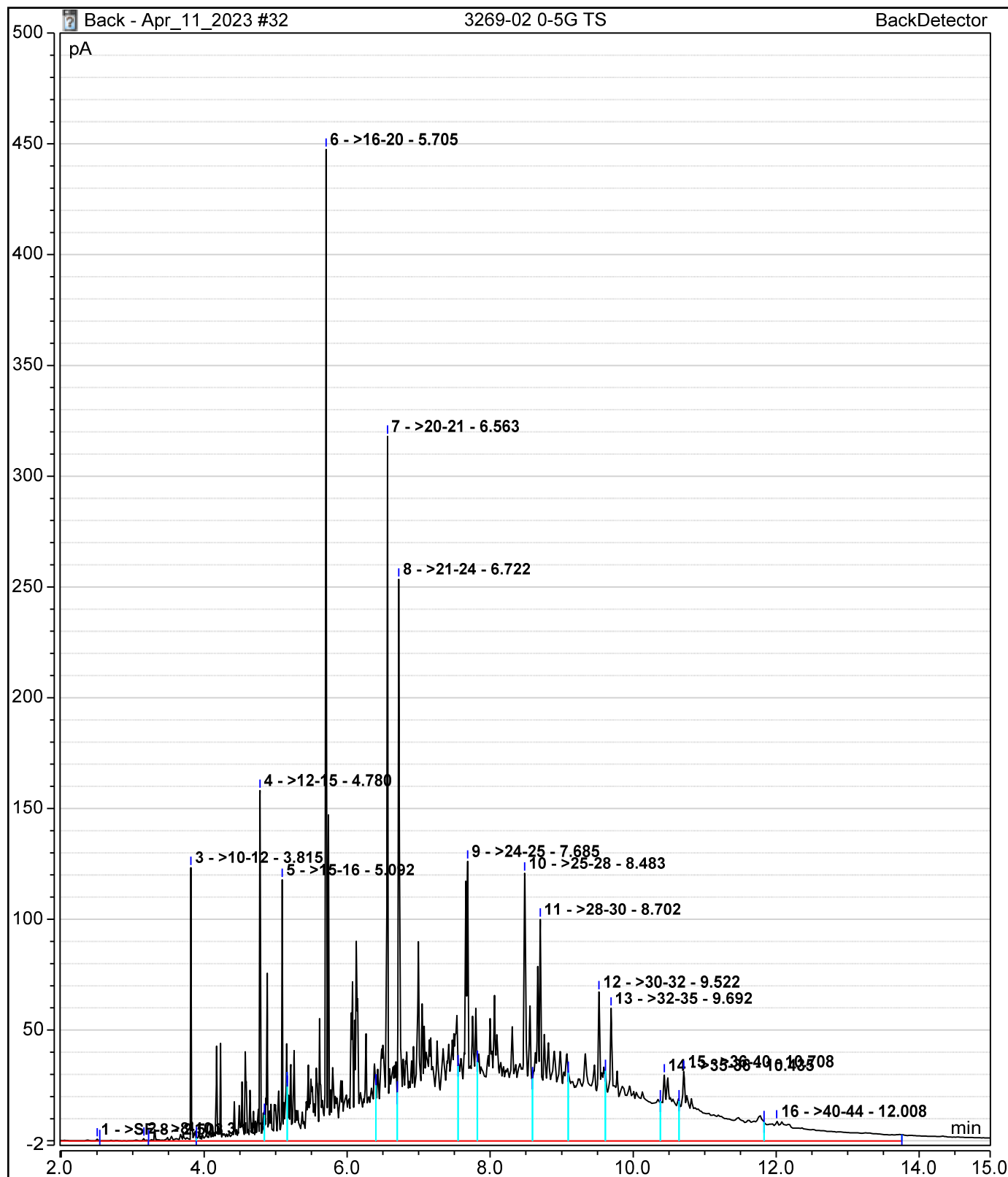
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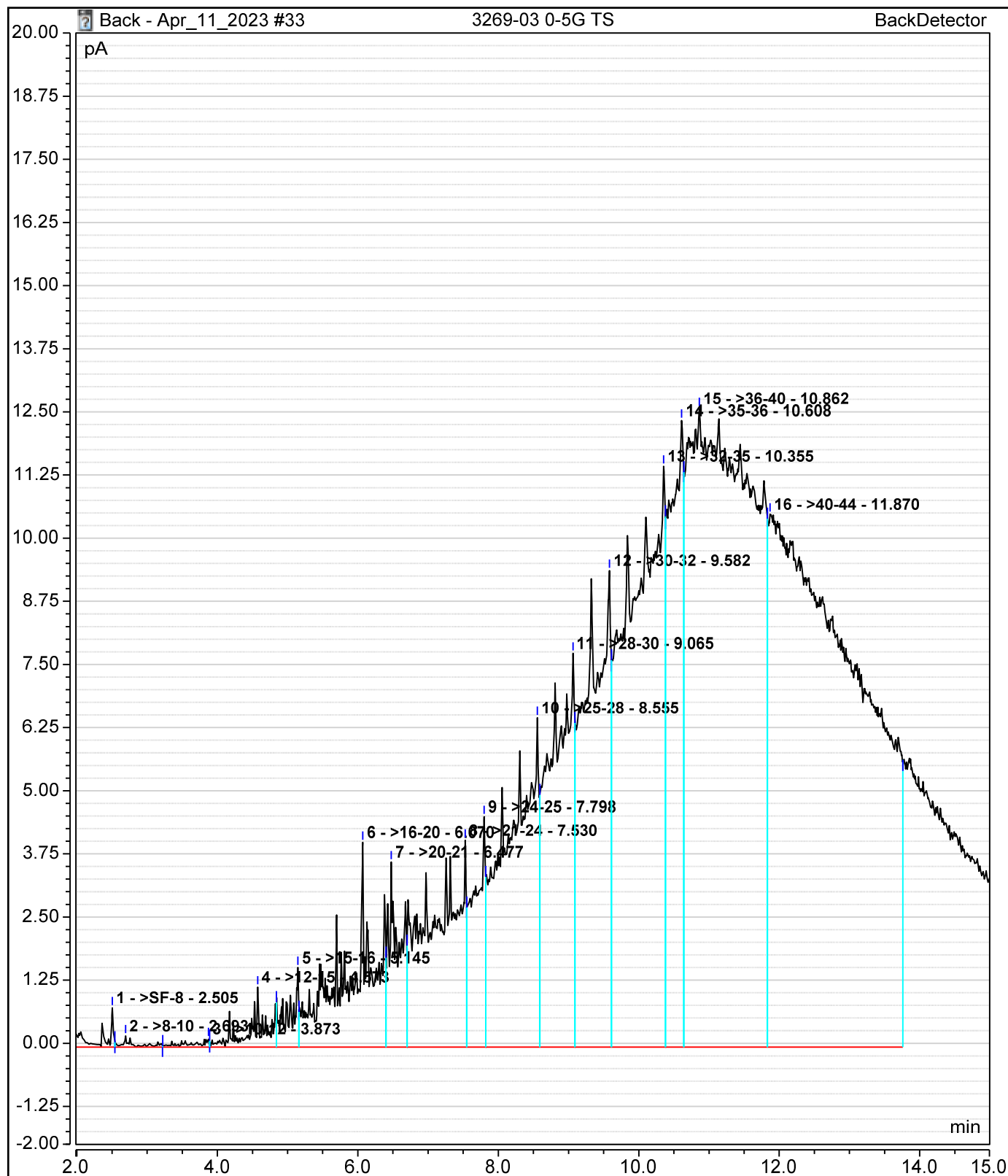
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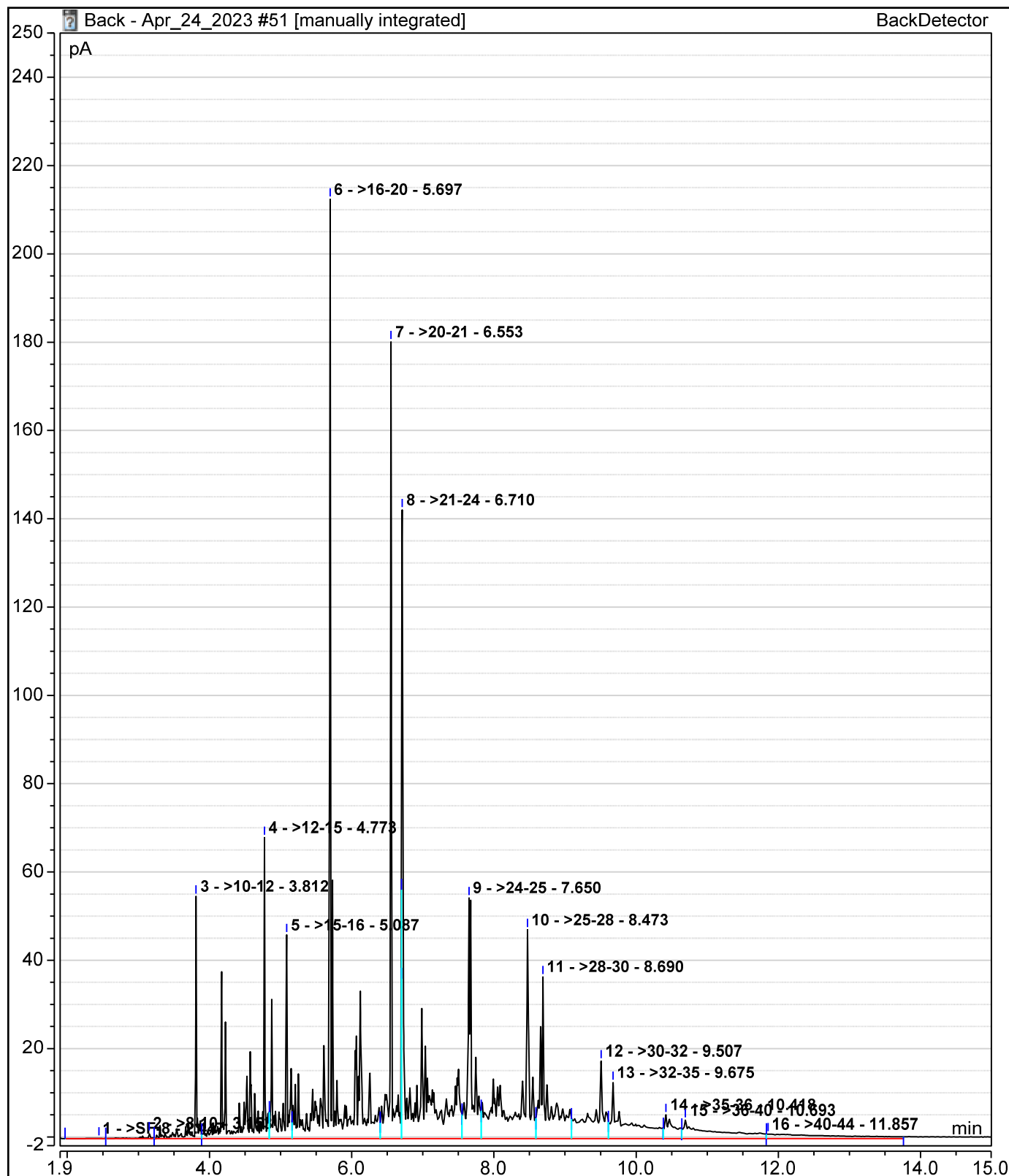
Chromatogram



Chromatogram



Chromatogram





Rogers Geotechnical Services: Soil Screening Values Comparison Sheet



Rogers Geotechnical Services Ltd: Soil Screening Value (SSV) Comparison Sheet															
Job Number	C3575/24/E/6619			<div>A = WS Atkins PLC, Atrisk Soil Screening Values. A+ = Values updated June 2017. A* = Atrisk's SSV is lower than I2's detectable limit for this compound. B = health criterion values, which are available from toxicological reviews published in the C4SL project methodology report. C = Category 4 Screening Levels (C4SLs) based on 6% soil organic matter. D = Value provided is based on Methyl Mercury. Should elemental mercury be observed or a source be known then a limit of 102 should be used.</div> <div><div>Exceeds SSV</div><div>Exceeds 2017, Below 2015</div><div>Below limit of detection (LOD)</div></div> <div></div>											
Job Name	Manchester Metropolitan University														
Date	01/05/2024														
Client	Casey Group			Sample Location	SMTH1	SMTH2	SMTH3	SMTH4	SMTH5	SMTH6	SMTH7				
				Depth Top	0.5										
				Depth Base											
Determinand	Units	Ref	LOD	Residential Without Plant Uptake 1%											
				Atrisk 2015 (No Free Product)	Atrisk 2017										
Cadmium	mg/kg	C	0.2		149	0.60	0.70	0.70	0.70	0.80	0.70	<0.5			
Chromium (Hexavalent)	mg/kg	B/C	1.8	20.5	3.62	<1	<1	<1	<1	<1	<1	<1			
Copper	mg/kg	A+	1.0		9060	16.00	38.00	28.00	9.00	40.00	42.00	6.00			
Mercury	mg/kg	A/D	0.3		10	0.33	<0.17	<0.17	<0.17	0.54	1.01	2.50			
Nickel	mg/kg	A+	1.0		188	11.00	17.00	14.00	11.00	17.00	15.00	5.00			
Lead	mg/kg	C	1.0		313	20.00	18.00	93.00	13.00	47.00	98.00	8.00			
Zinc	mg/kg	A+	1.0		47000	25.00	26.00	23.00	28.00	61.00	58.00	17.00			
Arsenic	mg/kg	C	1.0		39.9	6.00	6.00	8.00	4.00	8.00	6.00	1.00			
Selenium	mg/kg	A	1.0		595	<1	<1	<1	<1	<1	<1	2.00			
Naphthalene	mg/kg	A+	0.05		0.851	0.83	0.07	0.28	0.26	99.50	643.00	0.64			
Acenaphthylene	mg/kg		0.05			0.01	<0.01	<0.01	<0.01	<1	<1	<0.1			
Acenaphthene	mg/kg	A+	0.05	2680	156	0.23	0.10	0.20	0.11	76.90	55.90	0.56			
Fluorene	mg/kg	A+	0.05	3260	124	0.23	0.10	0.20	0.06	50.90	37.10	0.45			
Phenanthrene	mg/kg		0.05			0.14	0.05	0.14	0.35	279.00	199.00	2.67			
Anthracene	mg/kg	A+	0.05	34300	3.48	0.21	0.10	0.20	0.07	62.80	45.30	0.61			
Fluoranthene	mg/kg	A+	0.05		4880	1.05	0.69	1.11	0.22	238.00	160.00	1.83			
Pyrene	mg/kg	A+	0.05		3650	0.95	0.60	1.07	0.19	187.00	124.00	1.57			
Benzo[a]anthracene	mg/kg	A	0.05	5.42	1.71	0.43	0.31	0.52	0.07	84.90	57.90	0.79			
Chrysene	mg/kg	A	0.05	852	0.44	0.51	0.36	0.63	0.09	98.50	65.00	0.87			
Benzo[b]fluoranthene	mg/kg	A	0.05	9.68	1.22	0.51	0.39	0.63	0.08	98.50	63.40	0.82			
Benzo[k]fluoranthene	mg/kg	A	0.05	99.7	0.686	0.20	0.14	0.24	<0.07	34.30	25.40	<0.70			
Benzo[a]pyrene	mg/kg	B/C	0.05	5.33	2.17	0.47	0.32	0.55	0.07	84.10	53.80	0.80			
Indeno(1,2,3-c,d)Pyrene	mg/kg	A*	0.05	9.53	0.0614	0.28	0.21	0.34	0.04	57.80	36.50	0.59			
Dibenz(a,h)Anthracene	mg/kg	A	0.05	0.949	0.00393	0.05	<0.04	0.07	<0.04	11.10	7.68	<0.40			
Benzo[g,h,i]perylene	mg/kg	A	0.05	102	0.0187	0.28	0.20	0.36	<0.05	52.00	32.20	0.59			
Total Of 16 PAH's	mg/kg		0.8			7.20	4.03	7.49	1.61	1520.00	1030.00	12.80			
Total Petroleum Hydrocarbons	mg/kg		10.0		1930	195.00	154.00	169.00	43.00	6460.00	14200.00	1930.00			
pH			N/A			11.31	10.90	10.14	11.40	8.90	8.89	9.38			



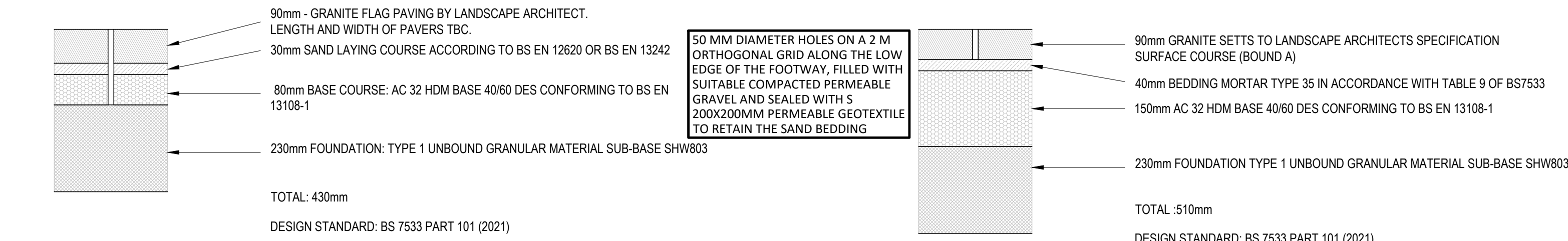
Rogers Geotechnical Services: Soil Screening Values Comparison Sheet



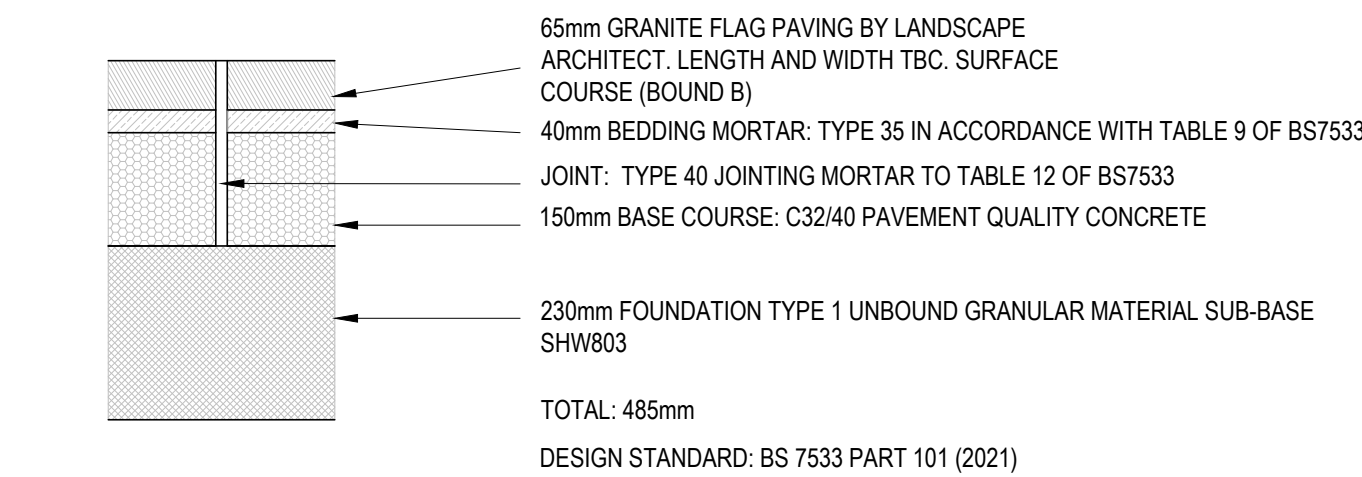
Rogers Geotechnical Services Ltd: Soil Screening Value (SSV) Comparison Sheet															
Job Number	C3575/24/E/6619			<div>A = WS Atkins PLC, Atrisk Soil Screening Values. A+ = Values updated June 2017. A* = Atrisk's SSV is lower than i2's detectable limit for this compound. B = health criterion values, which are available from toxicological reviews published in the C4SL project methodology report. C = Category 4 Screening Levels (C4SLs) based on 6% soil organic matter. D = Value provided is based on Methyl Mercury. Should elemental mercury be observed or a source be known then a limit of 102 should be used.</div> <div>KEY<div><div>Exceeds SSV</div><div>Exceeds 2017, Below 2015</div><div>Below limit of detection (LOD)</div></div><div></div></div>											
Job Name	Manchester Metropolitan University														
Date	01/05/2024														
Client	Casey Group			Sample Location	SMTH8	SMTH9	SMTH10	SMTH11	SMTH12						
				Depth Top	0.5	0.5	0.5	0.5							
				Depth Base											
Determinand	Units	Ref	LOD	Residential Without Plant Uptake 1%											
				Atrisk 2015 (No Free Product)	Atrisk 2017										
Cadmium	mg/kg	C	0.5		149	<0.5	0.60	1.20	1.80	0.80					
Chromium (Hexavalent)	mg/kg	B/C	1	20.5	3.62	<1	<1	<1	<1	<1					
Copper	mg/kg	A+	1.0		9060	15.00	15.00	62.00	88.00	62.00					
Mercury	mg/kg	A/D	0.17		10	<0.17	<0.17	2.17	<0.17	0.78					
Nickel	mg/kg	A+	1.0		188	11.00	10.00	17.00	20.00	14.00					
Lead	mg/kg	C	1.0		313	51.00	33.00	177.00	217.00	65.00					
Zinc	mg/kg	A+	1.0		47000	30.00	25.00	51.00	69.00	70.00					
Arsenic	mg/kg	C	1.0		39.9	1.00	2.00	9.00	13.00	5.00					
Selenium	mg/kg	A	1		595	<1	<1	<1	<1	<1					
Naphthalene	mg/kg	A+	0.03	0	0.851	<0.03	<0.03	<0.03	1.63	85.90					
Acenaphthylene	mg/kg		0.01			<0.01	<0.01	0.02	0.25	0.83					
Acenaphthene	mg/kg	A+	0.01	2680	156	<0.01	<0.01	0.07	1.19	0.83					
Fluorene	mg/kg	A+	0.01	3260	124	<0.01	<0.01	0.05	1.18	86.20					
Phenanthrene	mg/kg		0.03			<0.03	<0.03	0.79	11.80	264.00					
Anthracene	mg/kg	A+	0.02	34300	3.48	<0.02	<0.02	0.16	3.02	62.00					
Fluoranthene	mg/kg	A+	0.08		4880	<0.08	<0.08	1.23	14.80	154.00					
Pyrene	mg/kg	A+	0.07		3650	<0.07	<0.07	1.32	13.60	142.00					
Benzo[a]anthracene	mg/kg	A	0.04	5.42	1.71	0.05	<0.04	0.64	5.97	89.50					
Chrysene	mg/kg	A	0.06	852	0.44	<0.06	<0.06	0.77	5.95	136.00					
Benzo[b]fluoranthene	mg/kg	A	0.04	9.68	1.22	0.06	<0.04	0.64	5.97	54.80					
Benzo[k]fluoranthene	mg/kg	A	0.07	99.7	0.686	<0.07	<0.07	0.29	1.90	26.90					
Benzo[a]pyrene	mg/kg	B/C	0.04	5.33	2.17	0.06	<0.04	0.69	5.43	49.60					
Indeno(1,2,3-c,d)Pyrene	mg/kg	A*	0.03	9.53	0.0614	0.04	<0.03	0.45	2.92	31.50					
Dibenz(a,h)Anthracene	mg/kg	A	0.04	0.949	0.00393	<0.04	<0.04	0.10	0.56	7.10					
Benzo[g,h,i]perylene	mg/kg	A	0.05	102	0.0187	<0.05	<0.05	0.41	2.53	25.80					
Total Of 16 PAH's	mg/kg		0.01			0.22	<0.08	7.71	77.80	1270.00					
Total Petroleum Hydrocarbons	mg/kg		10.0		1930	0.22	<0.08	7.71	77.80	19400.00					
pH			N/A			7.27	7.53	7.77	7.96	8.22					

Appendix 3

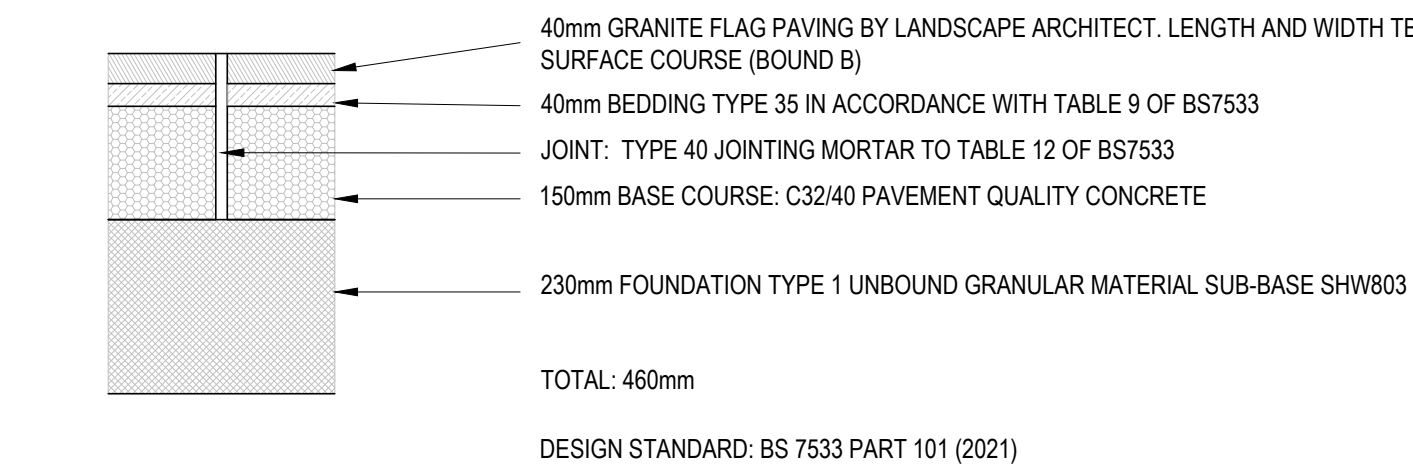
Footpath Technical Drawings



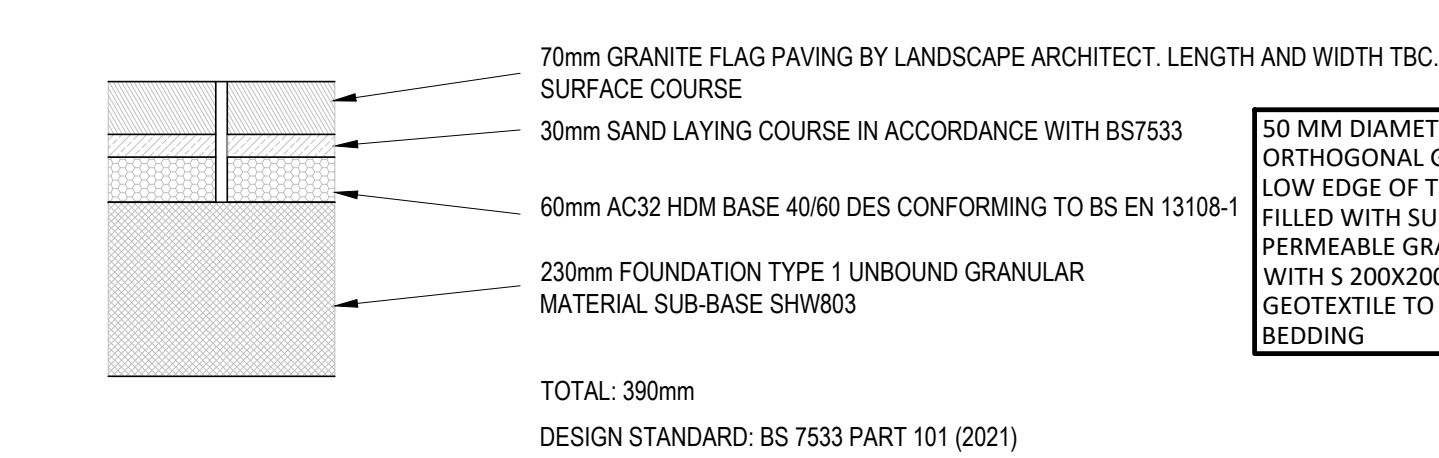
PAVEMENT P1a (VEHICLE DESIGN CATEGORY 5). NATURAL STONE PAVING
(Scale: 1:10)



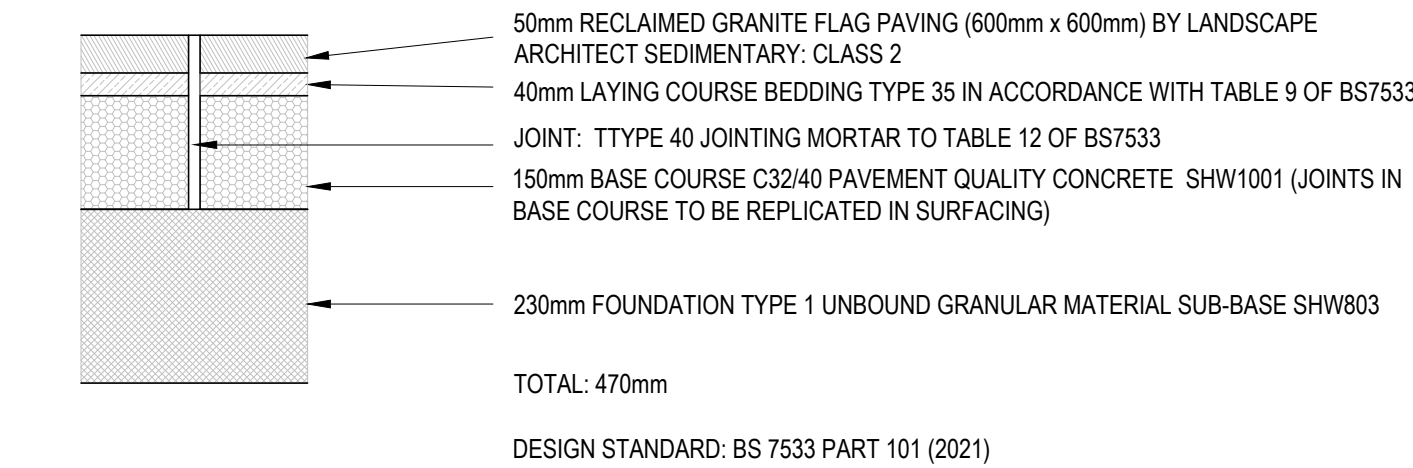
PAVEMENT P1b (VEHICLE DESIGN CATEGORY 6)
NATURAL STONE PAVING
(Scale: 1:10)



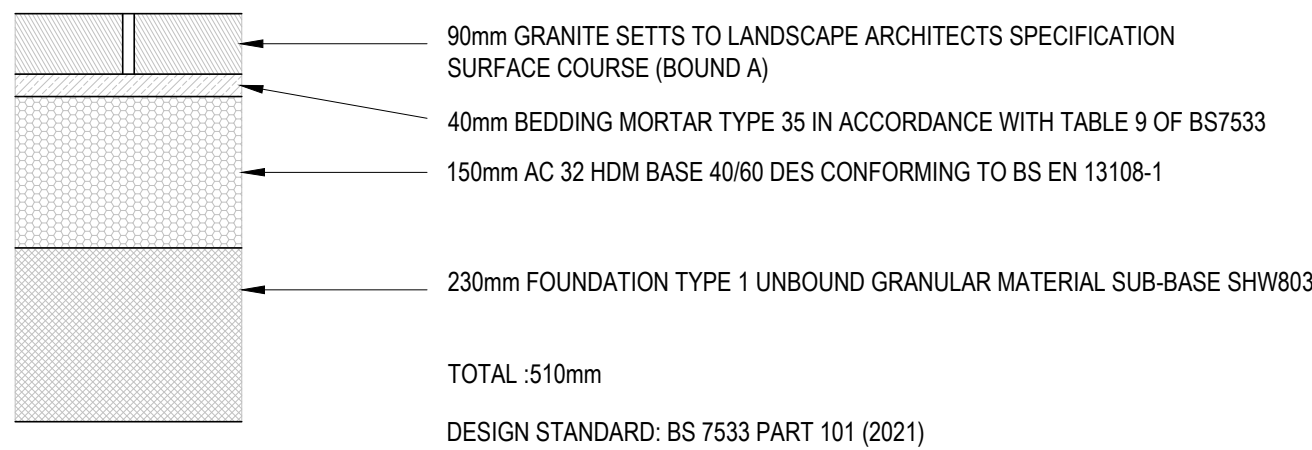
PAVEMENT P1c (VEHICLE DESIGN CATEGORY 4)
NATURAL STONE PAVING
(Scale: 1:10)



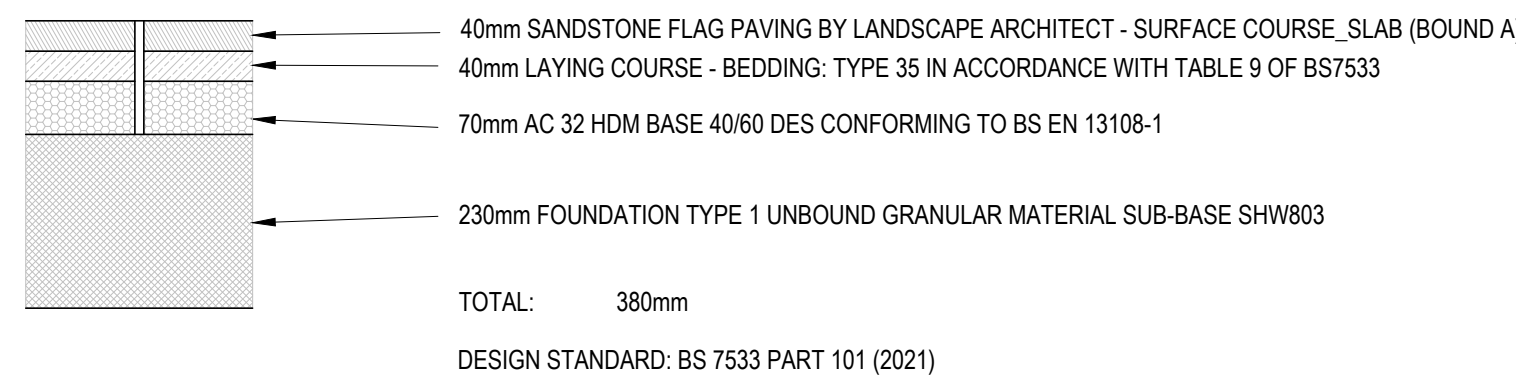
PAVEMENT P1d (VEHICLE DESIGN CATEGORY 4, UNBOUND) NATURAL STONE PAVING
(Scale: 1:10)



PAVEMENT P9a (VEHICLE DESIGN CATEGORY 5)
NATURAL STONE PAVING - RECLAIMED, UNADOPTED PARK AREAS
(Scale: 1:10)



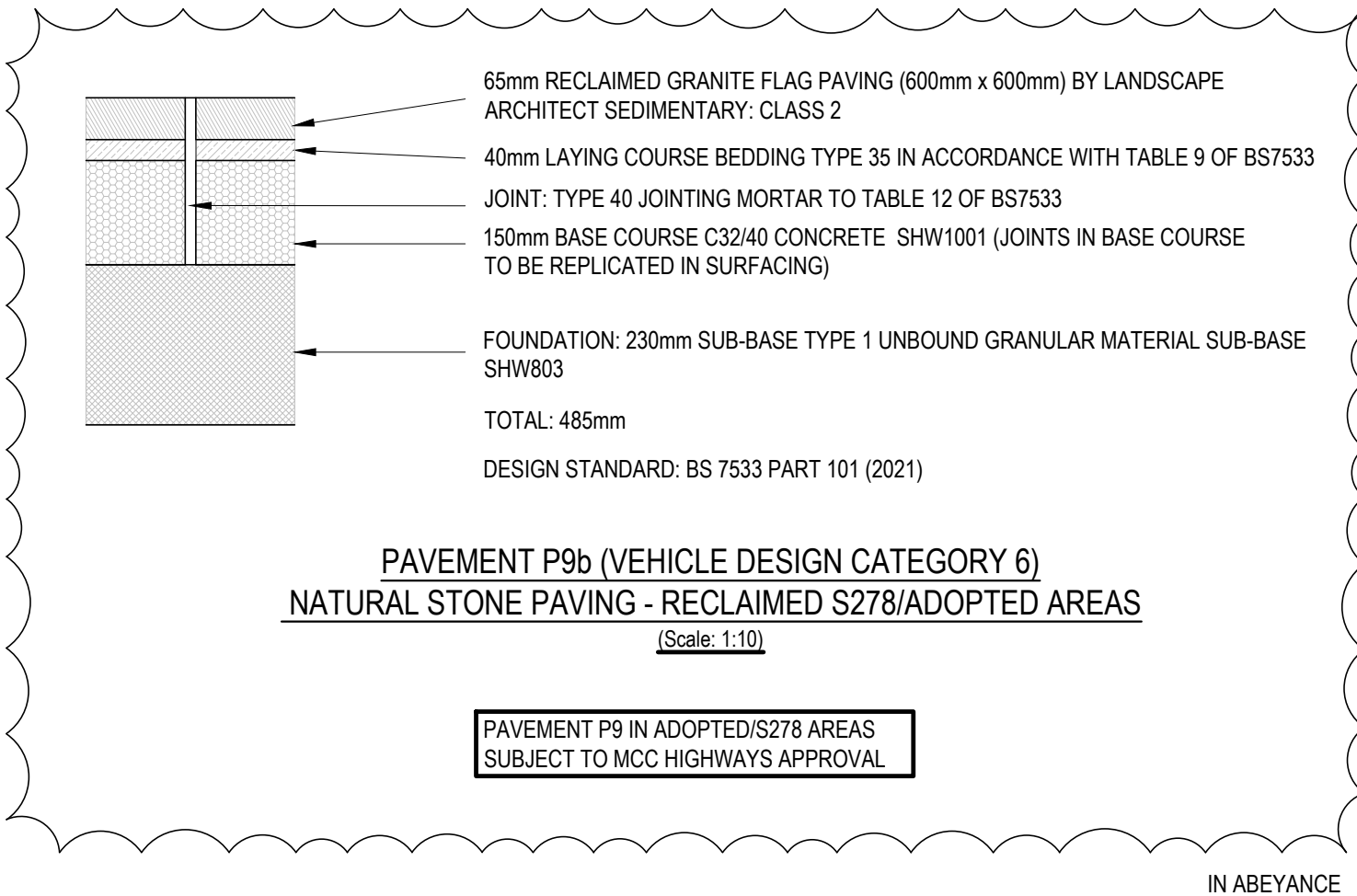
PAVEMENT P2 (VEHICLE DESIGN CATEGORY 6).
NATURAL STONE PAVING
(Scale: 1:10)



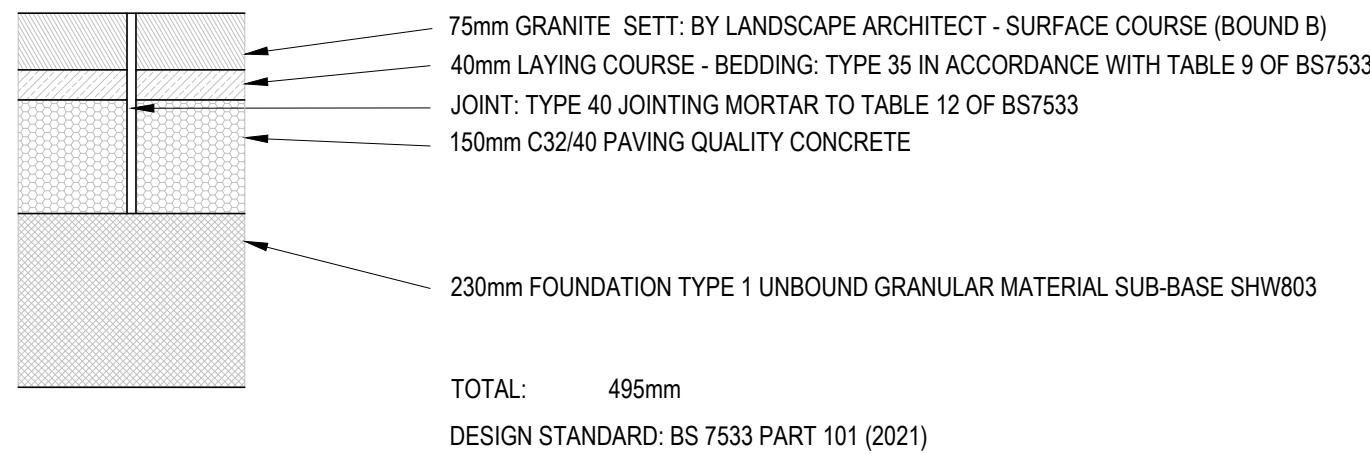
PAVEMENT P5 (VEHICLE DESIGN CATEGORY 2)
SANDSTONE FLAG PAVING
(Scale: 1:10)



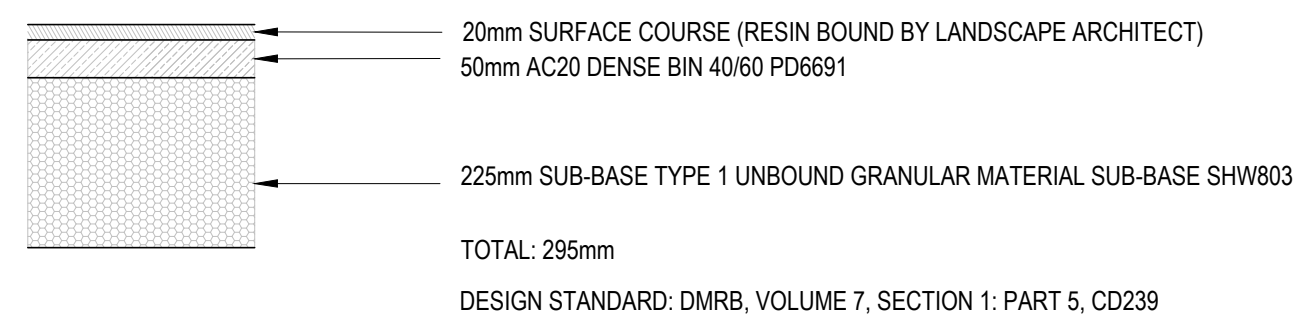
PAVEMENT P7a (TRAFFIC CATEGORY 2)
RESIN BOUND GRAVEL
(Scale: 1:10)



PAVEMENT P9b (VEHICLE DESIGN CATEGORY 6)
NATURAL STONE PAVING - RECLAIMED S278/ADOPTED AREAS
(Scale: 1:10)



PAVEMENT P6 (VEHICLE DESIGN CATEGORY 6)
YORKSHIRE STONE FLAGS
(Scale: 1:10)



PAVEMENT P7b (VEHICLE DESIGN CATEGORY 4)
RESIN BOUND GRAVEL
(Scale: 1:10)

GENERAL NOTES:

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
- DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
- ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
- FOR GENERAL NOTES REFER TO DRAWING REFERENCE 075050-CUR-XX-XX-DR-D-72101.
- FOR PAVEMENT EXTENTS AND LOCATIONS REFER TO PLANIT I.E DRAWING REFERENCE 1958-PLA-01A-XX-DR-L-1000
- FOR MOVEMENT JOINT LOCATIONS AND DETAILS, REFER TO DRAWINGS 075050-CUR-01-XX-DR-D-75002, -75003 and 75004.
- ALL MATERIAL WITHIN 450mm OF FINISHED SURFACE TO BE NON FROST SUSCEPTIBLE.
- ROAD FORMATION TO BE CHECKED FOR SOFT SPOTS. SOFT SPOTS TO BE REMOVED AND REPLACED WITH TYPE 1 MATERIAL OR TYPE 6F2 CAPPING MATERIAL.
- CBR VALUES ON SITE TO BE CONFIRMED AT THE PROPOSED FORMATION LEVEL, PRIOR TO FINAL DESIGN AND CONSTRUCTION. REPORT RESULTS TO THE ENGINEER AND ALLOW 5 WORKING DAYS FOR UPDATES, IF REQUIRED.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION UNUSUAL SIGNIFICANT HAZARDS

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT. IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:

CONSTRUCTION
1. CONTRACTOR TO ENSURE SITE IS SCANNED FOR EXISTING SERVICES THAT MAY BE ON SITE.
2. CONTRACTOR TO ASSESS FOR GROUND CONTAMINATION.
3. CONTRACTOR TO ENSURE SUITABLE MEASURES ARE TAKEN DURING ANY EXCAVATIONS/TEMPORARY WORKS.
4. A SUITABLE TRAFFIC MANAGEMENT PLAN SHOULD BE IN PLACE FOR DURATION OF WORKS.
NOTE: CURTINS ARE NOT LIABLE FOR ANY OF THE ABOVE.

MAINTENANCE / CLEANING
1. WHERE PROPRIETARY PRODUCTS ARE SPECIFIED, THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS SHOULD BE FOLLOWED.
3. THE RECOMMENDED INSPECTIONS OF OPERATIONS AND FREQUENCIES ARE TYPICAL ONLY AND SHOULD BE MORE FREQUENT INITIALLY TO ENSURE THAT THERE ARE NO UNFORESEEN ISSUES WITH THE OPERATION AND THEN ADJUSTED TO SUIT THE SITE REQUIREMENTS.

DECOMMISSIONING / DEMOLITION
1. N/A
2.
3.

RESIDUAL HAZARD REGISTER (RELATES TO CIVIL/STRUCTURAL MATTERS ONLY)
MUST BE READ IN CONJUNCTION WITH CURTINS RESIDUAL HAZARD REGISTER -075050-CUR-00-XX-HA-X-10001.
HAZARDS THAT SHOULD BE OBVIOUS TO A COMPETENT CONTRACTOR HAVE NOT BEEN INDICATED ON THIS DRAWING. SHOULD ANY ADDITIONAL HAZARDS BE IDENTIFIED, THE CONTRACTOR SHOULD NOTIFY ALL RELEVANT PROJECT TEAM MEMBERS.

HAZARD REF No.	ITEM (FEATURE, ELEMENT OR ACTIVITY)	RESIDUAL HAZARD
	Underground Services	GPR Survey has been commissioned and is currently underway
	Ground Conditions	Currently unknown

C01	CONSTRUCTION ISSUE	09/05/23	CS	MW
P09	UPDATED TENDER	20/01/23	KS	SR
P08	TENDER	21/01/22	TH	AR
P07	PAVEMENT CONSTRUCTION P10 REMOVED	02/12/20	AR	AR
P06	ALL SAINTS PAVEMENT CONSTRUCTION ADDED	15/10/20	AR	AR
P05	PAVEMENT CONSTRUCTION 4A & 4B REMOVED	16/9/20	AR	AR
P04	UPDATE TO PAVEMENT P1 CONSTRUCTION	06/08/20	AMG	AR
P03	UPDATE TO P1e LATEST INFORMATIN	30/03/20	AMG	AR
P02	ISSUED FOR CO-ORDINATION	04/03/20	AMG	AR
P01	ISSUED FOR CO-ORDINATION	03/03/20	AMG	AR
Rev:	Description:	Date:	By:	Chkd:



Civils & Structures • Transport Planning • Environmental • Infrastructure • Geotechnical • Conservation & Heritage • Principal Designer
Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kentish • Leeds • Liverpool • London • Manchester • Nottingham

Status: CONSTRUCTION **S5**

Project: MMU PUBLIC REALM MASTER PLAN

Orig Title: PAVEMENT BUILD UPS

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	20/01/2023	KS	SB	AR

Scale: 1:10		KS		SB		AR	
Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:

075050 - CUR - 00 - XX - DR - D - 75001 - C01

Appendix 4

Fill Screening Values

Rogers Geotechnical Services Ltd.

Atkins ATRISK Soil Screening Values (SSVs) - Residential Without Plant Uptake Landuse

Tox Data Report No.	Compound	Residential without Homegrown Produce Landuse (mg/kg)				Reference
	<i>Metals</i>	SOM: 1%		SOM: 6%		
3	Cadmium	149		149		C
4	Chromium VI	3.62	20.5	3.62	20.5	B/C
	Copper	9060		9060		A+
7	Mercury	10.00		20.30		A/D
8	Nickel	188		188		A+
	Lead	313		313		C
	Zinc	47000		47000		A+
	Vanadium	357		357		A+
	<i>Semi and Non Metals</i>					
1	Arsenic	39.9		39.9		C
10	Selenium	595		595		A
	Free Cyanide	34		34		A
9	Phenols (total)	570		2330		A
	<i>Poly Aromatic Hydrocarbons</i>	Free product	No free product	Free product	No free product	
20	Napthalene	0.851		13.1		A+
	Acenaphthene	156	2680	937	6730	A+
	Fluorene	124	3260	4860		A+
	Anthracene	3.48	34300	37700		A+
	Fluoranthene	4880		5050		A+
	Pyrene	3650		3780		A+
	Benzo(a)anthracene	1.71	5.42	9.04		A
2	Chrysene	0.44	852	2.64	1010	A
2	Benzo(b)fluoranthene	1.22	9.68	7.29	10.3	A
2	Benzo(k)fluoranthene	0.686	99.7	4.12	104	A
2	Benzo(a)pyrene	2.17	5.33	2.21	5.34	B/C
2	Dibenzo(a,h)anthracene	0.00393	0.949	0.0236	1.03	A*
2	Indeno(1,2,3-cd)pyrene	0.0614	9.53	0.368	10.3	A
2	Benzo(g,h,i)perylene	0.0187	102	0.112	104	A
	<i>Petroleum Hydrocarbons</i>					
	Aliphatic C5-C6	42.9		371		A+
	Aliphatic C6-C8	99.6		768	1240	A+
	Aliphatic C8-C10	13.9		205		A+
	Aliphatic C10-C12	49.9	81.8	297	1190	A+
	Aliphatic C12-C16	20.9	385	925	2710	A+
	Aliphatic C16-C21	212000		212000		A+
	Aliphatic C21-C35	212000		212000		A+
	Aromatic C5-C7 (Benzene)	0.31		3.32		A+
	Aromatic C7-C8 (Toluene)	312		3860		A+
	Aromatic C8-C10	22.7		332		A+
	Aromatic C10-C12	139		1550		A+
	Aromatic C12-C16	155	703	925	2710	A+
	Aromatic C16-C21	1930		1930		A+
	Aromatic C21-C35	1930		1930		A+
<i>Others</i>						
Asbestos Not Detected						
A+ = Values update June 2017.						
A* Atrisk's SSV is lower than Chemtest's detectable limit for this compound.						
B = Health Criterion Values (available from toxicological reviews published in the C4SL project methodology report).						
C = Category 4 Screening Levels (C4SLs).						
D = SSV provided is for Methyl Mercury.						