

Nomvula Park, Knowsley

Verification Completion Report

For: Barratt Homes

February 2020

R2469B-R02-v2

DOCUMENT CONTROL SHEET

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Verification Completion Report

Client: Barratt Homes

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Report Date: 19th February 2020

Signed For Smith Grant LLP

	Name	Position	Signature	Date
Author	P R Magraw BSc FGS	Consultant		19.02.2020
Reviewer	B J Thomas BSc MSc MCIWEM C.Env 	Partner		19.02.2020

Document Revision Record:

Version	Report Status	Date	Details of Revision
v1	Final	24.01.2020	For issue to Planning Authority
v2	Final	19.02.2020	Addition of Plots 49-56 validation certificate

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NOMVULA PARK, LIVERPOOL

VERIFICATION COMPLETION REPORT

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1. Introduction

- 1.1. Barratt Homes (BH) instructed Smith Grant LLP (SGP) to undertake the verification and validation of works to address risks from ground contamination after the construction phase of the Nomvula Park development on the site of a former school and open land.

Table 1.1: Site Details

Address	Nomvula Park, Waterpark Drive, Liverpool, L28 3QA
National Grid Reference	342789, 393090
Local Authority	Knowsley Metropolitan Borough Council
Current Nature of Site	Residential development
Planning Permission	17/00053/FUL
Proposed Use	residential development consisting of 79 dwellings, construction of vehicular access and provision of public open space

Figure 1.1: Site Location



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- 1.2. A Remediation Strategy was produced in May 2017 by ALM Consult (R2490-R01-v3) and preparatory remediation earthworks were undertaken on the site by Urban Regen between October 2017 and April 2018. Completion reporting for the preparatory remediation earthworks was issued in January 2019 by SGP (R2496-R01-v4). This report described the completed works, their verification testing, and contained specific recommendations to the developer to manage any residual risks associated with ground contamination at the site. The site layout is included in Drawings (R2469B-R01-D01) and indicates the locations of the plots referred to in this report.

2. Remediation Works

- 2.1. Gas sources characterised within the site were generally of no risk with regards to the generation of high positive pressures or substantial sub-surface flows of hazardous ground gas. The site was classified as CIRIA CS1 / NHBC-Green with no gas protection required.
- 2.2. Although heavily contaminated soils were not encountered in the site investigations or validation testing, low-level pervasive contamination was present associated with the limited amounts of made ground present on the site and a precautionary 600mm clean soil cover layer was specified for all garden and landscaped areas which contained made ground, , potentially containing low levels of common urban soil contaminants.
- 2.3. Natural soils were present in the areas of plots 42-46, 49-56 and 59-62 therefore no minimum thickness was required for garden soils. However, an inspection to confirm natural soils in the garden areas prior to placement of topsoil was required. In the absence of a formation inspection, a depth validation was required.
- 2.4. Levels were specified to be left sufficiently low in all parts of the site to accommodate 600mm of soil cover where this was required. Soils were assessed by collection of samples at volumetric sampling frequencies agreed with B&DBC, analysed for a standardised suite of common soil contaminants (metals, hydrocarbons, PAHs and asbestos) and compared to contemporary published generic assessment criteria for residential land-use.
- 2.5. Validation testing was carried out on the recovered natural topsoil ('Stockpile 1') at a total frequency of 1 sample per 180m³ for asbestos, metals and poly-aromatic hydrocarbons (PAHs), and 1 per 310m³ for petroleum hydrocarbons and BTEX to assess its potential suitability for reuse as garden soil within the development. No exceedances of the screening criteria were reported.
- 2.6. Approximately 1,560m³ of made ground topsoil was recovered from the south / southwest parts of the site (Stockpiles '3' and '4'). This material went through preliminary testing by SGP at a frequency of approximately 1 sample per 310m³ which indicated that it would be suitable for use within gardens / landscaped areas; however, further validation testing was required to achieve the necessary sampling frequency.

3. Soil Cover Validation

- 3.1. The compliance criteria for the soils were set as 'residential with plant uptake' in the Remediation Strategy for the site in 2017, and these were applied to the soils assessed during the phases of garden completion and assessment of stockpiled materials.
- 3.2. Testing and analysis of soils has been carried out both in stockpiles 1-5, prior to spreading within garden and landscaped areas, and in-situ from plots 1-48 and 66-79. Plots 42-62 did not require any specific depth of soils or independent validation of depths, although formation inspections were required prior to soil placement. One subsoil source was used in the areas under consideration as summarised in the table below:

Table 4.2 Subsoil Sources and Testing Regimes

Plots	Source	Testing Regime	Findings
1-10, 27-28, 42-46, 49- 56, 69-75	Subsoil not placed: cover system comprises 600m topsoil		
11-26, 29- 41, 47-48, 57-68	Site won subsoil	4 samples taken from Stockpile 5 and 1 taken from plot 11, achieving a 1 / 135m ³ testing frequency.	2 minor exceedances were reported for Dibenzo(ah)anthracene at 0.3-0.4mg/kg out of the 5 samples taken; a PAH ratio cross plot has been undertaken (attached) which indicates that the source of the material is more likely of pyrolytic origin, rather than petrogenic, and is therefore unlikely to be readily bioaccessible. All other samples tested for dibenzo(ah)anthracene reported below or at the limit of detection (<0.1-0.1mg/kg). The material is therefore considered suitable for its intended use in gardens within the development. Lab ref: 19-08072, 19-08562

- 3.3. Testing and analysis of the subsoil has been carried out in all material placed in plot gardens. Site won sub soil was placed in plots 11-26, 29-40, 46-48, 57-58, 63-68, and plot 500. The total volume of 675m³ was tested once every 135m³.
- 3.4. The testing frequencies were lower than those originally specified for the site (R2469-R01-v4). However, this was deemed appropriate by SGP due to the site's history and ALM's remediation

strategy stating that the site's 'Cohesive made ground and natural strata have been shown to be free from contaminants.' and that identified contamination was generally found to be minor and limited to isolated incidences within the made ground topsoil and ashy made ground rather than the underlying clays, as summarised in Section 2.2 of SGP's Remediation Earthworks Completion Report (Report Ref: R2469-R01-v4 FINAL).

- 3.5. Due to this initial assessment, a relaxed sampling frequency of 1 sample per 100m³ (greater than the frequency for natural soils but lower than that specified for the made ground topsoil) was considered to be appropriate by SGP. The results of the analysis carried out to date confirms the findings of the initial assessment carried out by ALM with no significant contamination noted, just two very minor exceedances of the ALM soil quality criteria for dibenzo(a/h)anthracene which has been attributed to a pyrolytic (i.e. low bioavailable) form.
- 3.6. It is therefore of the opinion of SGP that no further testing of the subsoil was necessary and that the material is suitable for use as subsoil within gardens on the site; however, we acknowledge that this is a material deviation from the recommendations presented within Section 6.3 of SGP's Remediation Earthworks Completion Report and therefore required approval from KMBC.
- 3.7. Three topsoil sources were used in the areas under consideration as summarised in the table below:

Table 4.4 Topsoil Sources and Testing Regimes

Area	Source	Testing Regime	Findings
POS	Site won stockpiles 3 & 4	1 / 100 m ³	No exceedances Lab ref: 743219-1, 19-08562
1-2, 9-41, 49-56, 63-75, 77-79, & 500	Site won stockpiles 1 & 2	1 / 135 m ³	No exceedances Lab ref: 697291, 709629
42-48, 57-62	King's Quarter, Pewterspear	1 / 32 m ³	No exceedances. Lab ref: 19-6738, 19-33471

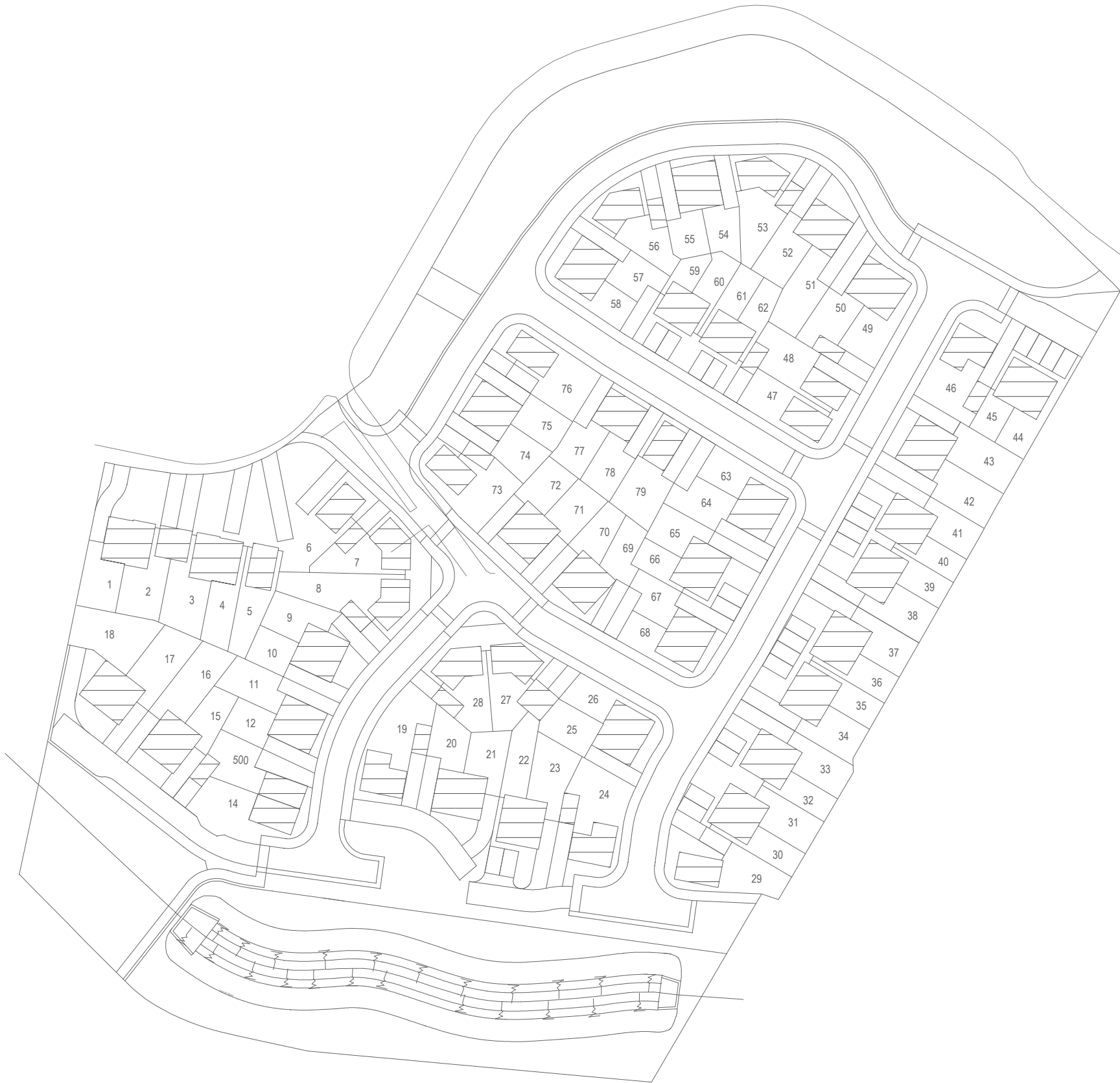
- 3.8. The laboratory analysis certificates for all the topsoil used within the development to date are attached in Appendix D.
- 3.9. The testing frequency for the site-won topsoil used in plots of 1 per 135 m³ did not meet those recommended by SGP (1 per 100m³) in SGP's Remediation Earthworks Completion Report (Report Ref: R2469-R01-v4 FINAL). SGP advised KMBC of the amended frequencies after a query was raised and no adverse comment was made. (R2469B-L02 15th July 2019)

- 3.10. The testing frequency for imported soils from a Greenfield source (1 per 250m³) was met for the King's Quarter source.
- 3.11. SGP attended the site on 19 occasions to validate the depth of placed soils in the garden areas of the plots under consideration (Plots 1-79) or the stripped surface (Plots 49-56) to confirm natural materials were present so that depth verification was not required.
- 3.12. Hand dug trial pits were excavated in the gardens of plots 1, 4, 7, 9, 11, 14, 17, 19-20, 24-25, 27, 29, 32, 35, 40, 43, 45, 47, 48, 57, 59, 61, 64, 65, 67, 69, 72, 73, 76, and 78; a photographic record has been provided. The depth of placed soil cover has been confirmed in 32 of the 79 completed plots to date achieving a frequency of 1 depth test per 2.5 gardens, exceeding the required frequency of 1 per 3 gardens. The validation certificates from soil cover depth inspections are attached in Appendix B.
- 3.13. 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.

4. Conclusions and Recommendations

- 4.1. 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. The soils in the landscaped areas of gardens tested by SGP are a minimum of 600mm depth.
- 4.2. Based on the evidence available, SGP conclude that the construction stage mitigation measures, comprising clean cover soil, recommended in the remediation earthworks completion reporting, have been successfully implemented by Barratt Homes. No further validation or verification reporting is proposed for the site.
- 4.3. This report has been prepared by SGP for the sole and exclusive use of Barratt Homes. 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.
- 4.4. 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.

DRAWING



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Project:
Nomvula Park, Knowsley

Drawing:
Site layout

Drawn: MJ	Checked: BJT
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Date: 04/01/2020	Scale: 1:1,000 @ A3
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Job No: R2469B	Drg No: D01
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APPENDIX A

Stockpile Validation Certificates

Soil Cover Validation Record



Job number	R2469b	Depth ref:	n/a	Quality ref:	R2469-R01-V4 Final	Other documents attached	✓
Date	25.03.19	Area use:	garden	landscaped	Currently stockpiled	Other (for use in POS)	
Site name / location	Nomvula Park, Waterpark Drive, Liverpool	Size area (m):	n/a	Approx Area (m ²):	n/a	Approx Depth Top (m):	n/a
Plot / location:	S / SW of site (Stockpiles '3' & '4')					Approx Volume Top (m ³):	n/a
Compiled by:	SM					Approx Depth Sub (m):	n/a
						Approx Volume Sub (m ³):	~1,560
		Number depth entries required:	n/a	Number of samples collected:		17 (<i>soil tested at frequency of >1 sample per 100m³.</i>)	

Quality Validation		inspection date/time:	07.06.18 / 07.03.19	inspected by:	SM	photographed:	✓
notes (see below)		✓ / ✗					
Source Topsoil	1.	✓	Sourced from previously developed areas in centre of site.				
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets and frequent inclusions of gravel including brick fragments.				
Sample Topsoil	3.	✓	17 samples taken from onsite stockpiles (10 collected from 'Stockpile 3' and 7 from 'Stockpile 4') (CLS ref: 743219-1 & Chemtest ref: 19-08562).				
Source Subsoil	4.	✗	n/a				
Description Subsoil	5.	✗	n/a				
Sample Subsoil	6.	✗	n/a				

Soil Cover Validation Record



Topsoil Analysis Summary

contaminant	Soil standard adopted (mg/kg)	concentrations (mg/kg)	compliant?
asbestos Fibres	NAD	NAD	Yes
pH	-	7.1-8.3	-
soil organic matter	-	2.1-6.0	-
arsenic	170	7.8-15	Yes
cadmium	532	<1	Yes
chromium III	33,000	17-28	Yes
chromium VI	220	<1	Yes
copper	200	17-53	Yes
lead	1,300	28-79	Yes
mercury	240	<1	Yes
nickel	800	16-35	Yes
zinc	300	47-190	Yes
naphthalene	1,200	<0.1-0.59	Yes
acenaphthene	29,000	<0.1-0.75	Yes
acenaphthylene	29,000	<0.1-0.46	Yes
fluorene	20,000	<0.1-0.62	Yes
phenanthrene	6,200	<0.1-4.6	Yes
anthracene	150,000	<0.1-1.3	Yes
fluoranthene	6,300	<0.1-7.2	Yes
pyrene	15,000	<0.1-7.2	Yes
benzo(a)anthracene	49	<0.1-4.2	Yes
chrysene	93	<0.1-3.9	Yes
benzo(b)fluoranthene	13	<0.1-3.2	Yes
benzo(k)fluoranthene	370	<0.1-2.2	Yes
benzo(a)pyrene	11	<0.1-3.1	Yes
indeno(123cd)pyrene	150	<0.1-1.8	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
dibenzo(ah)anthracene	1.1	<0.1-0.95	Yes
benzo(ghi)perylene	1,400	<0.1-2.7	Yes
Aliphatic C5-C6	95,000	<0.1	Yes
Aliphatic C6-C8	150,000	<0.1	Yes
Aliphatic C8-C10	14,000	<0.1	Yes
Aliphatic C10-C12	21,000	<1	Yes
Aliphatic C12-C16	25,000	<1	Yes
Aliphatic C16-C21	450,000	<1	Yes
Aliphatic C21-C35	450,000	<2-75	Yes
Aromatic C6-C7	76,000	<0.1	Yes
Aromatic C7-C8	87,000	<0.1	Yes
Aromatic C8-C10	7,200	<0.1	Yes
Aromatic C10-C12	9,200	<2	Yes
Aromatic C12-C16	10,000	<1-1	Yes
Aromatic C16-C21	7,600	<1-12	Yes
Aromatic C21-C35	7,800	<1-380	Yes

Due to the intended use of this material as soil cover in the public open space area in the south of the site, the LQM/CIEH S4UL and C4SL (lead only) criteria for 'Public open space 2 (public open space park)' has been utilised. This is defined as an area of open space provided for recreational use, usually owned and maintained by Local Authority. Could be used for family visits and picnics, children's play area, sports on an informal basis (not a dedicated sports pitch) and dog walking. Considered to be a relatively large area (>0.5ha) of predominately grass space, no more than 25% exposed soil.

More conservative criteria have been used with regards to copper and zinc, the results of which have been compared against the screening values specified in BS3882:2015 in accordance with recommendations contained within SGP report: R2469-R01-V4 Final.

Soil Cover Validation Record



Stockpile Validation	Inspection date/time:	07.06.18 / 07.03.19	Tested by:	SM	Photographed:	✓
Source Topsoil	Sourced from previously developed areas in centre of site.					
Soil description	Dark brown slightly sandy clayey topsoil with frequent rootlets and frequent inclusions of gravel including brick fragments.					
Photograph (Stockpile 3)			Photograph (Stockpile 4)			
						

Soil Cover Validation Record



The laboratory analysis results of the soil samples when compared against criteria for a 'Public Open Space 2' scenario (as described in the topsoil analysis summary), indicate that the material is suitable for its intended use as soil cover within the public open space area in the south of the site. Due to marginally elevated PAH concentrations (in particularly dibenzo(ah)anthracene), the material is not considered suitable for use as soil cover within private garden areas. The sampling frequency achieved exceeds 1 sample per 100m³ but does not achieve the frequency of 1 sample per 50m³ specified in SGP's Remediation Earthworks Completion Report (ref: R2469-R01-V4 Final); however, it was initially envisaged that the material would be used in private gardens and due to the reduced sensitivity of its intended use the sampling frequency achieved is considered to be suitable, subject to regulator approval.

SGP Staff: S D Miller BSc

Signed:

A handwritten signature in black ink, appearing to read 'S D Miller', is positioned above the date.

29.03.19

SGP Member: B J Thomas BSc MSc MCIWEM C.Env

Signed:

A handwritten signature in black ink, appearing to read 'B J Thomas', is positioned above the date.

29.03.19

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
7.	Material Acceptability	Presence and amount of visible deleterious or otherwise unacceptable materials, e.g. glass, metal, plastic, Knotweed shoots etc.

Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 743219-1

Date of Report: 21-Jun-2018

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: WATERPARK DRIVE

Date Job Received at Concept: 08-Jun-2018

Date Analysis Started: 11-Jun-2018

Date Analysis Completed: 21-Jun-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Chloe Kitto
Customer Service Advisor

Issued by :
Aneta Dybek-Echtermeyer
Customer Service Advisor



Concept Reference:	743219
Project Site:	WATERPARK DRIVE
Customer Reference:	R2469
Soil	Analysed as Soil
MCERTS Preparation	

Soil	Analysed as Soil
MCERTS Preparation	

Concept Reference					743219 001	743219 002	743219 003	743219 004	743219 005
Customer Sample Reference					TSSP3 S1	TSSP3 S2	TSSP3 S3	TSSP4 S1	TSSP4 S2
Date Sampled					07-JUN-2018	07-JUN-2018	07-JUN-2018	07-JUN-2018	07-JUN-2018
Matrix Class					Clay	Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units					
Moisture @105C	T162	AR	0.1	%	24	18	22	12	10
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1	<0.1	<0.1

Concept Reference: 743219 Project Site: WATERPARK DRIVE Customer Reference: R2469	
Soil Smith Grant Standard Suite 1	Analysed as Soil

Soil	Analysed as Soil
Smith Grant Standard Suite 1	

Concept Reference					743219 001	743219 002	743219 003	743219 004	743219 005
Customer Sample Reference					TSSP3 S1	TSSP3 S2	TSSP3 S3	TSSP4 S1	TSSP4 S2
Date Sampled					07-JUN-2018	07-JUN-2018	07-JUN-2018	07-JUN-2018	07-JUN-2018
Matrix Class					Clay	Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units					
Arsenic	T6	M40	2	mg/kg	10	11	15	9	10
Asbestos ID	T27	A40			N.D.	N.D.	N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1	<1	<1
Chromium	T6	M40	1	mg/kg	24	26	27	18	22
Chromium VI	T6	A40	1	mg/kg	<1	<1	<1	<1	<1
Copper	T6	M40	1	mg/kg	37	41	53	40	30
Lead	T6	M40	1	mg/kg	76	72	68	79	54
Mercury	T6	M40	1	mg/kg	<1	<1	<1	<1	<1
Nickel	T6	M40	1	mg/kg	23	26	35	17	20
pH	T7	A40			8.1	8.3	7.5	7.6	7.1
Soil Organic Matter	T287	A40	0.1	%	3.3	3.1	6.0	3.6	2.7
Zinc	T6	M40	1	mg/kg	100	110	110	86	190

Concept Reference: 743219 Project Site: WATERPARK DRIVE Customer Reference: R2469 Soil Analysed as Soil PAH US EPA 16 (B and K split)									
Concept Reference					743219 001	743219 002	743219 003	743219 004	743219 005
Customer Sample Reference					TSSP3 S1	TSSP3 S2	TSSP3 S3	TSSP4 S1	TSSP4 S2
Date Sampled					07-JUN-2018	07-JUN-2018	07-JUN-2018	07-JUN-2018	07-JUN-2018
Matrix Class					Clay	Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units					
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	0.2	0.2	<0.1	0.5	0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	0.3	0.5	<0.1	1.4	0.2
Pyrene	T207	M105	0.1	mg/kg	0.3	0.5	<0.1	1.4	0.2
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	0.2	0.2	<0.1	0.8	<0.1
Chrysene	T207	M105	0.1	mg/kg	0.2	0.2	<0.1	0.8	0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	0.2	0.2	<0.1	0.8	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	0.2	<0.1	0.8	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	0.1	0.2	<0.1	0.9	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	0.1	<0.1	0.5	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	0.1	<0.1	0.7	<0.1
PAH(total)	T207	M105	0.1	mg/kg	1.5	2.6	<0.1	8.9	0.6

Concept Reference: 743219 Project Site: WATERPARK DRIVE Customer Reference: R2469 Soil Analysed as Soil TPH (CWG) with MTBE, BTEX									
Concept Reference					743219 001	743219 002	743219 003	743219 004	743219 005
Customer Sample Reference					TSSP3 S1	TSSP3 S2	TSSP3 S3	TSSP4 S1	TSSP4 S2
Date Sampled					07-JUN-2018	07-JUN-2018	07-JUN-2018	07-JUN-2018	07-JUN-2018
Matrix Class					Clay	Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units					
Benzene	T209	M105	10	µg/kg	⁽¹³⁾ <10	⁽¹³⁾ <10	⁽¹³⁾ <10	⁽¹³⁾ <10	⁽¹³⁾ <10
Toluene	T209	M105	10	µg/kg	<10	<10	<10	<10	<10
EthylBenzene	T209	M105	10	µg/kg	<10	<10	<10	<10	<10
M/P Xylene	T209	M105	10	µg/kg	<10	<10	<10	<10	<10
O Xylene	T209	M105	10	µg/kg	<10	<10	<10	<10	<10
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	<10	<10	<10	<10	<10
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100	<0.100	<0.100	<0.100
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	⁽¹³⁾ <1	⁽¹³⁾ <1	⁽¹³⁾ <1	⁽¹³⁾ <1	⁽¹³⁾ <1
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	⁽¹³⁾ <1	⁽¹³⁾ <1	⁽¹³⁾ <1	⁽¹³⁾ <1	⁽¹³⁾ <1
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	⁽¹³⁾ <1	⁽¹³⁾ <1	⁽¹³⁾ <1	⁽¹³⁾ <1	⁽¹³⁾ <1
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	⁽¹³⁾ <2	⁽¹³⁾ <2	(13) 11	(13) 6	⁽¹³⁾ <2
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	⁽¹³⁾ <2	⁽¹³⁾ <2	⁽¹³⁾ <2	⁽¹³⁾ <2	⁽¹³⁾ <2
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	⁽¹³⁾ <1	(13) 1	⁽¹³⁾ <1	(13) 1	⁽¹³⁾ <1
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	(13) 5	(13) 6	(13) 2	(13) 12	⁽¹³⁾ <1
TPH (C21-C35 aromatic)	T909	M105	1	mg/kg	(13) 15	(13) 14	(13) 8	(13) 44	(13) 1

Index to symbols used in 743219-1

Value	Description
AR	As Received
A40	Assisted dried < 40C

M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos testing was subcontracted to REC Asbestos.

Method Index

Value	Description
T287	Calc TOC/0.58
T162	Grav (1 Dec) (105 C)
T207	GC/MS (MCERTS)
T2	Grav
T7	Probe
T27	PLM
T209	GC/MS (Head Space)(MCERTS)
T909	GCxGC
T6	ICP/OES

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Arsenic	T6	M40	2	mg/kg	M	001-005
Asbestos ID	T27	A40			SU	001-005
Cadmium	T6	M40	1	mg/kg	M	001-005
Chromium	T6	M40	1	mg/kg	M	001-005
Chromium VI	T6	A40	1	mg/kg	N	001-005
Copper	T6	M40	1	mg/kg	M	001-005
Lead	T6	M40	1	mg/kg	M	001-005
Mercury	T6	M40	1	mg/kg	M	001-005
Nickel	T6	M40	1	mg/kg	M	001-005
pH	T7	A40			M	001-005
Soil Organic Matter	T287	A40	0.1	%	N	001-005
Zinc	T6	M40	1	mg/kg	M	001-005
Benzene	T209	M105	10	µg/kg	M	001-005
Toluene	T209	M105	10	µg/kg	M	001-005
EthylBenzene	T209	M105	10	µg/kg	M	001-005
M/P Xylene	T209	M105	10	µg/kg	M	001-005
O Xylene	T209	M105	10	µg/kg	M	001-005
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	M	001-005
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-005
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-005
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-005
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	M	001-005
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	M	001-005
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	M	001-005
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	M	001-005
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-005
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-005
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-005
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	M	001-005
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	M	001-005
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	M	001-005
TPH (C21-C35 aromatic)	T909	M105	1	mg/kg	M	001-005
Naphthalene	T207	M105	0.1	mg/kg	M	001-005
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-005
Acenaphthene	T207	M105	0.1	mg/kg	M	001-005
Fluorene	T207	M105	0.1	mg/kg	M	001-005

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Phenanthrene	T207	M105	0.1	mg/kg	M	001-005
Anthracene	T207	M105	0.1	mg/kg	U	001-005
Fluoranthene	T207	M105	0.1	mg/kg	M	001-005
Pyrene	T207	M105	0.1	mg/kg	M	001-005
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-005
Chrysene	T207	M105	0.1	mg/kg	M	001-005
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-005
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-005
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-005
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-005
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-005
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-005
PAH(total)	T207	M105	0.1	mg/kg	U	001-005
Moisture @105C	T162	AR	0.1	%	N	001-005
Retained on 10mm sieve	T2	M40	0.1	%	N	001-005



Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 743219-1

Date of Report: 21-Jun-2018

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: WATERPARK DRIVE

Date Job Received at Concept: 08-Jun-2018

Date Analysis Started: 11-Jun-2018

Date Analysis Completed: 21-Jun-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Chloe Kitto
Customer Service Advisor

Issued by :
Aneta Dybek-Echtermeyer
Customer Service Advisor



Concept Reference:	743219
Project Site:	WATERPARK DRIVE
Customer Reference:	R2469
Soil	Analysed as Soil
MCERTS Preparation	

Concept Reference					743219 001	743219 002	743219 003	743219 004	743219 005
Customer Sample Reference					TSSP3 S1	TSSP3 S2	TSSP3 S3	TSSP4 S1	TSSP4 S2
Date Sampled					07-JUN-2018	07-JUN-2018	07-JUN-2018	07-JUN-2018	07-JUN-2018
Matrix Class					Clay	Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units					
Moisture @105C	T162	AR	0.1	%	24	18	22	12	10
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1	<0.1	<0.1

Concept Reference: 743219	
Project Site: WATERPARK DRIVE	
Customer Reference: R2469	
Soil	Analysed as Soil
Smith Grant Standard Suite 1	

Concept Reference					743219 001	743219 002	743219 003	743219 004	743219 005
Customer Sample Reference					TSSP3 S1	TSSP3 S2	TSSP3 S3	TSSP4 S1	TSSP4 S2
Date Sampled					07-JUN-2018	07-JUN-2018	07-JUN-2018	07-JUN-2018	07-JUN-2018
Matrix Class					Clay	Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units					
Arsenic	T6	M40	2	mg/kg	10	11	15	9	10
Asbestos ID	T27	A40			N.D.	N.D.	N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1	<1	<1
Chromium	T6	M40	1	mg/kg	24	26	27	18	22
Chromium VI	T6	A40	1	mg/kg	<1	<1	<1	<1	<1
Copper	T6	M40	1	mg/kg	37	41	53	40	30
Lead	T6	M40	1	mg/kg	76	72	68	79	54
Mercury	T6	M40	1	mg/kg	<1	<1	<1	<1	<1
Nickel	T6	M40	1	mg/kg	23	26	35	17	20
pH	T7	A40			8.1	8.3	7.5	7.6	7.1
Soil Organic Matter	T287	A40	0.1	%	3.3	3.1	6.0	3.6	2.7
Zinc	T6	M40	1	mg/kg	100	110	110	86	190

Concept Reference: 743219 Project Site: WATERPARK DRIVE Customer Reference: R2469 Soil Analysed as Soil PAH US EPA 16 (B and K split)									
Concept Reference					743219 001	743219 002	743219 003	743219 004	743219 005
Customer Sample Reference					TSSP3 S1	TSSP3 S2	TSSP3 S3	TSSP4 S1	TSSP4 S2
Date Sampled					07-JUN-2018	07-JUN-2018	07-JUN-2018	07-JUN-2018	07-JUN-2018
Matrix Class					Clay	Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units					
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	0.2	0.2	<0.1	0.5	0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	0.3	0.5	<0.1	1.4	0.2
Pyrene	T207	M105	0.1	mg/kg	0.3	0.5	<0.1	1.4	0.2
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	0.2	0.2	<0.1	0.8	<0.1
Chrysene	T207	M105	0.1	mg/kg	0.2	0.2	<0.1	0.8	0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	0.2	0.2	<0.1	0.8	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	0.2	<0.1	0.8	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	0.1	0.2	<0.1	0.9	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	0.1	<0.1	0.5	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	0.1	<0.1	0.7	<0.1
PAH(total)	T207	M105	0.1	mg/kg	1.5	2.6	<0.1	8.9	0.6

Concept Reference: 743219 Project Site: WATERPARK DRIVE Customer Reference: R2469 Soil Analysed as Soil TPH (CWG) with MTBE, BTEX									
Concept Reference					743219 001	743219 002	743219 003	743219 004	743219 005
Customer Sample Reference					TSSP3 S1	TSSP3 S2	TSSP3 S3	TSSP4 S1	TSSP4 S2
Date Sampled					07-JUN-2018	07-JUN-2018	07-JUN-2018	07-JUN-2018	07-JUN-2018
Matrix Class					Clay	Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units					
Benzene	T209	M105	10	µg/kg	⁽¹³⁾ <10	⁽¹³⁾ <10	⁽¹³⁾ <10	⁽¹³⁾ <10	⁽¹³⁾ <10
Toluene	T209	M105	10	µg/kg	<10	<10	<10	<10	<10
EthylBenzene	T209	M105	10	µg/kg	<10	<10	<10	<10	<10
M/P Xylene	T209	M105	10	µg/kg	<10	<10	<10	<10	<10
O Xylene	T209	M105	10	µg/kg	<10	<10	<10	<10	<10
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	<10	<10	<10	<10	<10
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100	<0.100	<0.100	<0.100
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	⁽¹³⁾ <1	⁽¹³⁾ <1	⁽¹³⁾ <1	⁽¹³⁾ <1	⁽¹³⁾ <1
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	⁽¹³⁾ <1	⁽¹³⁾ <1	⁽¹³⁾ <1	⁽¹³⁾ <1	⁽¹³⁾ <1
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	⁽¹³⁾ <1	⁽¹³⁾ <1	⁽¹³⁾ <1	⁽¹³⁾ <1	⁽¹³⁾ <1
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	⁽¹³⁾ <2	⁽¹³⁾ <2	(13) 11	(13) 6	⁽¹³⁾ <2
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	⁽¹³⁾ <2	⁽¹³⁾ <2	⁽¹³⁾ <2	⁽¹³⁾ <2	⁽¹³⁾ <2
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	⁽¹³⁾ <1	(13) 1	⁽¹³⁾ <1	(13) 1	⁽¹³⁾ <1
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	(13) 5	(13) 6	(13) 2	(13) 12	⁽¹³⁾ <1
TPH (C21-C35 aromatic)	T909	M105	1	mg/kg	(13) 15	(13) 14	(13) 8	(13) 44	(13) 1

Index to symbols used in 743219-1

Value	Description
AR	As Received
A40	Assisted dried < 40C

M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos testing was subcontracted to REC Asbestos.

Method Index

Value	Description
T287	Calc TOC/0.58
T162	Grav (1 Dec) (105 C)
T207	GC/MS (MCERTS)
T2	Grav
T7	Probe
T27	PLM
T209	GC/MS (Head Space)(MCERTS)
T909	GCxGC
T6	ICP/OES

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Arsenic	T6	M40	2	mg/kg	M	001-005
Asbestos ID	T27	A40			SU	001-005
Cadmium	T6	M40	1	mg/kg	M	001-005
Chromium	T6	M40	1	mg/kg	M	001-005
Chromium VI	T6	A40	1	mg/kg	N	001-005
Copper	T6	M40	1	mg/kg	M	001-005
Lead	T6	M40	1	mg/kg	M	001-005
Mercury	T6	M40	1	mg/kg	M	001-005
Nickel	T6	M40	1	mg/kg	M	001-005
pH	T7	A40			M	001-005
Soil Organic Matter	T287	A40	0.1	%	N	001-005
Zinc	T6	M40	1	mg/kg	M	001-005
Benzene	T209	M105	10	µg/kg	M	001-005
Toluene	T209	M105	10	µg/kg	M	001-005
EthylBenzene	T209	M105	10	µg/kg	M	001-005
M/P Xylene	T209	M105	10	µg/kg	M	001-005
O Xylene	T209	M105	10	µg/kg	M	001-005
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	M	001-005
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-005
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-005
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-005
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	M	001-005
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	M	001-005
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	M	001-005
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	M	001-005
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-005
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-005
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-005
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	M	001-005
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	M	001-005
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	M	001-005
TPH (C21-C35 aromatic)	T909	M105	1	mg/kg	M	001-005
Naphthalene	T207	M105	0.1	mg/kg	M	001-005
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-005
Acenaphthene	T207	M105	0.1	mg/kg	M	001-005
Fluorene	T207	M105	0.1	mg/kg	M	001-005

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Phenanthrene	T207	M105	0.1	mg/kg	M	001-005
Anthracene	T207	M105	0.1	mg/kg	U	001-005
Fluoranthene	T207	M105	0.1	mg/kg	M	001-005
Pyrene	T207	M105	0.1	mg/kg	M	001-005
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-005
Chrysene	T207	M105	0.1	mg/kg	M	001-005
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-005
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-005
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-005
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-005
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-005
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-005
PAH(total)	T207	M105	0.1	mg/kg	U	001-005
Moisture @105C	T162	AR	0.1	%	N	001-005
Retained on 10mm sieve	T2	M40	0.1	%	N	001-005



Soil Cover Validation Record



Job number	R2469b	Depth ref:	n/a	Quality ref:	R2469-R01-V4 Final	Other documents attached	✓
Date	25.03.19	Area use:	For use in private gardens	landscaped	Currently stockpiled	other	
Site name / location	Nomvula Park, Waterpark Drive, Liverpool	Size area (m):	n/a	Approx Area (m²):	n/a	Approx Depth Top (m):	n/a
Plot / location:	SE of site ('Stockpile 5')					Approx Volume Top (m³):	n/a
Compiled by:	SM					Approx Depth Sub (m):	n/a
						Approx Volume Sub (m³):	~480 m³
		Number depth entries required:	n/a	Number of samples collected:		5 (soil tested at frequency of >1 sample per 100m³).	

Quality Validation		inspection date/time:	01.03.19 & 07.03.19	inspected by:	PM / SM	photographed:	✓
notes (see below)		✓ / ✗					
Source Topsoil	1.	✗	n/a				
Description Topsoil	2.	✗	n/a				
Sample Topsoil	3.	✗	n/a				
Source Subsoil	4.	✓	Sourced from site.				
Description Subsoil	5.	✓	Reddish brown clay with cobbles and gravel of mixed lithologies including brick and concrete fragments.				
Sample Subsoil	6.	✓	4 samples taken from onsite stockpile 'Stockpile 5' and 1 taken in-situ from Plot 11 (Chemtest refs: 19-08072 & 19-08562).				

Soil Cover Validation Record



Subsoil Analysis Summary

contaminant	soil standard adopted (mg/kg)	concentrations (mg/kg)	compliant?
asbestos Fibres	NAD	NAD	Yes
pH	-	8.2-8.7	-
soil organic matter	-	0.8-2.8	-
arsenic	37	7.4-17	Yes
cadmium	11	<0.1-0.23	Yes
chromium III	910	19-28	Yes
chromium VI	6	<0.5	Yes
copper	200	16-42	Yes
lead	200	13-120	Yes
mercury	40	<0.1-0.15	Yes
nickel	130	24-37	Yes
zinc	300	41-120	Yes
naphthalene	2.3	<0.1-0.43	Yes
acenaphthene	210	<0.1	Yes
acenaphthylene	170	<0.1-0.20	Yes
fluorene	170	<0.1	Yes
phenanthrene	95	0.21-0.50	Yes
anthracene	2,400	<0.1-0.16	Yes
fluoranthene	280	0.25-1.3	Yes
pyrene	620	0.22-1.4	Yes
benzo(a)anthracene	7.2	<0.1-1.1	Yes
chrysene	15	<0.1-0.97	Yes
benzo(b)fluoranthene	2.6	<0.1-0.8	Yes
benzo(k)fluoranthene	77	<0.1-0.67	Yes
benzo(a)pyrene	2.2	<0.1-0.99	Yes
indeno(123cd)pyrene	27	<0.1-0.75	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
dibenzo(ah)anthracene	0.24	<0.1-0.4	Yes [#]
benzo(ghi)perylene	320	<0.1-1.4	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	<1-51	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	Yes
Aromatic C16-C21	260	<1-2.2	Yes
Aromatic C21-C35	1,100	<1-130	Yes

[#] 2 minor exceedances were reported for dibenzo(ah)anthracene at 0.3-0.4mg/kg out of the 5 samples taken; a PAH ratio cross plot has been undertaken (attached) which indicates that the source of the material is more likely of pyrolytic origin, rather than petrogenic, and is therefore unlikely to be readily bio-accessible. All other samples tested for dibenzo(ah)anthracene reported below or at the limit of detection (<0.1-0.1mg/kg). The material is therefore considered suitable for its intended use in gardens within the development.

Soil Cover Validation Record



Stockpile Validation	Inspection date/time:	01.03.19 & 07.03.19	Tested by:	PM / SM	Photographed:	✓
Source Subsoil	Sourced from site.					
Soil description	Reddish brown clay with cobbles and gravel of mixed lithologies including brick and concrete fragments.					
Photograph (Stockpile 5) 						

Soil Cover Validation Record



Two minor exceedances have been detected within samples collected from the material for dibenzo(ah)anthracene; however, when taking into account the likely pyrolytic origin of the exceedances, and therefore the likely low bio-availability, SGP considers that this does not preclude the use of the material for its intended use as soil cover in gardens within the development, however this is subject to regulatory approval.

SGP Staff: S D Miller BSc

Signed:

A handwritten signature in black ink, appearing to read 'S D Miller', is positioned above the date.

29.03.19

SGP Member: B J Thomas BSc MSc MCIWEM C.Env

Signed:

A handwritten signature in black ink, appearing to read 'B J Thomas', is positioned above the date.

29.03.19

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
7.	Material Acceptability	Presence and amount of visible deleterious or otherwise unacceptable materials, e.g. glass, metal, plastic, Knotweed shoots etc.



Final Report

Report No.: 19-08072-1

Initial Date of Issue: 13-Mar-2019

Client: Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Scott Miller

Project: R2469b Waterpark Drive

Quotation No.: Q15-02887 **Date Received:** 05-Mar-2019

Order No.: **Date Instructed:** 05-Mar-2019

No. of Samples: 3

Turnaround (Wkdays): 7 **Results Due:** 13-Mar-2019

Date Approved: 13-Mar-2019

Approved By:



Details: Martin Dyer, Laboratory Manager

Project: R2469b Waterpark Drive

Client: Smith Grant LLP	Chemtest Job No.:				19-08072	19-08072	19-08072
Quotation No.: Q15-02887	Chemtest Sample ID.:				787703	787704	787705
	Sample Location:				Clay-Plot 11	Clay SP-1	Clay SP-2
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				01-Mar-2019	01-Mar-2019	01-Mar-2019
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-
Moisture	N	2030	%	0.020	12	13	16
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Clay	Clay	Clay
pH	M	2010		N/A	8.7	8.5	8.2
Arsenic	M	2450	mg/kg	1.0	9.6	7.8	17
Cadmium	M	2450	mg/kg	0.10	0.18	0.12	< 0.10
Chromium	M	2450	mg/kg	1.0	21	19	28
Copper	M	2450	mg/kg	0.50	18	15	17
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	24	24	37
Lead	M	2450	mg/kg	0.50	31	23	13
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	48	43	41
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	2.8	1.1	0.81
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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
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	< 5.0	< 5.0
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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
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	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Project: R2469b Waterpark Drive

Client: Smith Grant LLP	Chemtest Job No.:				19-08072	19-08072	19-08072
Quotation No.: Q15-02887	Chemtest Sample ID.:				787703	787704	787705
	Sample Location:				Clay-Plot 11	Clay SP-1	Clay SP-2
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				01-Mar-2019	01-Mar-2019	01-Mar-2019
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.48	0.45	0.21
Anthracene	M	2700	mg/kg	0.10	0.12	0.15	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	0.95	0.97	0.25
Pyrene	M	2700	mg/kg	0.10	0.97	1.2	0.22
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.55	0.57	< 0.10
Chrysene	M	2700	mg/kg	0.10	0.41	0.27	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	0.50	0.80	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.22	0.40	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	0.49	0.79	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.23	0.42	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.11	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.29	0.59	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	5.2	6.7	< 2.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

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
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"

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 45 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



Final Report

Report No.: 19-08562-1

Initial Date of Issue: 19-Mar-2019

Client Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Scott Miller

Project R2469b Water Park Drive (Barratt Homes)

Quotation No.: Q15-02887

Order No.:

No. of Samples: 14

Turnaround (Wkdays): 7

Date Approved: 19-Mar-2019

Approved By:



Details: Robert Monk, Technical Manager

Date Received: 08-Mar-2019

Date Instructed: 08-Mar-2019

Results Due: 18-Mar-2019

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790227	790228	790229	790230	790231	790232	790233	790243	790244
	Sample Location:				SP3-S1	SP3-S2	SP3-S3	SP3-S4	SP3-S5	SP3-S6	SP3-S7	SP4-S1	SP4-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				DURHAM	COVENTRY	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	COVENTRY
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	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
ACM Detection Stage	U	2192		N/A	-	-	-	-	-	-	-	-	-
Moisture	N	2030	%	0.020	25	28	23	20	16	19	19	16	12
Soil Colour	N	2040		N/A	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,
Other Material	N	2040		N/A	Stones, Roots,	Roots, Stones,,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Roots, Stones,	Stones, Roots,
Soil Texture	N	2040		N/A	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,
pH	M	2010		N/A	8.0	8.1	8.3	7.8	7.8	8.1	8.0	7.1	7.1
Arsenic	M	2450	mg/kg	1.0	13	13	10	9.5	12	9.9	10	7.8	7.9
Cadmium	M	2450	mg/kg	0.10	0.35	0.24	0.29	0.28	0.28	0.24	0.31	0.29	0.22
Chromium	M	2450	mg/kg	1.0	23	24	23	21	23	19	22	17	21
Copper	M	2450	mg/kg	0.50	29	31	27	26	49	27	28	21	17
Mercury	M	2450	mg/kg	0.10	0.15	0.51	0.15	0.16	0.20	0.14	0.14	0.11	< 0.10
Nickel	M	2450	mg/kg	0.50	23	27	24	20	21	20	22	16	18
Lead	M	2450	mg/kg	0.50	58	61	58	55	46	59	58	39	28
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.26	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	76	88	74	61	54	84	74	77	47
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	M	2625	%	0.40	4.5	3.1	3.3	3.3	2.6	3.5	3.3	3.1	2.1
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	M	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	M	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	M	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	M	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	M	2680	mg/kg	1.0	< 1.0	75	< 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	75	< 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	M	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	M	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 >C12-C16	M	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 >C16-C21	U	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 >C21-C35	M	2680	mg/kg	1.0	< 1.0	380	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	14	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	400	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	470	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790227	790228	790229	790230	790231	790232	790233	790243	790244
	Sample Location:				SP3-S1	SP3-S2	SP3-S3	SP3-S4	SP3-S5	SP3-S6	SP3-S7	SP4-S1	SP4-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				DURHAM	COVENTRY	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	COVENTRY
Determinand	Accred.	SOP	Units	LOD									
Naphthalene	M	2700	mg/kg	0.10	0.44	0.59	0.46	0.48	< 0.10	0.56	0.47	0.38	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	0.24	0.26	< 0.10	0.46	< 0.10	< 0.10	0.31	0.21	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	0.75	0.11	0.15	< 0.10	0.30	0.11	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	0.62	0.12	0.21	< 0.10	0.27	0.12	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.59	4.6	0.89	1.9	0.67	2.0	1.0	0.59	0.18
Anthracene	M	2700	mg/kg	0.10	< 0.10	1.3	0.28	0.37	0.16	0.52	0.24	0.13	0.10
Fluoranthene	M	2700	mg/kg	0.10	0.45	7.2	0.90	1.9	0.65	2.6	1.4	0.73	0.21
Pyrene	M	2700	mg/kg	0.10	0.57	7.2	1.0	1.8	0.76	2.7	1.4	0.80	0.28
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	4.2	0.51	0.95	0.40	1.5	0.84	0.44	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	3.9	0.84	1.2	0.69	1.5	1.2	0.70	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	3.2	0.57	1.0	0.51	1.2	0.64	0.39	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	2.2	0.46	0.69	0.37	0.77	0.75	0.47	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	3.1	0.53	0.86	0.41	1.2	0.82	0.44	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	1.8	0.32	0.70	0.34	0.88	0.46	0.28	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.75	0.32	0.95	0.41	0.51	0.51	0.37	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	2.7	1.1	1.6	0.55	2.4	1.8	0.95	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	2.3	44	8.4	15	5.9	19	12	6.9	< 2.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	25	2.5	< 1.0	5.7	9.1	23	31	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	2.0	1.3	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	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	M	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

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790245	790246	790247	790254	790255
	Sample Location:				SP4-S3	SP4-S4	SP4-S5	SP5-S1	SP5-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD					
ACM Type	U	2192		N/A	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-	-	-
Moisture	N	2030	%	0.020	16	16	21	13	17
Soil Colour	N	2040		N/A	Brown,	Brown,	Brown,	Brown,	Brown,
Other Material	N	2040		N/A	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,
Soil Texture	N	2040		N/A	Clay,	Clay,	Clay	Clay,	Clay,
pH	M	2010		N/A	7.9	7.9	7.5	8.4	8.4
Arsenic	M	2450	mg/kg	1.0	8.4	11	12	12	7.4
Cadmium	M	2450	mg/kg	0.10	0.28	0.31	0.41	0.23	0.14
Chromium	M	2450	mg/kg	1.0	19	22	28	22	26
Copper	M	2450	mg/kg	0.50	23	23	30	42	19
Mercury	M	2450	mg/kg	0.10	0.15	0.24	0.17	0.15	< 0.10
Nickel	M	2450	mg/kg	0.50	20	21	24	27	30
Lead	M	2450	mg/kg	0.50	48	44	54	120	28
Selenium	M	2450	mg/kg	0.20	0.22	< 0.20	0.33	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	60	48	57	120	49
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	3.1	2.4	3.3	1.5	1.3
Aliphatic TPH >C5-C6	N	2680	mg/kg	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
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	51	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	3.3	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	54	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	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
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	2.2	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	130	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	3.4	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	140	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	190	< 10

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790245	790246	790247	790254	790255
	Sample Location:				SP4-S3	SP4-S4	SP4-S5	SP5-S1	SP5-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD					
Naphthalene	M	2700	mg/kg	0.10	< 0.10	0.36	0.40	0.43	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.14	0.20	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.31	0.27	0.46	0.50	0.48
Anthracene	M	2700	mg/kg	0.10	< 0.10	0.11	0.13	0.16	0.14
Fluoranthene	M	2700	mg/kg	0.10	0.37	0.41	0.58	1.3	0.65
Pyrene	M	2700	mg/kg	0.10	0.43	0.48	0.55	1.4	0.68
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.83	0.76	1.0	1.1	0.34
Chrysene	M	2700	mg/kg	0.10	0.51	0.41	0.66	0.97	0.66
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	0.29	0.27	0.37	0.17	0.39
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.43	0.21	< 0.10	0.67	0.21
Benzo[a]pyrene	M	2700	mg/kg	0.10	0.21	0.27	0.33	0.99	0.39
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.14	< 0.10	0.24	0.75	0.75
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	0.33	< 0.10	0.26	0.30	0.40
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.65	< 0.10	0.90	1.4	1.4
Total Of 16 PAH's	M	2700	mg/kg	2.0	4.5	3.6	6.0	10	6.5
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	2.4	7.2	< 1.0	1.9
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	4.5	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"

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 45 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

Job name	Waterpark Drive
Job no.	R2469b
Date:	25.03.19
Author:	SM
Laboratory:	Chemtest
Lab. Reference:	19-08562



PAH concentrations

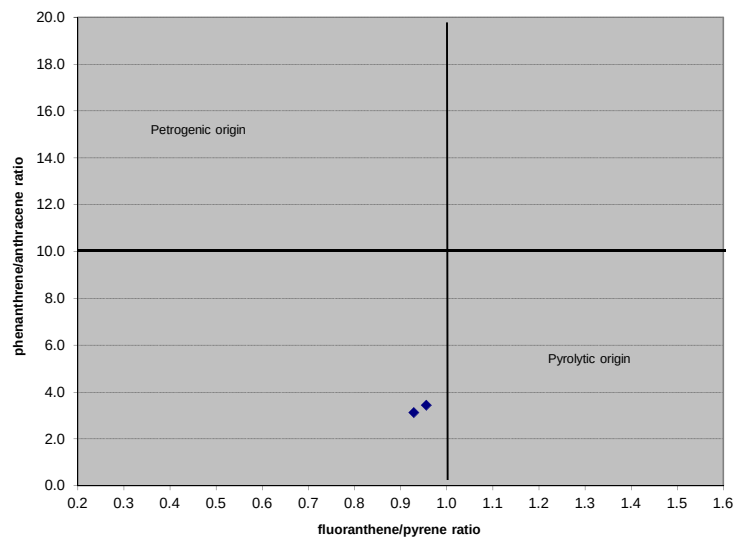
sample identity	SP5-S1	SP5-S2																	
phenanthrene	0.5	0.48																	
anthracene	0.16	0.14																	
fluoranthene	1.3	0.65																	
pyrene	1.4	0.68																	
benz(a)anthracene	1.1	0.34																	
chrysene	0.97	0.66																	

PAH units	mg/kg
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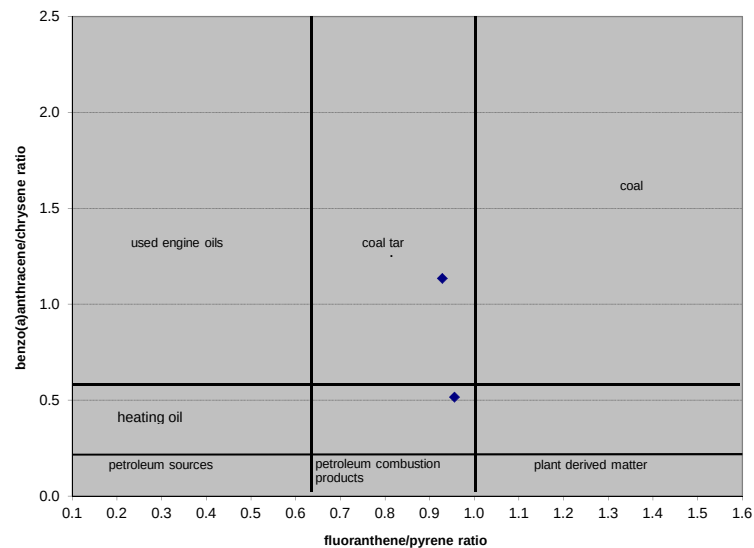
PAH ratios

phe/ant	3.125	3.429																	
flu/pyr	0.929	0.956																	
baa/chr	1.134	0.515																	

PAH source diagnosis



PAH source diagnosis



APPENDIX B

Soil Validation Certificates

Topsoil Validation Record

Job number	R2469b	Depth ref:	R2469-R01-v3		Quality ref:		R2469-R01-v3		Other documents attached		✓		
Date	07.05.19	Area use:	garden		landscaped		stockpile		other				
Site name / location	Nomvula Park, Waterpark Drive, Knowsley	Size area (m):	6 x 6	Approx Area (m²):	36	Approx Depth Top (m):	0.3	Approx Volume Top (m³):	11	Approx Depth Sub (m):	0.3	Approx Volume Sub (m³):	11
Plot/ location:	76	Number depth entries required		1 (1 per 3 gardens). 1 provided.		Number samples required:			3 TS & 3 SS (1 per 250m³ TS and 1 per 50m³ SS - minimum 3 samples per single source). 11 TS provided & 4 SS provided.				
Compiled by:	PRM												

Quality Validation		Inspection date/time:	15.11.17, 01.03.19	Inspected by:	SM, PRM	Photographed:	✓
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Source Topsoil	1.	✓	Site won topsoil
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets.
Sample Topsoil	3.	✓	11 samples taken from onsite stockpile '1' (CLS ref: 697291SW-TS-1 – SW-TS-4 & CLS ref:709629-1, SP-TS-1 – SP-TS-7).
Source Subsoil	4.	✓	Site won subsoil
Description Subsoil	5.	✓	Reddish brown clay with occasional cobbles and gravel of mixed lithologies.
Sample Subsoil	6.	✓	4 samples taken from onsite stockpile '5' and 1 taken in-situ from Plot 11 (Chemtest refs: 19-08072 & 19-08562).

Topsoil Validation Record



Topsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	11-17	Yes
Cadmium	11	<1	Yes
Chromium III	910	29-38	Yes
Chromium VI	6	<1	Yes
Copper	2400	32-43	Yes
Lead	200	56-72	Yes
Mercury	40	<1	Yes
Nickel	130	24-30	Yes
Zinc	3700	63-79	Yes
Naphthalene	2.3	<0.1	Yes
Acenaphthene	210	<0.1	Yes
Acenaphthylene	170	<0.1	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	<0.1-0.2	Yes
Pyrene	620	<0.1-0.2	Yes
Benzo(a) anthracene	7.2	<0.1	Yes
Chrysene	15	<0.1	Yes
Benzo(b) fluoranthene	2.6	<0.1	Yes
Benzo(k) fluoranthene	77	<0.1	Yes
Benzo(a) pyrene	2.2	<0.1	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1	Yes
Dibenzo(ah) anthracene	0.24	<0.1	Yes
Benzo(ghi) perylene	320	<0.1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1	Yes
Aliphatic C21-C35	5000	<1	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	Yes
Aromatic C16-C21	260	<1	Yes
Aromatic C21-C35	1100	<1	Yes

Soil Standards are adopted from published SGV's where available, other sources include the LQM/CIEH and CLAIRe GACs.
The appropriate land use is residential, and 1% SOM is assumed.

Topsoil Validation Record



Subsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	8.2-8.7	Yes
Cadmium	11	0.8-2.8	Yes
Chromium III	910	7.4-17	Yes
Chromium VI	6	<0.1-0.23	Yes
Copper	2400	19-28	Yes
Lead	200	<0.5	Yes
Mercury	40	16-42	Yes
Nickel	130	13-120	Yes
Zinc	3700	<0.1-0.15	Yes
Naphthalene	2.3	24-37	Yes
Acenaphthene	210	41-120	Yes
Acenaphthylene	170	<0.1-0.43	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1-0.20	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	0.21-0.50	Yes
Pyrene	620	<0.1-0.16	Yes
Benzo(a) anthracene	7.2	0.25-1.3	Yes
Chrysene	15	0.22-1.4	Yes
Benzo(b) fluoranthene	2.6	<0.1-1.1	Yes
Benzo(k) fluoranthene	77	<0.1-0.97	Yes
Benzo(a) pyrene	2.2	<0.1-0.8	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1-0.4	Yes
Dibenzo(ah) anthracene	0.24	<0.1-1.4	Yes*
Benzo(ghi) perylene	320	<1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1-51	Yes
Aliphatic C21-C35	5000	<1	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	<1-2.2	Yes
Aromatic C16-C21	260	<1-130	Yes
Aromatic C21-C35	1100	<1-380	Yes

Soil Standards are adopted from published SGV's where available, other sources include the LQM/CIEH and CLAIRe GACs.

The appropriate land use is residential, and 1% SOM is assumed.

2 minor exceedances were reported for dibenzo(ah)anthracene at 0.3-0.4mg/kg out of the 5 samples taken; a PAH ratio cross plot has been undertaken (attached) which indicates that the source of the material is more likely of pyrolytic origin, rather than petrogenic, and is therefore unlikely to be readily bio-accessible. All other samples tested for dibenzo(ah)anthracene reported below or at the limit of detection (<0.1-0.1mg/kg). The material is therefore considered suitable for its intended use in gardens within the development.

Topsoil Validation Record

Depth Validation	Inspection date/time:	03.05.19	Inspected by:	PRM	Photographed:	✓
Plot 76	Required Depth	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	Site Won Subsoil					
Soil profile/description	0.00-0.30m.	Dark brown slightly sandy topsoil with frequent rootlets.				
	0.30-0.60m.	Reddish brown clay with occasional cobbles and gravel				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



This area has PASSED inspection for depth and quality.

An additional inspection visit IS NOT required for these plots.

SGP Staff:	P R Magraw BSc FGS	Signed:		07.05.2019
SGP Member:	B Thomas BSc MSc MCIWEM C.Env SiLC	Signed:		08.05.2019

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



Final Report

Report No.: 19-08072-1

Initial Date of Issue: 13-Mar-2019

Client: Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Scott Miller

Project: R2469b Waterpark Drive

Quotation No.: Q15-02887 **Date Received:** 05-Mar-2019

Order No.: **Date Instructed:** 05-Mar-2019

No. of Samples: 3

Turnaround (Wkdays): 7 **Results Due:** 13-Mar-2019

Date Approved: 13-Mar-2019

Approved By:



Details: Martin Dyer, Laboratory Manager

Project: R2469b Waterpark Drive

Client: Smith Grant LLP	Chemtest Job No.:				19-08072	19-08072	19-08072
Quotation No.: Q15-02887	Chemtest Sample ID.:				787703	787704	787705
	Sample Location:				Clay-Plot 11	Clay SP-1	Clay SP-2
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				01-Mar-2019	01-Mar-2019	01-Mar-2019
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-
Moisture	N	2030	%	0.020	12	13	16
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Clay	Clay	Clay
pH	M	2010		N/A	8.7	8.5	8.2
Arsenic	M	2450	mg/kg	1.0	9.6	7.8	17
Cadmium	M	2450	mg/kg	0.10	0.18	0.12	< 0.10
Chromium	M	2450	mg/kg	1.0	21	19	28
Copper	M	2450	mg/kg	0.50	18	15	17
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	24	24	37
Lead	M	2450	mg/kg	0.50	31	23	13
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	48	43	41
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	2.8	1.1	0.81
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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
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	< 5.0	< 5.0
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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
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	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Project: R2469b Waterpark Drive

Client: Smith Grant LLP	Chemtest Job No.:				19-08072	19-08072	19-08072
Quotation No.: Q15-02887	Chemtest Sample ID.:				787703	787704	787705
	Sample Location:				Clay-Plot 11	Clay SP-1	Clay SP-2
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				01-Mar-2019	01-Mar-2019	01-Mar-2019
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.48	0.45	0.21
Anthracene	M	2700	mg/kg	0.10	0.12	0.15	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	0.95	0.97	0.25
Pyrene	M	2700	mg/kg	0.10	0.97	1.2	0.22
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.55	0.57	< 0.10
Chrysene	M	2700	mg/kg	0.10	0.41	0.27	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	0.50	0.80	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.22	0.40	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	0.49	0.79	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.23	0.42	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.11	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.29	0.59	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	5.2	6.7	< 2.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

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
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"

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 45 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

Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 697291-1

Date of Report: 07-Dec-2017

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 16-Nov-2017

Date Analysis Started: 20-Nov-2017

Date Analysis Completed: 07-Dec-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

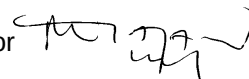
Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Miajan Miah
Customer Service Advisor

Issued by :
Miajan Miah
Customer Service Advisor



Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil MCERTS Preparation								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Moisture @105C	T162	AR	0.1	%	29	26	27	27
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1	<0.1

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Smith Grant Standard Suite 1								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Arsenic	T6	M40	2	mg/kg	14	13	13	17
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1	<1
Chromium	T6	M40	1	mg/kg	35	33	37	38
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1	<1
Copper	T6	M40	1	mg/kg	37	37	37	43
Lead	T6	M40	1	mg/kg	67	71	66	72
Mercury	T6	M40	1	mg/kg	<1	<1	<1	<1
Nickel	T6	M40	1	mg/kg	28	25	29	30
pH	T7	AR			6.0	5.7	6.0	7.3
Soil Organic Matter	T287	A40	0.1	%	4.1	5.1	4.3	5.4
Zinc	T6	M40	1	mg/kg	72	74	70	79

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil PAH US EPA 16 (B and K split)								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.2
Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.2
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
PAH(total)	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.4

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Total Petroleum Hydrocarbons CWG								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Benzene	T209	M105	0.010	mg/kg	(13) <0.010	(13) <0.010	(13) <0.010	(13) <0.010
Toluene	T209	M105	0.010	mg/kg	(13) <0.010	(13) <0.010	(13) <0.010	(13) <0.010
EthylBenzene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
M/P Xylene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
O Xylene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100	<0.100	<0.100
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	(13) <2	(13) <2	(13) <2	(13) <2
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	(13) <4	(13) <4	(13) <4	(13) <4
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) 2
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) 4

Index to symbols used in 697291-1

Value	Description
AR	As Received
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
A40	Assisted dried < 40C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T287	Calc TOC/0.58
T6	ICP/OES
T206	GC/FID (MCERTS)
T7	Probe
T162	Grav (1 Dec) (105 C)
T27	PLM
T2	Grav
T207	GC/MS (MCERTS)
T209	GC/MS (Head Space)(MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Arsenic	T6	M40	2	mg/kg	M	001-004
Asbestos ID	T27	AR			SU	001-004
Cadmium	T6	M40	1	mg/kg	M	001-004
Chromium	T6	M40	1	mg/kg	M	001-004
Chromium VI	T6	AR	1	mg/kg	N	001-004
Copper	T6	M40	1	mg/kg	M	001-004
Lead	T6	M40	1	mg/kg	M	001-004
Mercury	T6	M40	1	mg/kg	M	001-004
Nickel	T6	M40	1	mg/kg	M	001-004
pH	T7	AR			M	001-004
Soil Organic Matter	T287	A40	0.1	%	N	001-004
Zinc	T6	M40	1	mg/kg	M	001-004
Naphthalene	T207	M105	0.1	mg/kg	M	001-004
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-004
Acenaphthene	T207	M105	0.1	mg/kg	M	001-004
Fluorene	T207	M105	0.1	mg/kg	M	001-004
Phenanthrene	T207	M105	0.1	mg/kg	M	001-004
Anthracene	T207	M105	0.1	mg/kg	U	001-004
Fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Pyrene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Chrysene	T207	M105	0.1	mg/kg	M	001-004
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-004
PAH(total)	T207	M105	0.1	mg/kg	U	001-004
Benzene	T209	M105	0.010	mg/kg	M	001-004
Toluene	T209	M105	0.010	mg/kg	M	001-004
EthylBenzene	T209	M105	0.010	mg/kg	M	001-004
M/P Xylene	T209	M105	0.010	mg/kg	M	001-004

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
O Xylene	T209	M105	0.010	mg/kg	M	001-004
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	M	001-004
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-004
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	N	001-004
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	M	001-004
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	M	001-004
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	M	001-004
Moisture @105C	T162	AR	0.1	%	N	001-004
Retained on 10mm sieve	T2	M40	0.1	%	N	001-004



Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 709629-1

Date of Report: 30-Jan-2018

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 18-Jan-2018

Date Analysis Started: 19-Jan-2018

Date Analysis Completed: 30-Jan-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Aleksandra Pacula
Customer Service Advisor

Issued by :
Aleksandra Pacula
Customer Service Advisor



Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469								
Soil		Analysed as Soil						
MCERTS Preparation								
Concept Reference				709629 001		709629 002	709629 003	
Customer Sample Reference				SP-TS-5		SP-TS-6	SP-TS-7	
Date Sampled				16-JAN-2018		16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil		Sandy Soil	Sandy Soil	
Determinand		Method	Test Sample	LOD	Units			
Moisture @105C		T162	AR	0.1	%	26	18	28
Retained on 10mm sieve		T2	M40	0.1	%	<0.1	<0.1	<0.1

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
Smith Grant Standard Suite 1							
Concept Reference				709629 001	709629 002	709629 003	
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	
Determinand	Method	Test Sample	LOD	Units			
Arsenic	T6	M40	2	mg/kg	11	13	11
Asbestos ID	T27	AR			N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1
Chromium	T6	M40	1	mg/kg	29	31	29
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1
Copper	T6	M40	1	mg/kg	35	37	32
Lead	T6	M40	1	mg/kg	57	69	56
Mercury	T6	M40	1	mg/kg	<1	<1	<1
Nickel	T6	M40	1	mg/kg	24	27	25
pH	T7	AR			7.5	7.4	7.3
Soil Organic Matter	T287	A40	0.1	%	4.0	3.1	4.3
Zinc	T6	M40	1	mg/kg	74	70	63

Concept Reference: 709629							
Project Site: Waterpark Drive							
Customer Reference: R2469							
Soil				Analysed as Soil			
TPH (CWG) with MTBE, BTEX							
Concept Reference					709629 001	709629 002	709629 003
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Benzene	T209	M105	10	µg/kg	(13) <10	(13) <10	(13) <10
Toluene	T209	M105	10	µg/kg	<10	<10	<10
EthylBenzene	T209	M105	10	µg/kg	<10	<10	<10
M/P Xylene	T209	M105	10	µg/kg	<10	<10	<10
O Xylene	T209	M105	10	µg/kg	<10	<10	<10
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	<10	<10	<10
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100	<0.100
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	(13) <2	(13) <2	(13) <2
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	(13) <2	(13) <2	(13) <2
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aromatic)	T909	M105	1	mg/ka	(13) <1	(13) <1	(13) <1

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
PAH US EPA 16 (B and K split)							
Concept Reference					709629 001	709629 002	709629 003
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
PAH(tot(a))	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1

Concept Reference: 709629										
Project Site: Waterpark Drive										
Customer Reference: R2469										
Soil		Analysed as Soil								
Miscellaneous										
Concept Reference				709629 001	709629 002	709629 003	709629 004	709629 005		
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	AGG-IMP-6	AGG-IMP-7		
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018		
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil		
Determinand		Method	Test Sample	LOD	Units					
Asbestos ID		T27	AR			N.D.	N.D.	N.D.	N.D.	N.D.

Index to symbols used in 709629-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T2	Grav
T162	Grav (1 Dec) (105 C)
T6	ICP/OES
T27	PLM
T7	Probe
T909	GCxGC
T287	Calc TOC/0.58
T209	GC/MS (Head Space)(MCERTS)
T207	GC/MS (MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Moisture @105C	T162	AR	0.1	%	N	001-003
Retained on 10mm sieve	T2	M40	0.1	%	N	001-003
Arsenic	T6	M40	2	mg/kg	M	001-003
Asbestos ID	T27	AR			SU	001-005
Cadmium	T6	M40	1	mg/kg	M	001-003
Chromium	T6	M40	1	mg/kg	M	001-003
Chromium VI	T6	AR	1	mg/kg	N	001-003
Copper	T6	M40	1	mg/kg	M	001-003
Lead	T6	M40	1	mg/kg	M	001-003
Mercury	T6	M40	1	mg/kg	M	001-003
Nickel	T6	M40	1	mg/kg	M	001-003
pH	T7	AR			M	001-003
Soil Organic Matter	T287	A40	0.1	%	N	001-003
Zinc	T6	M40	1	mg/kg	M	001-003
Benzene	T209	M105	10	µg/kg	M	001-003

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Toluene	T209	M105	10	µg/kg	M	001-003
EthylBenzene	T209	M105	10	µg/kg	M	001-003
M/P Xylene	T209	M105	10	µg/kg	M	001-003
O Xylene	T209	M105	10	µg/kg	M	001-003
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	M	001-003
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-003
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	M	001-003
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	M	001-003
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aromatic)	T909	M105	1	mg/kg	M	001-003
Naphthalene	T207	M105	0.1	mg/kg	M	001-003
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-003
Acenaphthene	T207	M105	0.1	mg/kg	M	001-003
Fluorene	T207	M105	0.1	mg/kg	M	001-003
Phenanthrene	T207	M105	0.1	mg/kg	M	001-003
Anthracene	T207	M105	0.1	mg/kg	U	001-003
Fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Pyrene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Chrysene	T207	M105	0.1	mg/kg	M	001-003
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-003
PAH(total)	T207	M105	0.1	mg/kg	U	001-003



Final Report

Report No.: 19-08562-1

Initial Date of Issue: 19-Mar-2019

Client Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Scott Miller

Project R2469b Water Park Drive (Barratt Homes)

Quotation No.: Q15-02887

Order No.:

No. of Samples: 14

Turnaround (Wkdays): 7

Date Approved: 19-Mar-2019

Approved By:

Date Received: 08-Mar-2019

Date Instructed: 08-Mar-2019

Results Due: 18-Mar-2019

Details: Robert Monk, Technical Manager

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790227	790228	790229	790230	790231	790232	790233	790243	790244
	Sample Location:				SP3-S1	SP3-S2	SP3-S3	SP3-S4	SP3-S5	SP3-S6	SP3-S7	SP4-S1	SP4-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				DURHAM	COVENTRY	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	COVENTRY
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	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
ACM Detection Stage	U	2192		N/A	-	-	-	-	-	-	-	-	-
Moisture	N	2030	%	0.020	25	28	23	20	16	19	19	16	12
Soil Colour	N	2040		N/A	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,
Other Material	N	2040		N/A	Stones, Roots,	Roots, Stones,,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Roots, Stones,	Stones, Roots,
Soil Texture	N	2040		N/A	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,
pH	M	2010		N/A	8.0	8.1	8.3	7.8	7.8	8.1	8.0	7.1	7.1
Arsenic	M	2450	mg/kg	1.0	13	13	10	9.5	12	9.9	10	7.8	7.9
Cadmium	M	2450	mg/kg	0.10	0.35	0.24	0.29	0.28	0.28	0.24	0.31	0.29	0.22
Chromium	M	2450	mg/kg	1.0	23	24	23	21	23	19	22	17	21
Copper	M	2450	mg/kg	0.50	29	31	27	26	49	27	28	21	17
Mercury	M	2450	mg/kg	0.10	0.15	0.51	0.15	0.16	0.20	0.14	0.14	0.11	< 0.10
Nickel	M	2450	mg/kg	0.50	23	27	24	20	21	20	22	16	18
Lead	M	2450	mg/kg	0.50	58	61	58	55	46	59	58	39	28
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.26	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	76	88	74	61	54	84	74	77	47
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	M	2625	%	0.40	4.5	3.1	3.3	3.3	2.6	3.5	3.3	3.1	2.1
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	M	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	M	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	M	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	M	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	M	2680	mg/kg	1.0	< 1.0	75	< 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	75	< 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	M	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	M	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 >C12-C16	M	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 >C16-C21	U	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 >C21-C35	M	2680	mg/kg	1.0	< 1.0	380	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	14	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	400	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	470	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790227	790228	790229	790230	790231	790232	790233	790243	790244
	Sample Location:				SP3-S1	SP3-S2	SP3-S3	SP3-S4	SP3-S5	SP3-S6	SP3-S7	SP4-S1	SP4-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				DURHAM	COVENTRY	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	COVENTRY
Determinand	Accred.	SOP	Units	LOD									
Naphthalene	M	2700	mg/kg	0.10	0.44	0.59	0.46	0.48	< 0.10	0.56	0.47	0.38	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	0.24	0.26	< 0.10	0.46	< 0.10	< 0.10	0.31	0.21	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	0.75	0.11	0.15	< 0.10	0.30	0.11	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	0.62	0.12	0.21	< 0.10	0.27	0.12	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.59	4.6	0.89	1.9	0.67	2.0	1.0	0.59	0.18
Anthracene	M	2700	mg/kg	0.10	< 0.10	1.3	0.28	0.37	0.16	0.52	0.24	0.13	0.10
Fluoranthene	M	2700	mg/kg	0.10	0.45	7.2	0.90	1.9	0.65	2.6	1.4	0.73	0.21
Pyrene	M	2700	mg/kg	0.10	0.57	7.2	1.0	1.8	0.76	2.7	1.4	0.80	0.28
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	4.2	0.51	0.95	0.40	1.5	0.84	0.44	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	3.9	0.84	1.2	0.69	1.5	1.2	0.70	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	3.2	0.57	1.0	0.51	1.2	0.64	0.39	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	2.2	0.46	0.69	0.37	0.77	0.75	0.47	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	3.1	0.53	0.86	0.41	1.2	0.82	0.44	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	1.8	0.32	0.70	0.34	0.88	0.46	0.28	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.75	0.32	0.95	0.41	0.51	0.51	0.37	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	2.7	1.1	1.6	0.55	2.4	1.8	0.95	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	2.3	44	8.4	15	5.9	19	12	6.9	< 2.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	25	2.5	< 1.0	5.7	9.1	23	31	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	2.0	1.3	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	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	M	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

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790245	790246	790247	790254	790255
	Sample Location:				SP4-S3	SP4-S4	SP4-S5	SP5-S1	SP5-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD					
ACM Type	U	2192		N/A	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-	-	-
Moisture	N	2030	%	0.020	16	16	21	13	17
Soil Colour	N	2040		N/A	Brown,	Brown,	Brown,	Brown,	Brown,
Other Material	N	2040		N/A	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,
Soil Texture	N	2040		N/A	Clay,	Clay,	Clay	Clay,	Clay,
pH	M	2010		N/A	7.9	7.9	7.5	8.4	8.4
Arsenic	M	2450	mg/kg	1.0	8.4	11	12	12	7.4
Cadmium	M	2450	mg/kg	0.10	0.28	0.31	0.41	0.23	0.14
Chromium	M	2450	mg/kg	1.0	19	22	28	22	26
Copper	M	2450	mg/kg	0.50	23	23	30	42	19
Mercury	M	2450	mg/kg	0.10	0.15	0.24	0.17	0.15	< 0.10
Nickel	M	2450	mg/kg	0.50	20	21	24	27	30
Lead	M	2450	mg/kg	0.50	48	44	54	120	28
Selenium	M	2450	mg/kg	0.20	0.22	< 0.20	0.33	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	60	48	57	120	49
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	3.1	2.4	3.3	1.5	1.3
Aliphatic TPH >C5-C6	N	2680	mg/kg	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
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	51	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	3.3	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	54	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	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
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	2.2	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	130	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	3.4	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	140	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	190	< 10

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790245	790246	790247	790254	790255
	Sample Location:				SP4-S3	SP4-S4	SP4-S5	SP5-S1	SP5-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD					
Naphthalene	M	2700	mg/kg	0.10	< 0.10	0.36	0.40	0.43	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.14	0.20	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.31	0.27	0.46	0.50	0.48
Anthracene	M	2700	mg/kg	0.10	< 0.10	0.11	0.13	0.16	0.14
Fluoranthene	M	2700	mg/kg	0.10	0.37	0.41	0.58	1.3	0.65
Pyrene	M	2700	mg/kg	0.10	0.43	0.48	0.55	1.4	0.68
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.83	0.76	1.0	1.1	0.34
Chrysene	M	2700	mg/kg	0.10	0.51	0.41	0.66	0.97	0.66
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	0.29	0.27	0.37	0.17	0.39
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.43	0.21	< 0.10	0.67	0.21
Benzo[a]pyrene	M	2700	mg/kg	0.10	0.21	0.27	0.33	0.99	0.39
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.14	< 0.10	0.24	0.75	0.75
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	0.33	< 0.10	0.26	0.30	0.40
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.65	< 0.10	0.90	1.4	1.4
Total Of 16 PAH's	M	2700	mg/kg	2.0	4.5	3.6	6.0	10	6.5
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	2.4	7.2	< 1.0	1.9
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	4.5	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"

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 45 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

Job name	Waterpark Drive
Job no.	R2469b
Date:	25.03.19
Author:	SM
Laboratory:	Chemtest
Lab. Reference:	19-08562



PAH concentrations

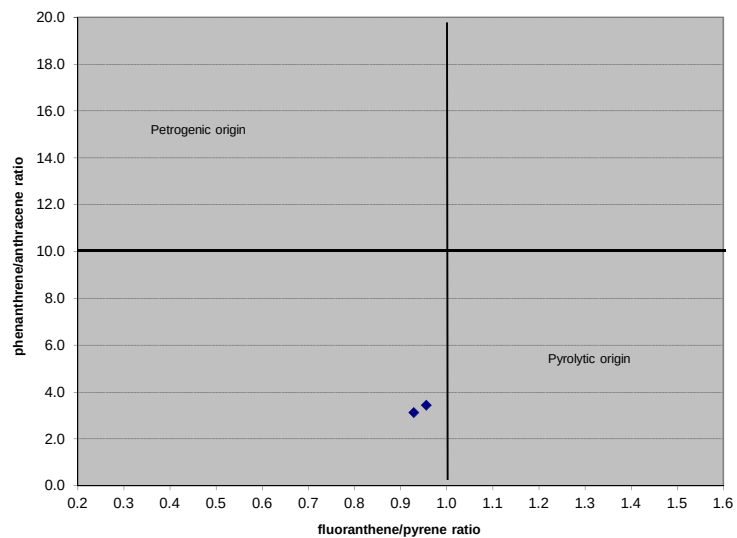
sample identity	SP5-S1	SP5-S2																	
phenanthrene	0.5	0.48																	
anthracene	0.16	0.14																	
fluoranthene	1.3	0.65																	
pyrene	1.4	0.68																	
benz(a)anthracene	1.1	0.34																	
chrysene	0.97	0.66																	

PAH units	mg/kg
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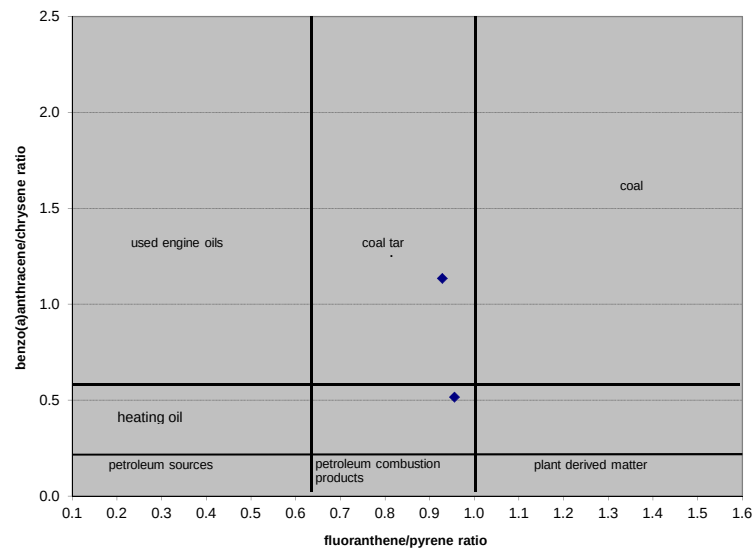
PAH ratios

phe/ant	3.125	3.429																	
flu/pyr	0.929	0.956																	
baa/chr	1.134	0.515																	

PAH source diagnosis



PAH source diagnosis



Topsoil Validation Record

Job number	R2469b	Depth ref:	R2469-R01-v3	Quality ref:	R2469-R01-v3	Other documents attached	✓						
Date	03.12.2018	Area use:	garden	landscaped	stockpile	other							
Site name / location	Nomvula Park, Waterpark Drive, Knowsley	Size area (m):	6 x 10 6 x 10	Approx Area (m²):	120	Approx Depth Top (m):	0.6	Approx Volume Top (m³):	72	Approx Depth Sub (m):	N/A	Approx Volume Sub (m³):	N/A
Plot/ location:	1-2, 74-75	Number depth entries required	2 (1 per 3 gardens). 2 provided.			Number samples required:	1 TS (1 per 250m³ TS) (minimum 3 samples per single source), 11 TS provided						
Compiled by:	PRM												

Quality Validation		Inspection date/time:	15.11.2017, 16.01.2018	Inspected by:	SM	Photographed:	✓
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Source Topsoil	1.	✓	Site won topsoil
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets.
Sample Topsoil	3.	✓	11 samples taken from onsite stockpile '1' (CLS ref: 697291SW-TS-1 – SW-TS-4 & 709629-1, SP-TS-1 – SP-TS-7)
Source Subsoil	4.	x	N/A
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	NFD	NFD	Yes
Arsenic	37	11-17	Yes
Cadmium	11	<1	Yes
Chromium III	910	29-38	Yes
Chromium VI	6	<1	Yes
Copper	2400	32-43	Yes
Lead	200	56-72	Yes
Mercury	40	<1	Yes
Nickel	130	24-30	Yes
Zinc	3700	63-79	Yes
Naphthalene	2.3	<0.1	Yes
Acenaphthene	210	<0.1	Yes
Acenaphthylene	170	<0.1	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	<0.1-0.2	Yes
Pyrene	620	<0.1-0.2	Yes
Benzo(a) anthracene	7.2	<0.1	Yes
Chrysene	15	<0.1	Yes
Benzo(b) fluoranthene	2.6	<0.1	Yes
Benzo(k) fluoranthene	77	<0.1	Yes
Benzo(a) pyrene	2.2	<0.1	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1	Yes
Dibenzo(ah) anthracene	0.24	<0.1	Yes
Benzo(ghi) perylene	320	<0.1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1	Yes
Aliphatic C21-C35	5000	<1	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	Yes
Aromatic C16-C21	260	<1	Yes
Aromatic C21-C35	1100	<1	Yes

Soil Standards are adopted from published SGV's where available, other sources include the LQM/CIEH and CLAIRe GACs.
The appropriate land use is residential, and 1% SOM is assumed.

Topsoil Validation Record

Depth Validation	Inspection date/time:	30.11.2018	Inspected by:	PRM	Photographed:	✓
Plot 1	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	N/A					
Soil profile/description	0.00-0.60m. 0.60m	Dark brown slightly sandy topsoil with frequent rootlets. Base				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



Depth Validation	Inspection date/time:	30.11.2018	Inspected by:	PRM	Photographed:	✓
Plot 75	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Generated material					
Source Subsoil	N/A					
Soil profile/description	0.00-0.60m. 0.60m	Dark brown slightly sandy topsoil with frequent rootlets. Base				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



This area has PASSED inspection for depth and quality.
An additional inspection visit IS NOT required for these plots.

SGP Staff:	P R Magraw BSc FGS	Signed:		03.12.2018
SGP Member:	D Wayland BSc MSc MCIWEM C.Env	Signed:		03.12.2018

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

Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 697291-1

Date of Report: 07-Dec-2017

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 16-Nov-2017

Date Analysis Started: 20-Nov-2017

Date Analysis Completed: 07-Dec-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Miajan Miah
Customer Service Advisor

Issued by :
Miajan Miah
Customer Service Advisor

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil MCERTS Preparation								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Moisture @105C	T162	AR	0.1	%	29	26	27	27
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1	<0.1

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Smith Grant Standard Suite 1								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Arsenic	T6	M40	2	mg/kg	14	13	13	17
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1	<1
Chromium	T6	M40	1	mg/kg	35	33	37	38
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1	<1
Copper	T6	M40	1	mg/kg	37	37	37	43
Lead	T6	M40	1	mg/kg	67	71	66	72
Mercury	T6	M40	1	mg/kg	<1	<1	<1	<1
Nickel	T6	M40	1	mg/kg	28	25	29	30
pH	T7	AR			6.0	5.7	6.0	7.3
Soil Organic Matter	T287	A40	0.1	%	4.1	5.1	4.3	5.4
Zinc	T6	M40	1	mg/kg	72	74	70	79

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil PAH US EPA 16 (B and K split)								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.2
Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.2
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
PAH(total)	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.4

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Total Petroleum Hydrocarbons CWG								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Benzene	T209	M105	0.010	mg/kg	(13) <0.010	(13) <0.010	(13) <0.010	(13) <0.010
Toluene	T209	M105	0.010	mg/kg	(13) <0.010	(13) <0.010	(13) <0.010	(13) <0.010
EthylBenzene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
M/P Xylene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
O Xylene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100	<0.100	<0.100
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	(13) <2	(13) <2	(13) <2	(13) <2
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	(13) <4	(13) <4	(13) <4	(13) <4
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) 2
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) 4

Index to symbols used in 697291-1

Value	Description
AR	As Received
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
A40	Assisted dried < 40C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T287	Calc TOC/0.58
T6	ICP/OES
T206	GC/FID (MCERTS)
T7	Probe
T162	Grav (1 Dec) (105 C)
T27	PLM
T2	Grav
T207	GC/MS (MCERTS)
T209	GC/MS (Head Space)(MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Arsenic	T6	M40	2	mg/kg	M	001-004
Asbestos ID	T27	AR			SU	001-004
Cadmium	T6	M40	1	mg/kg	M	001-004
Chromium	T6	M40	1	mg/kg	M	001-004
Chromium VI	T6	AR	1	mg/kg	N	001-004
Copper	T6	M40	1	mg/kg	M	001-004
Lead	T6	M40	1	mg/kg	M	001-004
Mercury	T6	M40	1	mg/kg	M	001-004
Nickel	T6	M40	1	mg/kg	M	001-004
pH	T7	AR			M	001-004
Soil Organic Matter	T287	A40	0.1	%	N	001-004
Zinc	T6	M40	1	mg/kg	M	001-004
Naphthalene	T207	M105	0.1	mg/kg	M	001-004
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-004
Acenaphthene	T207	M105	0.1	mg/kg	M	001-004
Fluorene	T207	M105	0.1	mg/kg	M	001-004
Phenanthrene	T207	M105	0.1	mg/kg	M	001-004
Anthracene	T207	M105	0.1	mg/kg	U	001-004
Fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Pyrene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Chrysene	T207	M105	0.1	mg/kg	M	001-004
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-004
PAH(total)	T207	M105	0.1	mg/kg	U	001-004
Benzene	T209	M105	0.010	mg/kg	M	001-004
Toluene	T209	M105	0.010	mg/kg	M	001-004
EthylBenzene	T209	M105	0.010	mg/kg	M	001-004
M/P Xylene	T209	M105	0.010	mg/kg	M	001-004

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
O Xylene	T209	M105	0.010	mg/kg	M	001-004
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	M	001-004
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-004
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	N	001-004
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	M	001-004
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	M	001-004
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	M	001-004
Moisture @105C	T162	AR	0.1	%	N	001-004
Retained on 10mm sieve	T2	M40	0.1	%	N	001-004



Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 709629-1

Date of Report: 30-Jan-2018

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 18-Jan-2018

Date Analysis Started: 19-Jan-2018

Date Analysis Completed: 30-Jan-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Aleksandra Pacula
Customer Service Advisor

Issued by :
Aleksandra Pacula
Customer Service Advisor



Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469								
Soil		Analysed as Soil						
MCERTS Preparation								
Concept Reference				709629 001		709629 002	709629 003	
Customer Sample Reference				SP-TS-5		SP-TS-6	SP-TS-7	
Date Sampled				16-JAN-2018		16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil		Sandy Soil	Sandy Soil	
Determinand		Method	Test Sample	LOD	Units			
Moisture @105C		T162	AR	0.1	%	26	18	28
Retained on 10mm sieve		T2	M40	0.1	%	<0.1	<0.1	<0.1

Concept Reference: 709629							
Project Site: Waterpark Drive							
Customer Reference: R2469							
Soil		Analysed as Soil					
Smith Grant Standard Suite 1							
Concept Reference				709629 001	709629 002	709629 003	
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	
Determinand	Method	Test Sample	LOD	Units			
Arsenic	T6	M40	2	mg/kg	11	13	11
Asbestos ID	T27	AR			N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1
Chromium	T6	M40	1	mg/kg	29	31	29
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1
Copper	T6	M40	1	mg/kg	35	37	32
Lead	T6	M40	1	mg/kg	57	69	56
Mercury	T6	M40	1	mg/kg	<1	<1	<1
Nickel	T6	M40	1	mg/kg	24	27	25
pH	T7	AR			7.5	7.4	7.3
Soil Organic Matter	T287	A40	0.1	%	4.0	3.1	4.3
Zinc	T6	M40	1	mg/kg	74	70	63

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil				Analysed as Soil			
TPH (CWG) with MTBE, BTEX							
Concept Reference					709629 001	709629 002	709629 003
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Benzene	T209	M105	10	µg/kg	(13) <10	(13) <10	(13) <10
Toluene	T209	M105	10	µg/kg	<10	<10	<10
EthylBenzene	T209	M105	10	µg/kg	<10	<10	<10
M/P Xylene	T209	M105	10	µg/kg	<10	<10	<10
O Xylene	T209	M105	10	µg/kg	<10	<10	<10
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	<10	<10	<10
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100	<0.100
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	(13) <2	(13) <2	(13) <2
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	(13) <2	(13) <2	(13) <2
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aromatic)	T909	M105	1	mg/ka	(13) <1	(13) <1	(13) <1

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
PAH US EPA 16 (B and K split)							
Concept Reference					709629 001	709629 002	709629 003
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
PAH(tot(a))	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1

Concept Reference: 709629									
Project Site: Waterpark Drive									
Customer Reference: R2469									
Soil		Analysed as Soil							
Miscellaneous									
Concept Reference				709629 001	709629 002	709629 003	709629 004	709629 005	
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	AGG-IMP-6	AGG-IMP-7	
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	
Determinand		Method	Test Sample	LOD	Units				
Asbestos ID		T27	AR			N.D.	N.D.	N.D.	N.D.
						N.D.	N.D.	N.D.	N.D.

Index to symbols used in 709629-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T2	Grav
T162	Grav (1 Dec) (105 C)
T6	ICP/OES
T27	PLM
T7	Probe
T909	GCxGC
T287	Calc TOC/0.58
T209	GC/MS (Head Space)(MCERTS)
T207	GC/MS (MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Moisture @105C	T162	AR	0.1	%	N	001-003
Retained on 10mm sieve	T2	M40	0.1	%	N	001-003
Arsenic	T6	M40	2	mg/kg	M	001-003
Asbestos ID	T27	AR			SU	001-005
Cadmium	T6	M40	1	mg/kg	M	001-003
Chromium	T6	M40	1	mg/kg	M	001-003
Chromium VI	T6	AR	1	mg/kg	N	001-003
Copper	T6	M40	1	mg/kg	M	001-003
Lead	T6	M40	1	mg/kg	M	001-003
Mercury	T6	M40	1	mg/kg	M	001-003
Nickel	T6	M40	1	mg/kg	M	001-003
pH	T7	AR			M	001-003
Soil Organic Matter	T287	A40	0.1	%	N	001-003
Zinc	T6	M40	1	mg/kg	M	001-003
Benzene	T209	M105	10	µg/kg	M	001-003

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Toluene	T209	M105	10	µg/kg	M	001-003
EthylBenzene	T209	M105	10	µg/kg	M	001-003
M/P Xylene	T209	M105	10	µg/kg	M	001-003
O Xylene	T209	M105	10	µg/kg	M	001-003
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	M	001-003
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-003
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	M	001-003
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	M	001-003
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aromatic)	T909	M105	1	mg/kg	M	001-003
Naphthalene	T207	M105	0.1	mg/kg	M	001-003
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-003
Acenaphthene	T207	M105	0.1	mg/kg	M	001-003
Fluorene	T207	M105	0.1	mg/kg	M	001-003
Phenanthrene	T207	M105	0.1	mg/kg	M	001-003
Anthracene	T207	M105	0.1	mg/kg	U	001-003
Fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Pyrene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Chrysene	T207	M105	0.1	mg/kg	M	001-003
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-003
PAH(total)	T207	M105	0.1	mg/kg	U	001-003

Topsoil Validation Record

Job number	R2469b	Depth ref:	R2469-R01-v3	Quality ref:	R2469-R01-v3	Other documents attached	✓						
Date	13.12.2018	Area use:	garden	landscaped	stockpile	other							
Site name / location	Nomvula Park, Waterpark Drive, Knowsley	Size area (m):	5 x 15 6 x 8	Approx Area (m²):	123	Approx Depth Top (m):	0.6	Approx Volume Top (m³):	74	Approx Depth Sub (m):	N/A	Approx Volume Sub (m³):	N/A
Plot/ location:	3-8	Number depth entries required	2 (1 per 3 gardens). 2 provided.			Number samples required:	1 TS (1 per 250m³ TS) (minimum 3 samples per single source), 11 TS provided						
Compiled by:	PRM												

Quality Validation		Inspection date/time:	15.11.2017, 16.01.2018	Inspected by:	SM	Photographed:	✓
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Source Topsoil	1.	✓	Site won topsoil
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets.
Sample Topsoil	3.	✓	11 samples taken from onsite stockpile '1' (CLS ref: 697291SW-TS-1 – SW-TS-4 & 709629-1, SP-TS-1 – SP-TS-7)
Source Subsoil	4.	x	N/A
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	NFD	NFD	Yes
Arsenic	37	11-17	Yes
Cadmium	11	<1	Yes
Chromium III	910	29-38	Yes
Chromium VI	6	<1	Yes
Copper	2400	32-43	Yes
Lead	200	56-72	Yes
Mercury	40	<1	Yes
Nickel	130	24-30	Yes
Zinc	3700	63-79	Yes
Naphthalene	2.3	<0.1	Yes
Acenaphthene	210	<0.1	Yes
Acenaphthylene	170	<0.1	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	<0.1-0.2	Yes
Pyrene	620	<0.1-0.2	Yes
Benzo(a) anthracene	7.2	<0.1	Yes
Chrysene	15	<0.1	Yes
Benzo(b) fluoranthene	2.6	<0.1	Yes
Benzo(k) fluoranthene	77	<0.1	Yes
Benzo(a) pyrene	2.2	<0.1	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1	Yes
Dibenzo(ah) anthracene	0.24	<0.1	Yes
Benzo(ghi) perylene	320	<0.1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1	Yes
Aliphatic C21-C35	5000	<1	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	Yes
Aromatic C16-C21	260	<1	Yes
Aromatic C21-C35	1100	<1	Yes

Soil Standards are adopted from published SGV's where available, other sources include the LQM/CIEH and CLAIRe GACs.
The appropriate land use is residential, and 1% SOM is assumed.

Topsoil Validation Record

Depth Validation	Inspection date/time:	13.12.2018	Inspected by:	PRM	Photographed:	✓
Plot 4	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	N/A					
Soil profile/description	0.00-0.60m. 0.60m	Dark brown slightly sandy topsoil with frequent rootlets. Base				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record

Depth Validation	Inspection date/time:	13.12.2018	Inspected by:	PRM	Photographed:	✓
Plot 7	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	N/A					
Soil profile/description	0.00-0.60m. 0.60m	Dark brown slightly sandy topsoil with frequent rootlets. Base				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



This area has PASSED inspection for depth and quality.
An additional inspection visit IS NOT required for these plots.

SGP Staff:	P R Magraw BSc FGS	Signed:		13.12.2018
SGP Member:	B J Thomas BSc MSc MCIWEM C.Env SiLC	Signed:		13.12.2018

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

Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 697291-1

Date of Report: 07-Dec-2017

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 16-Nov-2017

Date Analysis Started: 20-Nov-2017

Date Analysis Completed: 07-Dec-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

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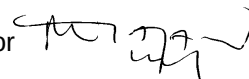
Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Miajan Miah
Customer Service Advisor

Issued by :
Miajan Miah
Customer Service Advisor



Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil MCERTS Preparation								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Moisture @105C	T162	AR	0.1	%	29	26	27	27
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1	<0.1

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Smith Grant Standard Suite 1								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Arsenic	T6	M40	2	mg/kg	14	13	13	17
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1	<1
Chromium	T6	M40	1	mg/kg	35	33	37	38
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1	<1
Copper	T6	M40	1	mg/kg	37	37	37	43
Lead	T6	M40	1	mg/kg	67	71	66	72
Mercury	T6	M40	1	mg/kg	<1	<1	<1	<1
Nickel	T6	M40	1	mg/kg	28	25	29	30
pH	T7	AR			6.0	5.7	6.0	7.3
Soil Organic Matter	T287	A40	0.1	%	4.1	5.1	4.3	5.4
Zinc	T6	M40	1	mg/kg	72	74	70	79

Value	Description
AR	As Received
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
A40	Assisted dried < 40C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T287	Calc TOC/0.58
T6	ICP/OES
T206	GC/FID (MCERTS)
T7	Probe
T162	Grav (1 Dec) (105 C)
T27	PLM
T2	Grav
T207	GC/MS (MCERTS)
T209	GC/MS (Head Space)(MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Arsenic	T6	M40	2	mg/kg	M	001-004
Asbestos ID	T27	AR			SU	001-004
Cadmium	T6	M40	1	mg/kg	M	001-004
Chromium	T6	M40	1	mg/kg	M	001-004
Chromium VI	T6	AR	1	mg/kg	N	001-004
Copper	T6	M40	1	mg/kg	M	001-004
Lead	T6	M40	1	mg/kg	M	001-004
Mercury	T6	M40	1	mg/kg	M	001-004
Nickel	T6	M40	1	mg/kg	M	001-004
pH	T7	AR			M	001-004
Soil Organic Matter	T287	A40	0.1	%	N	001-004
Zinc	T6	M40	1	mg/kg	M	001-004
Naphthalene	T207	M105	0.1	mg/kg	M	001-004
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-004
Acenaphthene	T207	M105	0.1	mg/kg	M	001-004
Fluorene	T207	M105	0.1	mg/kg	M	001-004
Phenanthrene	T207	M105	0.1	mg/kg	M	001-004
Anthracene	T207	M105	0.1	mg/kg	U	001-004
Fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Pyrene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Chrysene	T207	M105	0.1	mg/kg	M	001-004
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-004
PAH(total)	T207	M105	0.1	mg/kg	U	001-004
Benzene	T209	M105	0.010	mg/kg	M	001-004
Toluene	T209	M105	0.010	mg/kg	M	001-004
EthylBenzene	T209	M105	0.010	mg/kg	M	001-004
M/P Xylene	T209	M105	0.010	mg/kg	M	001-004

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
O Xylene	T209	M105	0.010	mg/kg	M	001-004
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	M	001-004
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-004
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	N	001-004
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	M	001-004
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	M	001-004
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	M	001-004
Moisture @105C	T162	AR	0.1	%	N	001-004
Retained on 10mm sieve	T2	M40	0.1	%	N	001-004



Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 709629-1

Date of Report: 30-Jan-2018

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 18-Jan-2018

Date Analysis Started: 19-Jan-2018

Date Analysis Completed: 30-Jan-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Aleksandra Pacula
Customer Service Advisor

Issued by :
Aleksandra Pacula
Customer Service Advisor



Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
MCERTS Preparation							
Concept Reference					709629 001	709629 002	709629 003
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Moisture @105C	T162	AR	0.1	%	26	18	28
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
Smith Grant Standard Suite 1							
Concept Reference				709629 001	709629 002	709629 003	
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	
Determinand	Method	Test Sample	LOD	Units			
Arsenic	T6	M40	2	mg/kg	11	13	11
Asbestos ID	T27	AR			N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1
Chromium	T6	M40	1	mg/kg	29	31	29
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1
Copper	T6	M40	1	mg/kg	35	37	32
Lead	T6	M40	1	mg/kg	57	69	56
Mercury	T6	M40	1	mg/kg	<1	<1	<1
Nickel	T6	M40	1	mg/kg	24	27	25
pH	T7	AR			7.5	7.4	7.3
Soil Organic Matter	T287	A40	0.1	%	4.0	3.1	4.3
Zinc	T6	M40	1	mg/kg	74	70	63

Concept Reference: 709629							
Project Site: Waterpark Drive							
Customer Reference: R2469							
Soil				Analysed as Soil			
TPH (CWG) with MTBE, BTEX							
Concept Reference					709629 001	709629 002	709629 003
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Benzene	T209	M105	10	µg/kg	(13) <10	(13) <10	(13) <10
Toluene	T209	M105	10	µg/kg	<10	<10	<10
EthylBenzene	T209	M105	10	µg/kg	<10	<10	<10
M/P Xylene	T209	M105	10	µg/kg	<10	<10	<10
O Xylene	T209	M105	10	µg/kg	<10	<10	<10
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	<10	<10	<10
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100	<0.100
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	(13) <2	(13) <2	(13) <2
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	(13) <2	(13) <2	(13) <2
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aromatic)	T909	M105	1	mg/ka	(13) <1	(13) <1	(13) <1

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
PAH US EPA 16 (B and K split)							
Concept Reference					709629 001	709629 002	709629 003
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
PAH(tot(a))	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1

Concept Reference: 709629										
Project Site: Waterpark Drive										
Customer Reference: R2469										
Soil		Analysed as Soil								
Miscellaneous										
Concept Reference				709629 001	709629 002	709629 003	709629 004	709629 005		
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	AGG-IMP-6	AGG-IMP-7		
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018		
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil		
Determinand		Method	Test Sample	LOD	Units					
Asbestos ID		T27	AR			N.D.	N.D.	N.D.	N.D.	N.D.

Index to symbols used in 709629-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T2	Grav
T162	Grav (1 Dec) (105 C)
T6	ICP/OES
T27	PLM
T7	Probe
T909	GCxGC
T287	Calc TOC/0.58
T209	GC/MS (Head Space)(MCERTS)
T207	GC/MS (MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Moisture @105C	T162	AR	0.1	%	N	001-003
Retained on 10mm sieve	T2	M40	0.1	%	N	001-003
Arsenic	T6	M40	2	mg/kg	M	001-003
Asbestos ID	T27	AR			SU	001-005
Cadmium	T6	M40	1	mg/kg	M	001-003
Chromium	T6	M40	1	mg/kg	M	001-003
Chromium VI	T6	AR	1	mg/kg	N	001-003
Copper	T6	M40	1	mg/kg	M	001-003
Lead	T6	M40	1	mg/kg	M	001-003
Mercury	T6	M40	1	mg/kg	M	001-003
Nickel	T6	M40	1	mg/kg	M	001-003
pH	T7	AR			M	001-003
Soil Organic Matter	T287	A40	0.1	%	N	001-003
Zinc	T6	M40	1	mg/kg	M	001-003
Benzene	T209	M105	10	µg/kg	M	001-003

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Toluene	T209	M105	10	µg/kg	M	001-003
EthylBenzene	T209	M105	10	µg/kg	M	001-003
M/P Xylene	T209	M105	10	µg/kg	M	001-003
O Xylene	T209	M105	10	µg/kg	M	001-003
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	M	001-003
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-003
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	M	001-003
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	M	001-003
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aromatic)	T909	M105	1	mg/kg	M	001-003
Naphthalene	T207	M105	0.1	mg/kg	M	001-003
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-003
Acenaphthene	T207	M105	0.1	mg/kg	M	001-003
Fluorene	T207	M105	0.1	mg/kg	M	001-003
Phenanthrene	T207	M105	0.1	mg/kg	M	001-003
Anthracene	T207	M105	0.1	mg/kg	U	001-003
Fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Pyrene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Chrysene	T207	M105	0.1	mg/kg	M	001-003
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-003
PAH(total)	T207	M105	0.1	mg/kg	U	001-003

Topsoil Validation Record

Job number	R2469b	Depth ref:	R2469-R01-v3	Quality ref:	R2469-R01-v3	Other documents attached	✓						
Date	13.03.19	Area use:	garden	landscaped	stockpile	other							
Site name / location	Nomvula Park, Waterpark Drive, Knowsley	Size area (m):	5 x 10	Approx Area (m ²):	50	Approx Depth Top (m):	0.3	Approx Volume Top (m ³):	15	Approx Depth Sub (m):	0.3	Approx Volume Sub (m ³):	15
Plot/ location:	11-12	Number depth entries required	1 (1 per 3 gardens). 1 provided.			Number samples required:	3 TS & 3 SS (1 per 250m ³ TS and 1 per 50m ³ SS - minimum 3 samples per single source). 11 TS provided & 3 SS provided.						
Compiled by:	PRM / SM												

Quality Validation		Inspection date/time:	15.11.17, 01.03.19	Inspected by:	SM, PRM	Photographed:	✓
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Source Topsoil	1.	✓	Site won topsoil
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets.
Sample Topsoil	3.	✓	11 samples taken from onsite stockpile '1' (CLS ref: 697291SW-TS-1 – SW-TS-4 & CLS ref:709629-1, SP-TS-1 – SP-TS-7)
Source Subsoil	4.	✓	Site won subsoil
Description Subsoil	5.	✓	Reddish brown clay with occasional cobbles and gravel of mixed lithologies.
Sample Subsoil	6.	✓	3 samples taken from onsite stockpile '5' (Chemtest ref: 19-08072).

Topsoil Validation Record



Topsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	11-17	Yes
Cadmium	11	<1	Yes
Chromium III	910	29-38	Yes
Chromium VI	6	<1	Yes
Copper	2400	32-43	Yes
Lead	200	56-72	Yes
Mercury	40	<1	Yes
Nickel	130	24-30	Yes
Zinc	3700	63-79	Yes
Naphthalene	2.3	<0.1	Yes
Acenaphthene	210	<0.1	Yes
Acenaphthylene	170	<0.1	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	<0.1-0.2	Yes
Pyrene	620	<0.1-0.2	Yes
Benzo(a) anthracene	7.2	<0.1	Yes
Chrysene	15	<0.1	Yes
Benzo(b) fluoranthene	2.6	<0.1	Yes
Benzo(k) fluoranthene	77	<0.1	Yes
Benzo(a) pyrene	2.2	<0.1	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1	Yes
Dibenzo(ah) anthracene	0.24	<0.1	Yes
Benzo(ghi) perylene	320	<0.1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1	Yes
Aliphatic C21-C35	5000	<1	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	Yes
Aromatic C16-C21	260	<1	Yes
Aromatic C21-C35	1100	<1	Yes

Soil Standards are adopted from published SGV's where available, other sources include the LQM/CIEH and CLAIRe GACs.
The appropriate land use is residential, and 1% SOM is assumed.

Topsoil Validation Record



Subsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	7.8-17	Yes
Cadmium	11	<0.1-0.18	Yes
Chromium III	910	19-28	Yes
Chromium VI	6	<0.5	Yes
Copper	2400	15-18	Yes
Lead	200	13-31	Yes
Mercury	40	<0.1	Yes
Nickel	130	24-37	Yes
Zinc	3700	41-48	Yes
Naphthalene	2.3	<0.1	Yes
Acenaphthene	210	<0.1	Yes
Acenaphthylene	170	<0.1	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	0.21-0.48	Yes
Anthracene	2400	<0.1-0.15	Yes
Fluoranthene	280	0.25-0.97	Yes
Pyrene	620	0.22-1.2	Yes
Benzo(a) anthracene	7.2	<0.1-0.57	Yes
Chrysene	15	<0.1-0.41	Yes
Benzo(b) fluoranthene	2.6	<0.1-0.8	Yes
Benzo(k) fluoranthene	77	<0.1-0.4	Yes
Benzo(a) pyrene	2.2	<0.1-0.79	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1-0.42	Yes
Dibenzo(ah) anthracene	0.24	<0.1-0.11	Yes
Benzo(ghi) perylene	320	<0.1-0.59	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1	Yes
Aliphatic C21-C35	5000	<1	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	Yes
Aromatic C16-C21	260	<1	Yes
Aromatic C21-C35	1100	<1	Yes

Soil Standards are adopted from published SGV's where available, other sources include the LQM/CIEH and CLAIRe GACs.
The appropriate land use is residential, and 1% SOM is assumed.

Topsoil Validation Record

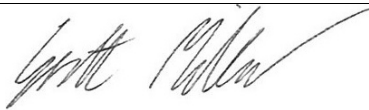
Depth Validation	Inspection date/time:	01.03.19	Inspected by:	PRM	Photographed:	✓
Plot 11	Required Depth	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	Site Won Subsoil					
Soil profile/description	0.00-0.30m.	Dark brown slightly sandy topsoil with frequent rootlets.				
	0.30-0.60m.	Reddish brown clay with occasional cobbles and gravel.				
	0.60m	Base				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



This area has PASSED inspection for depth and quality.

An additional inspection visit IS NOT required for these plots.

SGP Staff:	S D Miller BSc	Signed:		13.03.2019
SGP Member:	B Thomas BSc MSc MCIWEM C.Env SiLC	Signed:		13.03.2019

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

Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 697291-1

Date of Report: 07-Dec-2017

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 16-Nov-2017

Date Analysis Started: 20-Nov-2017

Date Analysis Completed: 07-Dec-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

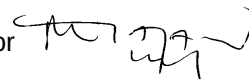
Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Miajan Miah
Customer Service Advisor

Issued by :
Miajan Miah
Customer Service Advisor



Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil MCERTS Preparation								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Moisture @105C	T162	AR	0.1	%	29	26	27	27
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1	<0.1

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Smith Grant Standard Suite 1								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Arsenic	T6	M40	2	mg/kg	14	13	13	17
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1	<1
Chromium	T6	M40	1	mg/kg	35	33	37	38
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1	<1
Copper	T6	M40	1	mg/kg	37	37	37	43
Lead	T6	M40	1	mg/kg	67	71	66	72
Mercury	T6	M40	1	mg/kg	<1	<1	<1	<1
Nickel	T6	M40	1	mg/kg	28	25	29	30
pH	T7	AR			6.0	5.7	6.0	7.3
Soil Organic Matter	T287	A40	0.1	%	4.1	5.1	4.3	5.4
Zinc	T6	M40	1	mg/kg	72	74	70	79

Value	Description
AR	As Received
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
A40	Assisted dried < 40C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T287	Calc TOC/0.58
T6	ICP/OES
T206	GC/FID (MCERTS)
T7	Probe
T162	Grav (1 Dec) (105 C)
T27	PLM
T2	Grav
T207	GC/MS (MCERTS)
T209	GC/MS (Head Space)(MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Arsenic	T6	M40	2	mg/kg	M	001-004
Asbestos ID	T27	AR			SU	001-004
Cadmium	T6	M40	1	mg/kg	M	001-004
Chromium	T6	M40	1	mg/kg	M	001-004
Chromium VI	T6	AR	1	mg/kg	N	001-004
Copper	T6	M40	1	mg/kg	M	001-004
Lead	T6	M40	1	mg/kg	M	001-004
Mercury	T6	M40	1	mg/kg	M	001-004
Nickel	T6	M40	1	mg/kg	M	001-004
pH	T7	AR			M	001-004
Soil Organic Matter	T287	A40	0.1	%	N	001-004
Zinc	T6	M40	1	mg/kg	M	001-004
Naphthalene	T207	M105	0.1	mg/kg	M	001-004
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-004
Acenaphthene	T207	M105	0.1	mg/kg	M	001-004
Fluorene	T207	M105	0.1	mg/kg	M	001-004
Phenanthrene	T207	M105	0.1	mg/kg	M	001-004
Anthracene	T207	M105	0.1	mg/kg	U	001-004
Fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Pyrene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Chrysene	T207	M105	0.1	mg/kg	M	001-004
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-004
PAH(total)	T207	M105	0.1	mg/kg	U	001-004
Benzene	T209	M105	0.010	mg/kg	M	001-004
Toluene	T209	M105	0.010	mg/kg	M	001-004
EthylBenzene	T209	M105	0.010	mg/kg	M	001-004
M/P Xylene	T209	M105	0.010	mg/kg	M	001-004

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
O Xylene	T209	M105	0.010	mg/kg	M	001-004
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	M	001-004
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-004
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	N	001-004
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	M	001-004
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	M	001-004
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	M	001-004
Moisture @105C	T162	AR	0.1	%	N	001-004
Retained on 10mm sieve	T2	M40	0.1	%	N	001-004



Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 709629-1

Date of Report: 30-Jan-2018

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 18-Jan-2018

Date Analysis Started: 19-Jan-2018

Date Analysis Completed: 30-Jan-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Aleksandra Pacula
Customer Service Advisor

Issued by :
Aleksandra Pacula
Customer Service Advisor



Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469									
Soil		Analysed as Soil							
MCERTS Preparation									
Concept Reference				709629 001		709629 002		709629 003	
Customer Sample Reference				SP-TS-5		SP-TS-6		SP-TS-7	
Date Sampled				16-JAN-2018		16-JAN-2018		16-JAN-2018	
Matrix Class				Sandy Soil		Sandy Soil		Sandy Soil	
Determinand		Method	Test Sample	LOD	Units				
Moisture @105C		T162	AR	0.1	%	26	18	28	
Retained on 10mm sieve		T2	M40	0.1	%	<0.1	<0.1	<0.1	

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
Smith Grant Standard Suite 1							
Concept Reference				709629 001	709629 002	709629 003	
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	
Determinand	Method	Test Sample	LOD	Units			
Arsenic	T6	M40	2	mg/kg	11	13	11
Asbestos ID	T27	AR			N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1
Chromium	T6	M40	1	mg/kg	29	31	29
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1
Copper	T6	M40	1	mg/kg	35	37	32
Lead	T6	M40	1	mg/kg	57	69	56
Mercury	T6	M40	1	mg/kg	<1	<1	<1
Nickel	T6	M40	1	mg/kg	24	27	25
pH	T7	AR			7.5	7.4	7.3
Soil Organic Matter	T287	A40	0.1	%	4.0	3.1	4.3
Zinc	T6	M40	1	mg/kg	74	70	63

Concept Reference: 709629										
Project Site: Waterpark Drive										
Customer Reference: R2469										
Soil		Analysed as Soil								
Miscellaneous										
Concept Reference				709629 001	709629 002	709629 003	709629 004	709629 005		
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	AGG-IMP-6	AGG-IMP-7		
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018		
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil		
Determinand		Method	Test Sample	LOD	Units					
Asbestos ID		T27	AR			N.D.	N.D.	N.D.	N.D.	N.D.

Index to symbols used in 709629-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T2	Grav
T162	Grav (1 Dec) (105 C)
T6	ICP/OES
T27	PLM
T7	Probe
T909	GCxGC
T287	Calc TOC/0.58
T209	GC/MS (Head Space)(MCERTS)
T207	GC/MS (MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Moisture @105C	T162	AR	0.1	%	N	001-003
Retained on 10mm sieve	T2	M40	0.1	%	N	001-003
Arsenic	T6	M40	2	mg/kg	M	001-003
Asbestos ID	T27	AR			SU	001-005
Cadmium	T6	M40	1	mg/kg	M	001-003
Chromium	T6	M40	1	mg/kg	M	001-003
Chromium VI	T6	AR	1	mg/kg	N	001-003
Copper	T6	M40	1	mg/kg	M	001-003
Lead	T6	M40	1	mg/kg	M	001-003
Mercury	T6	M40	1	mg/kg	M	001-003
Nickel	T6	M40	1	mg/kg	M	001-003
pH	T7	AR			M	001-003
Soil Organic Matter	T287	A40	0.1	%	N	001-003
Zinc	T6	M40	1	mg/kg	M	001-003
Benzene	T209	M105	10	µg/kg	M	001-003

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Toluene	T209	M105	10	µg/kg	M	001-003
EthylBenzene	T209	M105	10	µg/kg	M	001-003
M/P Xylene	T209	M105	10	µg/kg	M	001-003
O Xylene	T209	M105	10	µg/kg	M	001-003
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	M	001-003
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-003
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	M	001-003
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	M	001-003
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aromatic)	T909	M105	1	mg/kg	M	001-003
Naphthalene	T207	M105	0.1	mg/kg	M	001-003
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-003
Acenaphthene	T207	M105	0.1	mg/kg	M	001-003
Fluorene	T207	M105	0.1	mg/kg	M	001-003
Phenanthrene	T207	M105	0.1	mg/kg	M	001-003
Anthracene	T207	M105	0.1	mg/kg	U	001-003
Fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Pyrene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Chrysene	T207	M105	0.1	mg/kg	M	001-003
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-003
PAH(total)	T207	M105	0.1	mg/kg	U	001-003



Final Report

Report No.: 19-08072-1

Initial Date of Issue: 13-Mar-2019

Client: Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Scott Miller

Project: R2469b Waterpark Drive

Quotation No.: Q15-02887 **Date Received:** 05-Mar-2019

Order No.: **Date Instructed:** 05-Mar-2019

No. of Samples: 3

Turnaround (Wkdays): 7 **Results Due:** 13-Mar-2019

Date Approved: 13-Mar-2019

Approved By:



Details: Martin Dyer, Laboratory Manager

Project: R2469b Waterpark Drive

Client: Smith Grant LLP	Chemtest Job No.:				19-08072	19-08072	19-08072
Quotation No.: Q15-02887	Chemtest Sample ID.:				787703	787704	787705
	Sample Location:				Clay-Plot 11	Clay SP-1	Clay SP-2
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				01-Mar-2019	01-Mar-2019	01-Mar-2019
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-
Moisture	N	2030	%	0.020	12	13	16
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Clay	Clay	Clay
pH	M	2010		N/A	8.7	8.5	8.2
Arsenic	M	2450	mg/kg	1.0	9.6	7.8	17
Cadmium	M	2450	mg/kg	0.10	0.18	0.12	< 0.10
Chromium	M	2450	mg/kg	1.0	21	19	28
Copper	M	2450	mg/kg	0.50	18	15	17
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	24	24	37
Lead	M	2450	mg/kg	0.50	31	23	13
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	48	43	41
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	2.8	1.1	0.81
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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
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	< 5.0	< 5.0
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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
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	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Project: R2469b Waterpark Drive

Client: Smith Grant LLP	Chemtest Job No.:				19-08072	19-08072	19-08072
Quotation No.: Q15-02887	Chemtest Sample ID.:				787703	787704	787705
	Sample Location:				Clay-Plot 11	Clay SP-1	Clay SP-2
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				01-Mar-2019	01-Mar-2019	01-Mar-2019
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.48	0.45	0.21
Anthracene	M	2700	mg/kg	0.10	0.12	0.15	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	0.95	0.97	0.25
Pyrene	M	2700	mg/kg	0.10	0.97	1.2	0.22
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.55	0.57	< 0.10
Chrysene	M	2700	mg/kg	0.10	0.41	0.27	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	0.50	0.80	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.22	0.40	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	0.49	0.79	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.23	0.42	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.11	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.29	0.59	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	5.2	6.7	< 2.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

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
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"

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 45 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



Topsoil Validation Record

Job number	R2469b	Depth ref:	R2469-R01-v3		Quality ref:		R2469-R01-v3		Other documents attached		✓		
Date	11.04.19	Area use:	garden		landscaped		stockpile		other				
Site name / location	Nomvula Park, Waterpark Drive, Knowsley	Size area (m):	500: 8 x 10	Approx Area (m²):	843	Approx Depth Top (m):	0.3	Approx Volume Top (m³):	255	Approx Depth Sub (m):	0.3	Approx Volume Sub (m³):	255
Plot/ location:	14-19 & 500		14: 7 x 10										
			15: 7 x 10										
			16: 8 x 16										
			17: 8 x 16										
		18: 18 x 10											
		19: 14 x 10											
Compiled by:	MJ	Number depth entries required			1 (1 per 3 gardens). 3 provided.		Number samples required:		3 TS & 3 SS (1 per 250m³ TS and 1 per 50m³ SS - minimum 3 samples per single source). 11 TS provided & 4 SS provided.				

Quality Validation		Inspection date/time:	15.11.17, 01.03.19	Inspected by:	SM, PRM	Photographed:	✓
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Source Topsoil	1.	✓	Site won topsoil
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets.
Sample Topsoil	3.	✓	11 samples taken from onsite stockpile '1' (CLS ref: 697291SW-TS-1 – SW-TS-4 & CLS ref:709629-1, SP-TS-1 – SP-TS-7).
Source Subsoil	4.	✓	Site won subsoil
Description Subsoil	5.	✓	Reddish brown clay with occasional cobbles and gravel of mixed lithologies.
Sample Subsoil	6.	✓	4 samples taken from onsite stockpile '5' and 1 taken in-situ from Plot 11 (Chemtest refs: 19-08072 & 19-08562).

Topsoil Validation Record



Topsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	11-17	Yes
Cadmium	11	<1	Yes
Chromium III	910	29-38	Yes
Chromium VI	6	<1	Yes
Copper	2400	32-43	Yes
Lead	200	56-72	Yes
Mercury	40	<1	Yes
Nickel	130	24-30	Yes
Zinc	3700	63-79	Yes
Naphthalene	2.3	<0.1	Yes
Acenaphthene	210	<0.1	Yes
Acenaphthylene	170	<0.1	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	<0.1-0.2	Yes
Pyrene	620	<0.1-0.2	Yes
Benzo(a) anthracene	7.2	<0.1	Yes
Chrysene	15	<0.1	Yes
Benzo(b) fluoranthene	2.6	<0.1	Yes
Benzo(k) fluoranthene	77	<0.1	Yes
Benzo(a) pyrene	2.2	<0.1	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1	Yes
Dibenzo(ah) anthracene	0.24	<0.1	Yes
Benzo(ghi) perylene	320	<0.1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1	Yes
Aliphatic C21-C35	5000	<1	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	Yes
Aromatic C16-C21	260	<1	Yes
Aromatic C21-C35	1100	<1	Yes

Soil Standards are adopted from published SGV's where available, other sources include the LQM/CIEH and CLAIRe GACs.
The appropriate land use is residential, and 1% SOM is assumed.

Topsoil Validation Record



Subsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	8.2-8.7	Yes
Cadmium	11	0.8-2.8	Yes
Chromium III	910	7.4-17	Yes
Chromium VI	6	<0.1-0.23	Yes
Copper	2400	19-28	Yes
Lead	200	<0.5	Yes
Mercury	40	16-42	Yes
Nickel	130	13-120	Yes
Zinc	3700	<0.1-0.15	Yes
Naphthalene	2.3	24-37	Yes
Acenaphthene	210	41-120	Yes
Acenaphthylene	170	<0.1-0.43	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1-0.20	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	0.21-0.50	Yes
Pyrene	620	<0.1-0.16	Yes
Benzo(a) anthracene	7.2	0.25-1.3	Yes
Chrysene	15	0.22-1.4	Yes
Benzo(b) fluoranthene	2.6	<0.1-1.1	Yes
Benzo(k) fluoranthene	77	<0.1-0.97	Yes
Benzo(a) pyrene	2.2	<0.1-0.8	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1-0.4	Yes
Dibenzo(ah) anthracene	0.24	<0.1-1.4	Yes*
Benzo(ghi) perylene	320	<1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1-51	Yes
Aliphatic C21-C35	5000	<1	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	<1-2.2	Yes
Aromatic C16-C21	260	<1-130	Yes
Aromatic C21-C35	1100	<1-380	Yes

Soil Standards are adopted from published SGV's where available, other sources include the LQM/CIEH and CLAIRe GACs.
The appropriate land use is residential, and 1% SOM is assumed.

2 minor exceedances were reported for dibenzo(ah)anthracene at 0.3-0.4mg/kg out of the 5 samples taken; a PAH ratio cross plot has been undertaken (attached) which indicates that the source of the material is more likely of pyrolytic origin, rather than petrogenic, and is therefore unlikely to be readily bio-accessible. All other samples tested for dibenzo(ah)anthracene reported below or at the limit of detection (<0.1-0.1mg/kg). The material is therefore considered suitable for its intended use in gardens within the development.

Topsoil Validation Record



Depth Validation	Inspection date/time:	10.04.19	Inspected by:	MJ	Photographed:	✓
Plot 14	Required Depth	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	Site Won Subsoil					
Soil profile/description	0.00-0.30m.	Dark brown slightly sandy topsoil with frequent rootlets.				
	0.30-0.60m.	Reddish brown clay with occasional cobbles and gravel				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						



Topsoil Validation Record

Depth Validation	Inspection date/time:	10.04.19	Inspected by:	MJ	Photographed:	✓
Plot 17	Required Depth	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	Site Won Subsoil					
Soil profile/description	0.00-0.30m.	Dark brown slightly sandy topsoil with frequent rootlets.				
	0.30-0.60m.	Reddish brown clay with occasional cobbles and gravel				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						



Topsoil Validation Record

Depth Validation	Inspection date/time:	10.04.19	Inspected by:	MJ	Photographed:	✓
Plot 19	Required Depth	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	Site Won Subsoil					
Soil profile/description	0.00-0.30m.	Dark brown slightly sandy topsoil with frequent rootlets.				
	0.30-0.60m.	Reddish brown clay with occasional cobbles and gravel.				
Photograph (location)			Photograph (depth profile)		Photograph (soil type)	
						

Topsoil Validation Record



This area has PASSED inspection for depth and quality.

An additional inspection visit IS NOT required for these plots.

SGP Staff:	M K Jones BSc MSc	Signed:		11.04.2019
SGP Member:	B Thomas BSc MSc MCIWEM C.Env SiLC	Signed:		12.04.2019

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.: 19-08072-1

Initial Date of Issue: 13-Mar-2019

Client Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Scott Miller

Project R2469b Waterpark Drive

Quotation No.: Q15-02887 **Date Received:** 05-Mar-2019

Order No.: **Date Instructed:** 05-Mar-2019

No. of Samples: 3

Turnaround (Wkdays): 7 **Results Due:** 13-Mar-2019

Date Approved: 13-Mar-2019

Approved By:



Details: Martin Dyer, Laboratory Manager

Project: R2469b Waterpark Drive

Client: Smith Grant LLP	Chemtest Job No.:				19-08072	19-08072	19-08072
Quotation No.: Q15-02887	Chemtest Sample ID.:				787703	787704	787705
	Sample Location:				Clay-Plot 11	Clay SP-1	Clay SP-2
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				01-Mar-2019	01-Mar-2019	01-Mar-2019
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-
Moisture	N	2030	%	0.020	12	13	16
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Clay	Clay	Clay
pH	M	2010		N/A	8.7	8.5	8.2
Arsenic	M	2450	mg/kg	1.0	9.6	7.8	17
Cadmium	M	2450	mg/kg	0.10	0.18	0.12	< 0.10
Chromium	M	2450	mg/kg	1.0	21	19	28
Copper	M	2450	mg/kg	0.50	18	15	17
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	24	24	37
Lead	M	2450	mg/kg	0.50	31	23	13
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	48	43	41
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	2.8	1.1	0.81
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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
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	< 5.0	< 5.0
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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
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	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Project: R2469b Waterpark Drive

Client: Smith Grant LLP	Chemtest Job No.:				19-08072	19-08072	19-08072
Quotation No.: Q15-02887	Chemtest Sample ID.:				787703	787704	787705
	Sample Location:				Clay-Plot 11	Clay SP-1	Clay SP-2
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				01-Mar-2019	01-Mar-2019	01-Mar-2019
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.48	0.45	0.21
Anthracene	M	2700	mg/kg	0.10	0.12	0.15	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	0.95	0.97	0.25
Pyrene	M	2700	mg/kg	0.10	0.97	1.2	0.22
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.55	0.57	< 0.10
Chrysene	M	2700	mg/kg	0.10	0.41	0.27	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	0.50	0.80	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.22	0.40	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	0.49	0.79	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.23	0.42	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.11	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.29	0.59	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	5.2	6.7	< 2.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

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
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"

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 45 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

Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 697291-1

Date of Report: 07-Dec-2017

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 16-Nov-2017

Date Analysis Started: 20-Nov-2017

Date Analysis Completed: 07-Dec-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

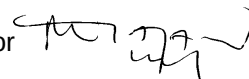
Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Miajan Miah
Customer Service Advisor

Issued by :
Miajan Miah
Customer Service Advisor



Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil MCERTS Preparation								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Moisture @105C	T162	AR	0.1	%	29	26	27	27
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1	<0.1

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Smith Grant Standard Suite 1								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Arsenic	T6	M40	2	mg/kg	14	13	13	17
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1	<1
Chromium	T6	M40	1	mg/kg	35	33	37	38
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1	<1
Copper	T6	M40	1	mg/kg	37	37	37	43
Lead	T6	M40	1	mg/kg	67	71	66	72
Mercury	T6	M40	1	mg/kg	<1	<1	<1	<1
Nickel	T6	M40	1	mg/kg	28	25	29	30
pH	T7	AR			6.0	5.7	6.0	7.3
Soil Organic Matter	T287	A40	0.1	%	4.1	5.1	4.3	5.4
Zinc	T6	M40	1	mg/kg	72	74	70	79

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil PAH US EPA 16 (B and K split)								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.2
Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.2
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
PAH(total)	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.4

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Total Petroleum Hydrocarbons CWG								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Benzene	T209	M105	0.010	mg/kg	(13) <0.010	(13) <0.010	(13) <0.010	(13) <0.010
Toluene	T209	M105	0.010	mg/kg	(13) <0.010	(13) <0.010	(13) <0.010	(13) <0.010
EthylBenzene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
M/P Xylene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
O Xylene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100	<0.100	<0.100
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	(13) <2	(13) <2	(13) <2	(13) <2
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	(13) <4	(13) <4	(13) <4	(13) <4
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) 2
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) 4

Index to symbols used in 697291-1

Value	Description
AR	As Received
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
A40	Assisted dried < 40C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T287	Calc TOC/0.58
T6	ICP/OES
T206	GC/FID (MCERTS)
T7	Probe
T162	Grav (1 Dec) (105 C)
T27	PLM
T2	Grav
T207	GC/MS (MCERTS)
T209	GC/MS (Head Space)(MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Arsenic	T6	M40	2	mg/kg	M	001-004
Asbestos ID	T27	AR			SU	001-004
Cadmium	T6	M40	1	mg/kg	M	001-004
Chromium	T6	M40	1	mg/kg	M	001-004
Chromium VI	T6	AR	1	mg/kg	N	001-004
Copper	T6	M40	1	mg/kg	M	001-004
Lead	T6	M40	1	mg/kg	M	001-004
Mercury	T6	M40	1	mg/kg	M	001-004
Nickel	T6	M40	1	mg/kg	M	001-004
pH	T7	AR			M	001-004
Soil Organic Matter	T287	A40	0.1	%	N	001-004
Zinc	T6	M40	1	mg/kg	M	001-004
Naphthalene	T207	M105	0.1	mg/kg	M	001-004
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-004
Acenaphthene	T207	M105	0.1	mg/kg	M	001-004
Fluorene	T207	M105	0.1	mg/kg	M	001-004
Phenanthrene	T207	M105	0.1	mg/kg	M	001-004
Anthracene	T207	M105	0.1	mg/kg	U	001-004
Fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Pyrene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Chrysene	T207	M105	0.1	mg/kg	M	001-004
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-004
PAH(total)	T207	M105	0.1	mg/kg	U	001-004
Benzene	T209	M105	0.010	mg/kg	M	001-004
Toluene	T209	M105	0.010	mg/kg	M	001-004
EthylBenzene	T209	M105	0.010	mg/kg	M	001-004
M/P Xylene	T209	M105	0.010	mg/kg	M	001-004

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
O Xylene	T209	M105	0.010	mg/kg	M	001-004
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	M	001-004
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-004
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	N	001-004
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	M	001-004
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	M	001-004
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	M	001-004
Moisture @105C	T162	AR	0.1	%	N	001-004
Retained on 10mm sieve	T2	M40	0.1	%	N	001-004



Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 709629-1

Date of Report: 30-Jan-2018

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 18-Jan-2018

Date Analysis Started: 19-Jan-2018

Date Analysis Completed: 30-Jan-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Aleksandra Pacula
Customer Service Advisor

Issued by :
Aleksandra Pacula
Customer Service Advisor



Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
MCERTS Preparation							
Concept Reference					709629 001	709629 002	709629 003
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Moisture @105C	T162	AR	0.1	%	26	18	28
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
Smith Grant Standard Suite 1							
Concept Reference				709629 001	709629 002	709629 003	
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	
Determinand	Method	Test Sample	LOD	Units			
Arsenic	T6	M40	2	mg/kg	11	13	11
Asbestos ID	T27	AR			N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1
Chromium	T6	M40	1	mg/kg	29	31	29
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1
Copper	T6	M40	1	mg/kg	35	37	32
Lead	T6	M40	1	mg/kg	57	69	56
Mercury	T6	M40	1	mg/kg	<1	<1	<1
Nickel	T6	M40	1	mg/kg	24	27	25
pH	T7	AR			7.5	7.4	7.3
Soil Organic Matter	T287	A40	0.1	%	4.0	3.1	4.3
Zinc	T6	M40	1	mg/kg	74	70	63

Concept Reference: 709629							
Project Site: Waterpark Drive							
Customer Reference: R2469							
Soil				Analysed as Soil			
TPH (CWG) with MTBE, BTEX							
Concept Reference					709629 001	709629 002	709629 003
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Benzene	T209	M105	10	µg/kg	(13) <10	(13) <10	(13) <10
Toluene	T209	M105	10	µg/kg	<10	<10	<10
EthylBenzene	T209	M105	10	µg/kg	<10	<10	<10
M/P Xylene	T209	M105	10	µg/kg	<10	<10	<10
O Xylene	T209	M105	10	µg/kg	<10	<10	<10
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	<10	<10	<10
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100	<0.100
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	(13) <2	(13) <2	(13) <2
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	(13) <2	(13) <2	(13) <2
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aromatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
PAH US EPA 16 (B and K split)							
Concept Reference					709629 001	709629 002	709629 003
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
PAH(tot(a))	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469									
Soil		Analysed as Soil							
Miscellaneous									
Concept Reference				709629 001	709629 002	709629 003	709629 004	709629 005	
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	AGG-IMP-6	AGG-IMP-7	
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	
Determinand	Method	Test Sample	LOD	Units					
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.	N.D.

Index to symbols used in 709629-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T2	Grav
T162	Grav (1 Dec) (105 C)
T6	ICP/OES
T27	PLM
T7	Probe
T909	GCxGC
T287	Calc TOC/0.58
T209	GC/MS (Head Space)(MCERTS)
T207	GC/MS (MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Moisture @105C	T162	AR	0.1	%	N	001-003
Retained on 10mm sieve	T2	M40	0.1	%	N	001-003
Arsenic	T6	M40	2	mg/kg	M	001-003
Asbestos ID	T27	AR			SU	001-005
Cadmium	T6	M40	1	mg/kg	M	001-003
Chromium	T6	M40	1	mg/kg	M	001-003
Chromium VI	T6	AR	1	mg/kg	N	001-003
Copper	T6	M40	1	mg/kg	M	001-003
Lead	T6	M40	1	mg/kg	M	001-003
Mercury	T6	M40	1	mg/kg	M	001-003
Nickel	T6	M40	1	mg/kg	M	001-003
pH	T7	AR			M	001-003
Soil Organic Matter	T287	A40	0.1	%	N	001-003
Zinc	T6	M40	1	mg/kg	M	001-003
Benzene	T209	M105	10	µg/kg	M	001-003

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Toluene	T209	M105	10	µg/kg	M	001-003
EthylBenzene	T209	M105	10	µg/kg	M	001-003
M/P Xylene	T209	M105	10	µg/kg	M	001-003
O Xylene	T209	M105	10	µg/kg	M	001-003
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	M	001-003
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-003
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	M	001-003
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	M	001-003
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aromatic)	T909	M105	1	mg/kg	M	001-003
Naphthalene	T207	M105	0.1	mg/kg	M	001-003
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-003
Acenaphthene	T207	M105	0.1	mg/kg	M	001-003
Fluorene	T207	M105	0.1	mg/kg	M	001-003
Phenanthrene	T207	M105	0.1	mg/kg	M	001-003
Anthracene	T207	M105	0.1	mg/kg	U	001-003
Fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Pyrene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Chrysene	T207	M105	0.1	mg/kg	M	001-003
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-003
PAH(total)	T207	M105	0.1	mg/kg	U	001-003



Final Report

Report No.: 19-08562-1

Initial Date of Issue: 19-Mar-2019

Client Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Scott Miller

Project R2469b Water Park Drive (Barratt Homes)

Quotation No.: Q15-02887

Order No.:

No. of Samples: 14

Turnaround (Wkdays): 7

Date Approved: 19-Mar-2019

Approved By:



Details: Robert Monk, Technical Manager

Date Received: 08-Mar-2019

Date Instructed: 08-Mar-2019

Results Due: 18-Mar-2019

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790227	790228	790229	790230	790231	790232	790233	790243	790244
	Sample Location:				SP3-S1	SP3-S2	SP3-S3	SP3-S4	SP3-S5	SP3-S6	SP3-S7	SP4-S1	SP4-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				DURHAM	COVENTRY	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	COVENTRY
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	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
ACM Detection Stage	U	2192		N/A	-	-	-	-	-	-	-	-	-
Moisture	N	2030	%	0.020	25	28	23	20	16	19	19	16	12
Soil Colour	N	2040		N/A	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,
Other Material	N	2040		N/A	Stones, Roots,	Roots, Stones,,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Roots, Stones,	Stones, Roots,
Soil Texture	N	2040		N/A	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,
pH	M	2010		N/A	8.0	8.1	8.3	7.8	7.8	8.1	8.0	7.1	7.1
Arsenic	M	2450	mg/kg	1.0	13	13	10	9.5	12	9.9	10	7.8	7.9
Cadmium	M	2450	mg/kg	0.10	0.35	0.24	0.29	0.28	0.28	0.24	0.31	0.29	0.22
Chromium	M	2450	mg/kg	1.0	23	24	23	21	23	19	22	17	21
Copper	M	2450	mg/kg	0.50	29	31	27	26	49	27	28	21	17
Mercury	M	2450	mg/kg	0.10	0.15	0.51	0.15	0.16	0.20	0.14	0.14	0.11	< 0.10
Nickel	M	2450	mg/kg	0.50	23	27	24	20	21	20	22	16	18
Lead	M	2450	mg/kg	0.50	58	61	58	55	46	59	58	39	28
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.26	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	76	88	74	61	54	84	74	77	47
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	M	2625	%	0.40	4.5	3.1	3.3	3.3	2.6	3.5	3.3	3.1	2.1
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	M	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	M	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	M	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	M	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	M	2680	mg/kg	1.0	< 1.0	75	< 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	75	< 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	M	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	M	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 >C12-C16	M	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 >C16-C21	U	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 >C21-C35	M	2680	mg/kg	1.0	< 1.0	380	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	14	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	400	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	470	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790227	790228	790229	790230	790231	790232	790233	790243	790244
	Sample Location:				SP3-S1	SP3-S2	SP3-S3	SP3-S4	SP3-S5	SP3-S6	SP3-S7	SP4-S1	SP4-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				DURHAM	COVENTRY	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	COVENTRY
Determinand	Accred.	SOP	Units	LOD									
Naphthalene	M	2700	mg/kg	0.10	0.44	0.59	0.46	0.48	< 0.10	0.56	0.47	0.38	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	0.24	0.26	< 0.10	0.46	< 0.10	< 0.10	0.31	0.21	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	0.75	0.11	0.15	< 0.10	0.30	0.11	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	0.62	0.12	0.21	< 0.10	0.27	0.12	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.59	4.6	0.89	1.9	0.67	2.0	1.0	0.59	0.18
Anthracene	M	2700	mg/kg	0.10	< 0.10	1.3	0.28	0.37	0.16	0.52	0.24	0.13	0.10
Fluoranthene	M	2700	mg/kg	0.10	0.45	7.2	0.90	1.9	0.65	2.6	1.4	0.73	0.21
Pyrene	M	2700	mg/kg	0.10	0.57	7.2	1.0	1.8	0.76	2.7	1.4	0.80	0.28
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	4.2	0.51	0.95	0.40	1.5	0.84	0.44	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	3.9	0.84	1.2	0.69	1.5	1.2	0.70	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	3.2	0.57	1.0	0.51	1.2	0.64	0.39	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	2.2	0.46	0.69	0.37	0.77	0.75	0.47	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	3.1	0.53	0.86	0.41	1.2	0.82	0.44	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	1.8	0.32	0.70	0.34	0.88	0.46	0.28	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.75	0.32	0.95	0.41	0.51	0.51	0.37	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	2.7	1.1	1.6	0.55	2.4	1.8	0.95	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	2.3	44	8.4	15	5.9	19	12	6.9	< 2.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	25	2.5	< 1.0	5.7	9.1	23	31	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	2.0	1.3	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	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	M	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

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790245	790246	790247	790254	790255
	Sample Location:				SP4-S3	SP4-S4	SP4-S5	SP5-S1	SP5-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD					
ACM Type	U	2192		N/A	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-	-	-
Moisture	N	2030	%	0.020	16	16	21	13	17
Soil Colour	N	2040		N/A	Brown,	Brown,	Brown,	Brown,	Brown,
Other Material	N	2040		N/A	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,
Soil Texture	N	2040		N/A	Clay,	Clay,	Clay	Clay,	Clay,
pH	M	2010		N/A	7.9	7.9	7.5	8.4	8.4
Arsenic	M	2450	mg/kg	1.0	8.4	11	12	12	7.4
Cadmium	M	2450	mg/kg	0.10	0.28	0.31	0.41	0.23	0.14
Chromium	M	2450	mg/kg	1.0	19	22	28	22	26
Copper	M	2450	mg/kg	0.50	23	23	30	42	19
Mercury	M	2450	mg/kg	0.10	0.15	0.24	0.17	0.15	< 0.10
Nickel	M	2450	mg/kg	0.50	20	21	24	27	30
Lead	M	2450	mg/kg	0.50	48	44	54	120	28
Selenium	M	2450	mg/kg	0.20	0.22	< 0.20	0.33	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	60	48	57	120	49
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	3.1	2.4	3.3	1.5	1.3
Aliphatic TPH >C5-C6	N	2680	mg/kg	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
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	51	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	3.3	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	54	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	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
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	2.2	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	130	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	3.4	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	140	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	190	< 10

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790245	790246	790247	790254	790255
	Sample Location:				SP4-S3	SP4-S4	SP4-S5	SP5-S1	SP5-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD					
Naphthalene	M	2700	mg/kg	0.10	< 0.10	0.36	0.40	0.43	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.14	0.20	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.31	0.27	0.46	0.50	0.48
Anthracene	M	2700	mg/kg	0.10	< 0.10	0.11	0.13	0.16	0.14
Fluoranthene	M	2700	mg/kg	0.10	0.37	0.41	0.58	1.3	0.65
Pyrene	M	2700	mg/kg	0.10	0.43	0.48	0.55	1.4	0.68
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.83	0.76	1.0	1.1	0.34
Chrysene	M	2700	mg/kg	0.10	0.51	0.41	0.66	0.97	0.66
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	0.29	0.27	0.37	0.17	0.39
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.43	0.21	< 0.10	0.67	0.21
Benzo[a]pyrene	M	2700	mg/kg	0.10	0.21	0.27	0.33	0.99	0.39
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.14	< 0.10	0.24	0.75	0.75
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	0.33	< 0.10	0.26	0.30	0.40
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.65	< 0.10	0.90	1.4	1.4
Total Of 16 PAH's	M	2700	mg/kg	2.0	4.5	3.6	6.0	10	6.5
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	2.4	7.2	< 1.0	1.9
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	4.5	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"

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 45 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

Job name	Waterpark Drive
Job no.	R2469b
Date:	25.03.19
Author:	SM
Laboratory:	Chemtest
Lab. Reference:	19-08562



PAH concentrations

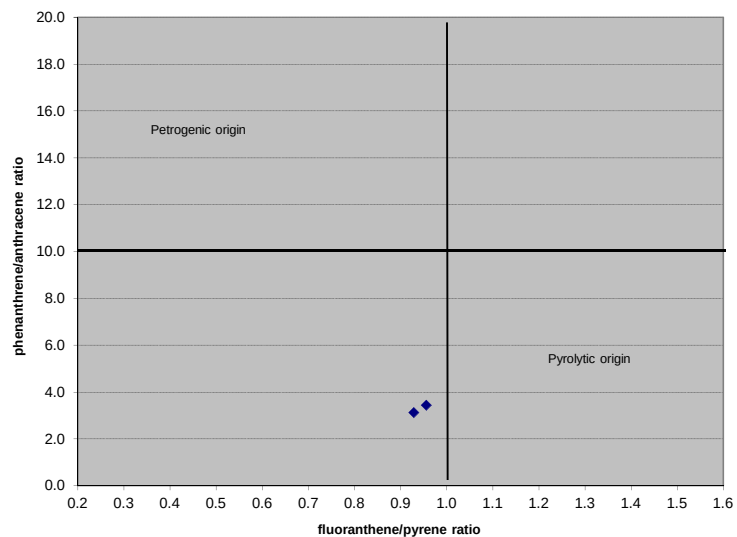
sample identity	SP5-S1	SP5-S2																	
phenanthrene	0.5	0.48																	
anthracene	0.16	0.14																	
fluoranthene	1.3	0.65																	
pyrene	1.4	0.68																	
benz(a)anthracene	1.1	0.34																	
chrysene	0.97	0.66																	

PAH units	mg/kg
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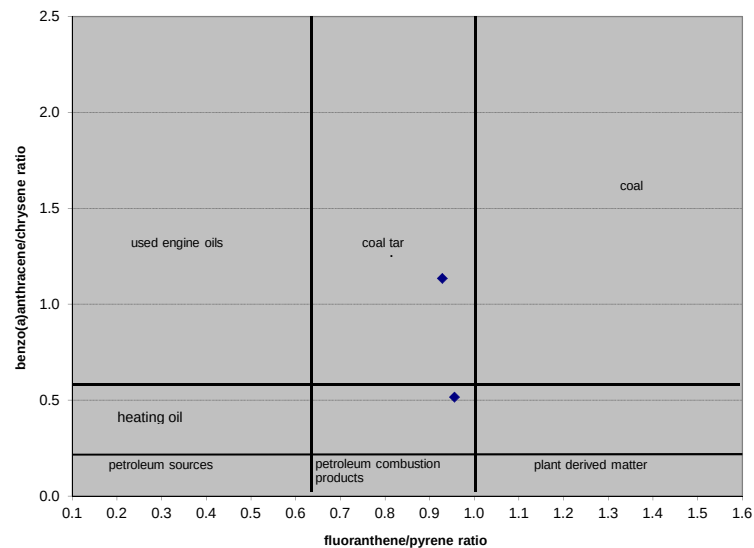
PAH ratios

phe/ant	3.125	3.429																	
flu/pyr	0.929	0.956																	
baa/chr	1.134	0.515																	

PAH source diagnosis



PAH source diagnosis





Topsoil Validation Record

Job number	R2469b	Depth ref:	R2469-R01-v3			Quality ref:			R2469-R01-v3			Other documents attached			✓
Date	02.05.19	Area use:	garden			landscaped			stockpile			other			
Site name / location	Nomvula Park, Waterpark Drive, Knowsley	Size area (m):	irregular	Approx Area (m²):	210	Approx Depth Top (m):	0.3	Approx Volume Top (m³):	63	Approx Depth Sub (m):	0.3	Approx Volume Sub (m³):	63		
Plot/ location:	20-26														
Compiled by:	PRM	Number depth entries required			3 (1 per 3 gardens). 3 provided.			Number samples required:			3 TS & 3 SS (1 per 250m³ TS and 1 per 50m³ SS - minimum 3 samples per single source). 11 TS provided & 4 SS provided.				

Quality Validation		Inspection date/time:	15.11.17, 01.03.19	Inspected by:	SM, PRM	Photographed:	✓
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Source Topsoil	1.	✓	Site won topsoil
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets.
Sample Topsoil	3.	✓	11 samples taken from onsite stockpile '1' (CLS ref: 697291SW-TS-1 – SW-TS-4 & CLS ref:709629-1, SP-TS-1 – SP-TS-7).
Source Subsoil	4.	✓	Site won subsoil
Description Subsoil	5.	✓	Reddish brown clay with occasional cobbles and gravel of mixed lithologies.
Sample Subsoil	6.	✓	4 samples taken from onsite stockpile '5' and 1 taken in-situ from Plot 11 (Chemtest refs: 19-08072 & 19-08562).

Topsoil Validation Record



Topsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	11-17	Yes
Cadmium	11	<1	Yes
Chromium III	910	29-38	Yes
Chromium VI	6	<1	Yes
Copper	2400	32-43	Yes
Lead	200	56-72	Yes
Mercury	40	<1	Yes
Nickel	130	24-30	Yes
Zinc	3700	63-79	Yes
Naphthalene	2.3	<0.1	Yes
Acenaphthene	210	<0.1	Yes
Acenaphthylene	170	<0.1	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	<0.1-0.2	Yes
Pyrene	620	<0.1-0.2	Yes
Benzo(a) anthracene	7.2	<0.1	Yes
Chrysene	15	<0.1	Yes
Benzo(b) fluoranthene	2.6	<0.1	Yes
Benzo(k) fluoranthene	77	<0.1	Yes
Benzo(a) pyrene	2.2	<0.1	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1	Yes
Dibenzo(ah) anthracene	0.24	<0.1	Yes
Benzo(ghi) perylene	320	<0.1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1	Yes
Aliphatic C21-C35	5000	<1	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	Yes
Aromatic C16-C21	260	<1	Yes
Aromatic C21-C35	1100	<1	Yes

Soil Standards are adopted from published SGV's where available, other sources include the LQM/CIEH and CLAIRe GACs.
The appropriate land use is residential, and 1% SOM is assumed.

Topsoil Validation Record



Subsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	8.2-8.7	Yes
Cadmium	11	0.8-2.8	Yes
Chromium III	910	7.4-17	Yes
Chromium VI	6	<0.1-0.23	Yes
Copper	2400	19-28	Yes
Lead	200	<0.5	Yes
Mercury	40	16-42	Yes
Nickel	130	13-120	Yes
Zinc	3700	<0.1-0.15	Yes
Naphthalene	2.3	24-37	Yes
Acenaphthene	210	41-120	Yes
Acenaphthylene	170	<0.1-0.43	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1-0.20	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	0.21-0.50	Yes
Pyrene	620	<0.1-0.16	Yes
Benzo(a) anthracene	7.2	0.25-1.3	Yes
Chrysene	15	0.22-1.4	Yes
Benzo(b) fluoranthene	2.6	<0.1-1.1	Yes
Benzo(k) fluoranthene	77	<0.1-0.97	Yes
Benzo(a) pyrene	2.2	<0.1-0.8	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1-0.4	Yes
Dibenzo(ah) anthracene	0.24	<0.1-1.4	Yes*
Benzo(ghi) perylene	320	<1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1-51	Yes
Aliphatic C21-C35	5000	<1	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	<1-2.2	Yes
Aromatic C16-C21	260	<1-130	Yes
Aromatic C21-C35	1100	<1-380	Yes

Soil Standards are adopted from published SGV's where available, other sources include the LQM/ClEH and CLAIRe GACs.
The appropriate land use is residential, and 1% SOM is assumed.

2 minor exceedances were reported for dibenzo(ah)anthracene at 0.3-0.4mg/kg out of the 5 samples taken; a PAH ratio cross plot has been undertaken (attached) which indicates that the source of the material is more likely of pyrolytic origin, rather than petrogenic, and is therefore unlikely to be readily bio-accessible. All other samples tested for dibenzo(ah)anthracene reported below or at the limit of detection (<0.1-0.1mg/kg). The material is therefore considered suitable for its intended use in gardens within the development.

Topsoil Validation Record



Depth Validation	Inspection date/time:	01.05.19	Inspected by:	PRM	Photographed:	✓
Plot 20	Required Depth	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	Site Won Subsoil					
Soil profile/description	0.00-0.30m.	Dark brown slightly sandy topsoil with frequent rootlets.				
	0.30-0.60m.	Reddish brown clay with occasional cobbles and gravel				

Photograph (location)



Photograph (depth profile)



Photograph (soil type)



Topsoil Validation Record



Depth Validation	Inspection date/time:	01.05.19	Inspected by:	PRM	Photographed:	✓
Plot 24	Required Depth	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	Site Won Subsoil					
Soil profile/description	0.00-0.30m.	Dark brown slightly sandy topsoil with frequent rootlets.				
	0.30-0.60m.	Reddish brown clay with occasional cobbles and gravel				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						



Topsoil Validation Record

Depth Validation	Inspection date/time:	01.05.19	Inspected by:	PRM	Photographed:	✓
Plot 25	Required Depth	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	Site Won Subsoil					
Soil profile/description	0.00-0.30m.	Dark brown slightly sandy topsoil with frequent rootlets.				
	0.30-0.60m.	Reddish brown clay with occasional cobbles and gravel.				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		

Topsoil Validation Record



This area has PASSED inspection for depth and quality.

An additional inspection visit IS NOT required for these plots.

SGP Staff:	P R Magraw BSc FGS	Signed:		02.05.2019
SGP Member:	B Thomas BSc MSc MCIWEM C.Env SiLC	Signed:		02.05.2019

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



Final Report

Report No.: 19-08072-1

Initial Date of Issue: 13-Mar-2019

Client: Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Scott Miller

Project: R2469b Waterpark Drive

Quotation No.: Q15-02887 **Date Received:** 05-Mar-2019

Order No.: **Date Instructed:** 05-Mar-2019

No. of Samples: 3

Turnaround (Wkdays): 7 **Results Due:** 13-Mar-2019

Date Approved: 13-Mar-2019

Approved By:



Details: Martin Dyer, Laboratory Manager

Project: R2469b Waterpark Drive

Client: Smith Grant LLP	Chemtest Job No.:				19-08072	19-08072	19-08072
Quotation No.: Q15-02887	Chemtest Sample ID.:				787703	787704	787705
	Sample Location:				Clay-Plot 11	Clay SP-1	Clay SP-2
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				01-Mar-2019	01-Mar-2019	01-Mar-2019
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-
Moisture	N	2030	%	0.020	12	13	16
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Clay	Clay	Clay
pH	M	2010		N/A	8.7	8.5	8.2
Arsenic	M	2450	mg/kg	1.0	9.6	7.8	17
Cadmium	M	2450	mg/kg	0.10	0.18	0.12	< 0.10
Chromium	M	2450	mg/kg	1.0	21	19	28
Copper	M	2450	mg/kg	0.50	18	15	17
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	24	24	37
Lead	M	2450	mg/kg	0.50	31	23	13
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	48	43	41
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	2.8	1.1	0.81
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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
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	< 5.0	< 5.0
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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
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	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Project: R2469b Waterpark Drive

Client: Smith Grant LLP	Chemtest Job No.:				19-08072	19-08072	19-08072
Quotation No.: Q15-02887	Chemtest Sample ID.:				787703	787704	787705
	Sample Location:				Clay-Plot 11	Clay SP-1	Clay SP-2
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				01-Mar-2019	01-Mar-2019	01-Mar-2019
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.48	0.45	0.21
Anthracene	M	2700	mg/kg	0.10	0.12	0.15	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	0.95	0.97	0.25
Pyrene	M	2700	mg/kg	0.10	0.97	1.2	0.22
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.55	0.57	< 0.10
Chrysene	M	2700	mg/kg	0.10	0.41	0.27	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	0.50	0.80	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.22	0.40	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	0.49	0.79	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.23	0.42	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.11	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.29	0.59	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	5.2	6.7	< 2.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

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
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"

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 45 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

Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 697291-1

Date of Report: 07-Dec-2017

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 16-Nov-2017

Date Analysis Started: 20-Nov-2017

Date Analysis Completed: 07-Dec-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

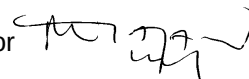
Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Miajan Miah
Customer Service Advisor

Issued by :
Miajan Miah
Customer Service Advisor



Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil MCERTS Preparation								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Moisture @105C	T162	AR	0.1	%	29	26	27	27
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1	<0.1

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Smith Grant Standard Suite 1								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Arsenic	T6	M40	2	mg/kg	14	13	13	17
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1	<1
Chromium	T6	M40	1	mg/kg	35	33	37	38
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1	<1
Copper	T6	M40	1	mg/kg	37	37	37	43
Lead	T6	M40	1	mg/kg	67	71	66	72
Mercury	T6	M40	1	mg/kg	<1	<1	<1	<1
Nickel	T6	M40	1	mg/kg	28	25	29	30
pH	T7	AR			6.0	5.7	6.0	7.3
Soil Organic Matter	T287	A40	0.1	%	4.1	5.1	4.3	5.4
Zinc	T6	M40	1	mg/kg	72	74	70	79

Value	Description
AR	As Received
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
A40	Assisted dried < 40C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T287	Calc TOC/0.58
T6	ICP/OES
T206	GC/FID (MCERTS)
T7	Probe
T162	Grav (1 Dec) (105 C)
T27	PLM
T2	Grav
T207	GC/MS (MCERTS)
T209	GC/MS (Head Space)(MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Arsenic	T6	M40	2	mg/kg	M	001-004
Asbestos ID	T27	AR			SU	001-004
Cadmium	T6	M40	1	mg/kg	M	001-004
Chromium	T6	M40	1	mg/kg	M	001-004
Chromium VI	T6	AR	1	mg/kg	N	001-004
Copper	T6	M40	1	mg/kg	M	001-004
Lead	T6	M40	1	mg/kg	M	001-004
Mercury	T6	M40	1	mg/kg	M	001-004
Nickel	T6	M40	1	mg/kg	M	001-004
pH	T7	AR			M	001-004
Soil Organic Matter	T287	A40	0.1	%	N	001-004
Zinc	T6	M40	1	mg/kg	M	001-004
Naphthalene	T207	M105	0.1	mg/kg	M	001-004
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-004
Acenaphthene	T207	M105	0.1	mg/kg	M	001-004
Fluorene	T207	M105	0.1	mg/kg	M	001-004
Phenanthrene	T207	M105	0.1	mg/kg	M	001-004
Anthracene	T207	M105	0.1	mg/kg	U	001-004
Fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Pyrene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Chrysene	T207	M105	0.1	mg/kg	M	001-004
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-004
PAH(total)	T207	M105	0.1	mg/kg	U	001-004
Benzene	T209	M105	0.010	mg/kg	M	001-004
Toluene	T209	M105	0.010	mg/kg	M	001-004
EthylBenzene	T209	M105	0.010	mg/kg	M	001-004
M/P Xylene	T209	M105	0.010	mg/kg	M	001-004

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
O Xylene	T209	M105	0.010	mg/kg	M	001-004
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	M	001-004
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-004
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	N	001-004
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	M	001-004
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	M	001-004
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	M	001-004
Moisture @105C	T162	AR	0.1	%	N	001-004
Retained on 10mm sieve	T2	M40	0.1	%	N	001-004



Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 709629-1

Date of Report: 30-Jan-2018

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 18-Jan-2018

Date Analysis Started: 19-Jan-2018

Date Analysis Completed: 30-Jan-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Aleksandra Pacula
Customer Service Advisor

Issued by :
Aleksandra Pacula
Customer Service Advisor



Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469									
Soil		Analysed as Soil							
MCERTS Preparation									
Concept Reference				709629 001		709629 002		709629 003	
Customer Sample Reference				SP-TS-5		SP-TS-6		SP-TS-7	
Date Sampled				16-JAN-2018		16-JAN-2018		16-JAN-2018	
Matrix Class				Sandy Soil		Sandy Soil		Sandy Soil	
Determinand		Method	Test Sample	LOD	Units				
Moisture @105C		T162	AR	0.1	%	26	18	28	
Retained on 10mm sieve		T2	M40	0.1	%	<0.1	<0.1	<0.1	

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
Smith Grant Standard Suite 1							
Concept Reference				709629 001	709629 002	709629 003	
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	
Determinand	Method	Test Sample	LOD	Units			
Arsenic	T6	M40	2	mg/kg	11	13	11
Asbestos ID	T27	AR			N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1
Chromium	T6	M40	1	mg/kg	29	31	29
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1
Copper	T6	M40	1	mg/kg	35	37	32
Lead	T6	M40	1	mg/kg	57	69	56
Mercury	T6	M40	1	mg/kg	<1	<1	<1
Nickel	T6	M40	1	mg/kg	24	27	25
pH	T7	AR			7.5	7.4	7.3
Soil Organic Matter	T287	A40	0.1	%	4.0	3.1	4.3
Zinc	T6	M40	1	mg/kg	74	70	63

Concept Reference: 709629							
Project Site: Waterpark Drive							
Customer Reference: R2469							
Soil				Analysed as Soil			
TPH (CWG) with MTBE, BTEX							
Concept Reference					709629 001	709629 002	709629 003
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Benzene	T209	M105	10	µg/kg	(13) <10	(13) <10	(13) <10
Toluene	T209	M105	10	µg/kg	<10	<10	<10
EthylBenzene	T209	M105	10	µg/kg	<10	<10	<10
M/P Xylene	T209	M105	10	µg/kg	<10	<10	<10
O Xylene	T209	M105	10	µg/kg	<10	<10	<10
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	<10	<10	<10
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100	<0.100
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	(13) <2	(13) <2	(13) <2
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	(13) <2	(13) <2	(13) <2
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aromatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
PAH US EPA 16 (B and K split)							
Concept Reference					709629 001	709629 002	709629 003
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
PAH(tot(a))	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469									
Soil		Analysed as Soil							
Miscellaneous									
Concept Reference				709629 001	709629 002	709629 003	709629 004	709629 005	
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	AGG-IMP-6	AGG-IMP-7	
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	
Determinand	Method	Test Sample	LOD	Units					
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.	N.D.

Index to symbols used in 709629-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T2	Grav
T162	Grav (1 Dec) (105 C)
T6	ICP/OES
T27	PLM
T7	Probe
T909	GCxGC
T287	Calc TOC/0.58
T209	GC/MS (Head Space)(MCERTS)
T207	GC/MS (MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Moisture @105C	T162	AR	0.1	%	N	001-003
Retained on 10mm sieve	T2	M40	0.1	%	N	001-003
Arsenic	T6	M40	2	mg/kg	M	001-003
Asbestos ID	T27	AR			SU	001-005
Cadmium	T6	M40	1	mg/kg	M	001-003
Chromium	T6	M40	1	mg/kg	M	001-003
Chromium VI	T6	AR	1	mg/kg	N	001-003
Copper	T6	M40	1	mg/kg	M	001-003
Lead	T6	M40	1	mg/kg	M	001-003
Mercury	T6	M40	1	mg/kg	M	001-003
Nickel	T6	M40	1	mg/kg	M	001-003
pH	T7	AR			M	001-003
Soil Organic Matter	T287	A40	0.1	%	N	001-003
Zinc	T6	M40	1	mg/kg	M	001-003
Benzene	T209	M105	10	µg/kg	M	001-003

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Toluene	T209	M105	10	µg/kg	M	001-003
EthylBenzene	T209	M105	10	µg/kg	M	001-003
M/P Xylene	T209	M105	10	µg/kg	M	001-003
O Xylene	T209	M105	10	µg/kg	M	001-003
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	M	001-003
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-003
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	M	001-003
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	M	001-003
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aromatic)	T909	M105	1	mg/kg	M	001-003
Naphthalene	T207	M105	0.1	mg/kg	M	001-003
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-003
Acenaphthene	T207	M105	0.1	mg/kg	M	001-003
Fluorene	T207	M105	0.1	mg/kg	M	001-003
Phenanthrene	T207	M105	0.1	mg/kg	M	001-003
Anthracene	T207	M105	0.1	mg/kg	U	001-003
Fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Pyrene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Chrysene	T207	M105	0.1	mg/kg	M	001-003
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-003
PAH(total)	T207	M105	0.1	mg/kg	U	001-003



Final Report

Report No.: 19-08562-1

Initial Date of Issue: 19-Mar-2019

Client: Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Scott Miller

Project: R2469b Water Park Drive (Barratt Homes)

Quotation No.: Q15-02887 **Date Received:** 08-Mar-2019

Order No.: **Date Instructed:** 08-Mar-2019

No. of Samples: 14

Turnaround (Wkdays): 7 **Results Due:** 18-Mar-2019

Date Approved: 19-Mar-2019

Approved By:



Details: Robert Monk, Technical Manager

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790227	790228	790229	790230	790231	790232	790233	790243	790244
	Sample Location:				SP3-S1	SP3-S2	SP3-S3	SP3-S4	SP3-S5	SP3-S6	SP3-S7	SP4-S1	SP4-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				DURHAM	COVENTRY	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	COVENTRY
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	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
ACM Detection Stage	U	2192		N/A	-	-	-	-	-	-	-	-	-
Moisture	N	2030	%	0.020	25	28	23	20	16	19	19	16	12
Soil Colour	N	2040		N/A	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,
Other Material	N	2040		N/A	Stones, Roots,	Roots, Stones,,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Roots, Stones,	Stones, Roots,
Soil Texture	N	2040		N/A	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,
pH	M	2010		N/A	8.0	8.1	8.3	7.8	7.8	8.1	8.0	7.1	7.1
Arsenic	M	2450	mg/kg	1.0	13	13	10	9.5	12	9.9	10	7.8	7.9
Cadmium	M	2450	mg/kg	0.10	0.35	0.24	0.29	0.28	0.28	0.24	0.31	0.29	0.22
Chromium	M	2450	mg/kg	1.0	23	24	23	21	23	19	22	17	21
Copper	M	2450	mg/kg	0.50	29	31	27	26	49	27	28	21	17
Mercury	M	2450	mg/kg	0.10	0.15	0.51	0.15	0.16	0.20	0.14	0.14	0.11	< 0.10
Nickel	M	2450	mg/kg	0.50	23	27	24	20	21	20	22	16	18
Lead	M	2450	mg/kg	0.50	58	61	58	55	46	59	58	39	28
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.26	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	76	88	74	61	54	84	74	77	47
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	M	2625	%	0.40	4.5	3.1	3.3	3.3	2.6	3.5	3.3	3.1	2.1
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	M	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	M	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	M	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	M	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	M	2680	mg/kg	1.0	< 1.0	75	< 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	75	< 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	M	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	M	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 >C12-C16	M	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 >C16-C21	U	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 >C21-C35	M	2680	mg/kg	1.0	< 1.0	380	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	14	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	400	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	470	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790227	790228	790229	790230	790231	790232	790233	790243	790244
	Sample Location:				SP3-S1	SP3-S2	SP3-S3	SP3-S4	SP3-S5	SP3-S6	SP3-S7	SP4-S1	SP4-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				DURHAM	COVENTRY	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	COVENTRY
Determinand	Accred.	SOP	Units	LOD									
Naphthalene	M	2700	mg/kg	0.10	0.44	0.59	0.46	0.48	< 0.10	0.56	0.47	0.38	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	0.24	0.26	< 0.10	0.46	< 0.10	< 0.10	0.31	0.21	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	0.75	0.11	0.15	< 0.10	0.30	0.11	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	0.62	0.12	0.21	< 0.10	0.27	0.12	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.59	4.6	0.89	1.9	0.67	2.0	1.0	0.59	0.18
Anthracene	M	2700	mg/kg	0.10	< 0.10	1.3	0.28	0.37	0.16	0.52	0.24	0.13	0.10
Fluoranthene	M	2700	mg/kg	0.10	0.45	7.2	0.90	1.9	0.65	2.6	1.4	0.73	0.21
Pyrene	M	2700	mg/kg	0.10	0.57	7.2	1.0	1.8	0.76	2.7	1.4	0.80	0.28
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	4.2	0.51	0.95	0.40	1.5	0.84	0.44	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	3.9	0.84	1.2	0.69	1.5	1.2	0.70	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	3.2	0.57	1.0	0.51	1.2	0.64	0.39	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	2.2	0.46	0.69	0.37	0.77	0.75	0.47	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	3.1	0.53	0.86	0.41	1.2	0.82	0.44	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	1.8	0.32	0.70	0.34	0.88	0.46	0.28	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.75	0.32	0.95	0.41	0.51	0.51	0.37	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	2.7	1.1	1.6	0.55	2.4	1.8	0.95	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	2.3	44	8.4	15	5.9	19	12	6.9	< 2.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	25	2.5	< 1.0	5.7	9.1	23	31	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	2.0	1.3	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	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	M	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

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790245	790246	790247	790254	790255
	Sample Location:				SP4-S3	SP4-S4	SP4-S5	SP5-S1	SP5-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD					
ACM Type	U	2192		N/A	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-	-	-
Moisture	N	2030	%	0.020	16	16	21	13	17
Soil Colour	N	2040		N/A	Brown,	Brown,	Brown,	Brown,	Brown,
Other Material	N	2040		N/A	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,
Soil Texture	N	2040		N/A	Clay,	Clay,	Clay	Clay,	Clay,
pH	M	2010		N/A	7.9	7.9	7.5	8.4	8.4
Arsenic	M	2450	mg/kg	1.0	8.4	11	12	12	7.4
Cadmium	M	2450	mg/kg	0.10	0.28	0.31	0.41	0.23	0.14
Chromium	M	2450	mg/kg	1.0	19	22	28	22	26
Copper	M	2450	mg/kg	0.50	23	23	30	42	19
Mercury	M	2450	mg/kg	0.10	0.15	0.24	0.17	0.15	< 0.10
Nickel	M	2450	mg/kg	0.50	20	21	24	27	30
Lead	M	2450	mg/kg	0.50	48	44	54	120	28
Selenium	M	2450	mg/kg	0.20	0.22	< 0.20	0.33	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	60	48	57	120	49
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	3.1	2.4	3.3	1.5	1.3
Aliphatic TPH >C5-C6	N	2680	mg/kg	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
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	51	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	3.3	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	54	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	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
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	2.2	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	130	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	3.4	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	140	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	190	< 10

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790245	790246	790247	790254	790255
	Sample Location:				SP4-S3	SP4-S4	SP4-S5	SP5-S1	SP5-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD					
Naphthalene	M	2700	mg/kg	0.10	< 0.10	0.36	0.40	0.43	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.14	0.20	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.31	0.27	0.46	0.50	0.48
Anthracene	M	2700	mg/kg	0.10	< 0.10	0.11	0.13	0.16	0.14
Fluoranthene	M	2700	mg/kg	0.10	0.37	0.41	0.58	1.3	0.65
Pyrene	M	2700	mg/kg	0.10	0.43	0.48	0.55	1.4	0.68
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.83	0.76	1.0	1.1	0.34
Chrysene	M	2700	mg/kg	0.10	0.51	0.41	0.66	0.97	0.66
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	0.29	0.27	0.37	0.17	0.39
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.43	0.21	< 0.10	0.67	0.21
Benzo[a]pyrene	M	2700	mg/kg	0.10	0.21	0.27	0.33	0.99	0.39
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.14	< 0.10	0.24	0.75	0.75
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	0.33	< 0.10	0.26	0.30	0.40
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.65	< 0.10	0.90	1.4	1.4
Total Of 16 PAH's	M	2700	mg/kg	2.0	4.5	3.6	6.0	10	6.5
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	2.4	7.2	< 1.0	1.9
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	4.5	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"

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 45 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

Job name	Waterpark Drive
Job no.	R2469b
Date:	25.03.19
Author:	SM
Laboratory:	Chemtest
Lab. Reference:	19-08562



PAH concentrations

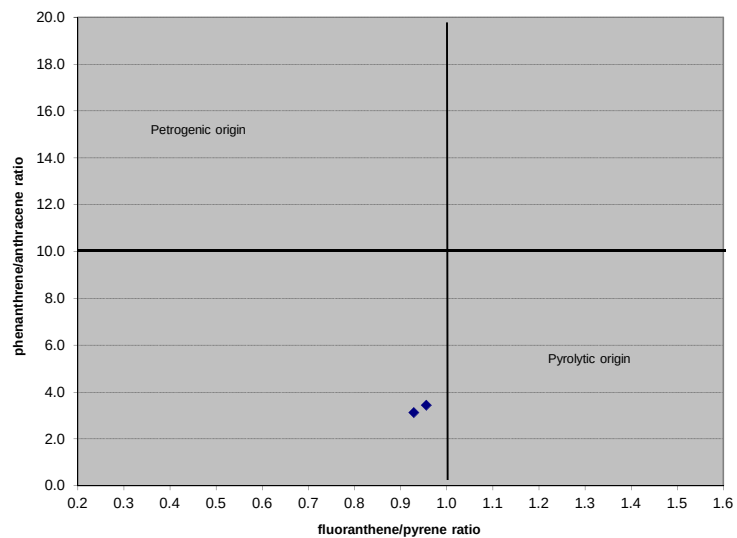
sample identity	SP5-S1	SP5-S2																	
phenanthrene	0.5	0.48																	
anthracene	0.16	0.14																	
fluoranthene	1.3	0.65																	
pyrene	1.4	0.68																	
benz(a)anthracene	1.1	0.34																	
chrysene	0.97	0.66																	

PAH units	mg/kg
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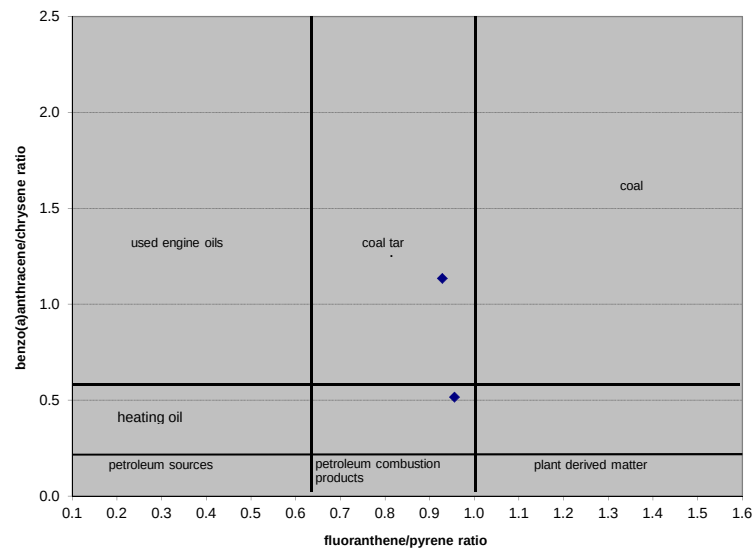
PAH ratios

phe/ant	3.125	3.429																	
flu/pyr	0.929	0.956																	
baa/chr	1.134	0.515																	

PAH source diagnosis



PAH source diagnosis



Topsoil Validation Record

Job number	R2469b	Depth ref:	R2469-R01-v3		Quality ref:		R2469-R01-v3		Other documents attached		✓		
Date	01.03.2018	Area use:	garden		landscaped		stockpile		other				
Site name / location	Nomvula Park, Waterpark Drive, Knowsley	Size area (m):	5 x 10	Approx Area (m²):	50	Approx Depth Top (m):	0.6	Approx Volume Top (m³):	30	Approx Depth Sub (m):	N/A	Approx Volume Sub (m³):	N/A
Plot/ location:	27-28	Number depth entries required		1 (1 per 3 gardens). 1 provided.		Number samples required:			1 TS (1 per 250m³ TS) (minimum 3 samples per single source), 11 TS provided				
Compiled by:	PRM												

Quality Validation		Inspection date/time:	15.11.2017, 16.01.2018	Inspected by:	SM	Photographed:	✓
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Source Topsoil	1.	✓	Site won topsoil
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets.
Sample Topsoil	3.	✓	11 samples taken from onsite stockpile '1' (CLS ref: 697291SW-TS-1 – SW-TS-4 & 709629-1, SP-TS-1 – SP-TS-7)
Source Subsoil	4.	x	N/A
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	NFD	NFD	Yes
Arsenic	37	11-17	Yes
Cadmium	11	<1	Yes
Chromium III	910	29-38	Yes
Chromium VI	6	<1	Yes
Copper	2400	32-43	Yes
Lead	200	56-72	Yes
Mercury	40	<1	Yes
Nickel	130	24-30	Yes
Zinc	3700	63-79	Yes
Naphthalene	2.3	<0.1	Yes
Acenaphthene	210	<0.1	Yes
Acenaphthylene	170	<0.1	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	<0.1-0.2	Yes
Pyrene	620	<0.1-0.2	Yes
Benzo(a) anthracene	7.2	<0.1	Yes
Chrysene	15	<0.1	Yes
Benzo(b) fluoranthene	2.6	<0.1	Yes
Benzo(k) fluoranthene	77	<0.1	Yes
Benzo(a) pyrene	2.2	<0.1	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1	Yes
Dibenzo(ah) anthracene	0.24	<0.1	Yes
Benzo(ghi) perylene	320	<0.1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1	Yes
Aliphatic C21-C35	5000	<1	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	Yes
Aromatic C16-C21	260	<1	Yes
Aromatic C21-C35	1100	<1	Yes

Soil Standards are adopted from published SGV's where available, other sources include the LQM/CIEH and CLAIRe GACs.

The appropriate land use is residential, and 1% SOM is assumed.

Topsoil Validation Record

Depth Validation	Inspection date/time:	01.03.2019	Inspected by:	PRM	Photographed:	✓
Plot 27	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	N/A					
Soil profile/description	0.00-0.60m. 0.60m	Dark brown slightly sandy topsoil with frequent rootlets. Base				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



This area has PASSED inspection for depth and quality.
An additional inspection visit IS NOT required for these plots.

SGP Staff:	P R Magraw BSc FGS	Signed:		06.03.2019
SGP Member:	D Wayland BSc MSc MCIWEM C.Env	Signed:		07.03.2019

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

Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 697291-1

Date of Report: 07-Dec-2017

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 16-Nov-2017

Date Analysis Started: 20-Nov-2017

Date Analysis Completed: 07-Dec-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

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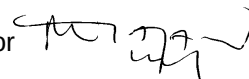
Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Miajan Miah
Customer Service Advisor

Issued by :
Miajan Miah
Customer Service Advisor



Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil MCERTS Preparation								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Moisture @105C	T162	AR	0.1	%	29	26	27	27
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1	<0.1

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Smith Grant Standard Suite 1								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Arsenic	T6	M40	2	mg/kg	14	13	13	17
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1	<1
Chromium	T6	M40	1	mg/kg	35	33	37	38
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1	<1
Copper	T6	M40	1	mg/kg	37	37	37	43
Lead	T6	M40	1	mg/kg	67	71	66	72
Mercury	T6	M40	1	mg/kg	<1	<1	<1	<1
Nickel	T6	M40	1	mg/kg	28	25	29	30
pH	T7	AR			6.0	5.7	6.0	7.3
Soil Organic Matter	T287	A40	0.1	%	4.1	5.1	4.3	5.4
Zinc	T6	M40	1	mg/kg	72	74	70	79

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil PAH US EPA 16 (B and K split)								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.2
Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.2
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
PAH(total)	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.4

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Total Petroleum Hydrocarbons CWG								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Benzene	T209	M105	0.010	mg/kg	(13) <0.010	(13) <0.010	(13) <0.010	(13) <0.010
Toluene	T209	M105	0.010	mg/kg	(13) <0.010	(13) <0.010	(13) <0.010	(13) <0.010
EthylBenzene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
M/P Xylene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
O Xylene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100	<0.100	<0.100
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	(13) <2	(13) <2	(13) <2	(13) <2
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	(13) <4	(13) <4	(13) <4	(13) <4
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) 2
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) 4

Index to symbols used in 697291-1

Value	Description
AR	As Received
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
A40	Assisted dried < 40C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T287	Calc TOC/0.58
T6	ICP/OES
T206	GC/FID (MCERTS)
T7	Probe
T162	Grav (1 Dec) (105 C)
T27	PLM
T2	Grav
T207	GC/MS (MCERTS)
T209	GC/MS (Head Space)(MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Arsenic	T6	M40	2	mg/kg	M	001-004
Asbestos ID	T27	AR			SU	001-004
Cadmium	T6	M40	1	mg/kg	M	001-004
Chromium	T6	M40	1	mg/kg	M	001-004
Chromium VI	T6	AR	1	mg/kg	N	001-004
Copper	T6	M40	1	mg/kg	M	001-004
Lead	T6	M40	1	mg/kg	M	001-004
Mercury	T6	M40	1	mg/kg	M	001-004
Nickel	T6	M40	1	mg/kg	M	001-004
pH	T7	AR			M	001-004
Soil Organic Matter	T287	A40	0.1	%	N	001-004
Zinc	T6	M40	1	mg/kg	M	001-004
Naphthalene	T207	M105	0.1	mg/kg	M	001-004
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-004
Acenaphthene	T207	M105	0.1	mg/kg	M	001-004
Fluorene	T207	M105	0.1	mg/kg	M	001-004
Phenanthrene	T207	M105	0.1	mg/kg	M	001-004
Anthracene	T207	M105	0.1	mg/kg	U	001-004
Fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Pyrene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Chrysene	T207	M105	0.1	mg/kg	M	001-004
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-004
PAH(total)	T207	M105	0.1	mg/kg	U	001-004
Benzene	T209	M105	0.010	mg/kg	M	001-004
Toluene	T209	M105	0.010	mg/kg	M	001-004
EthylBenzene	T209	M105	0.010	mg/kg	M	001-004
M/P Xylene	T209	M105	0.010	mg/kg	M	001-004

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
O Xylene	T209	M105	0.010	mg/kg	M	001-004
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	M	001-004
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-004
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	N	001-004
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	M	001-004
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	M	001-004
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	M	001-004
Moisture @105C	T162	AR	0.1	%	N	001-004
Retained on 10mm sieve	T2	M40	0.1	%	N	001-004



Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 709629-1

Date of Report: 30-Jan-2018

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 18-Jan-2018

Date Analysis Started: 19-Jan-2018

Date Analysis Completed: 30-Jan-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Aleksandra Pacula
Customer Service Advisor

Issued by :
Aleksandra Pacula
Customer Service Advisor



Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469								
Soil		Analysed as Soil						
MCERTS Preparation								
Concept Reference				709629 001		709629 002	709629 003	
Customer Sample Reference				SP-TS-5		SP-TS-6	SP-TS-7	
Date Sampled				16-JAN-2018		16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil		Sandy Soil	Sandy Soil	
Determinand		Method	Test Sample	LOD	Units			
Moisture @105C		T162	AR	0.1	%	26	18	28
Retained on 10mm sieve		T2	M40	0.1	%	<0.1	<0.1	<0.1

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
Smith Grant Standard Suite 1							
Concept Reference				709629 001	709629 002	709629 003	
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	
Determinand	Method	Test Sample	LOD	Units			
Arsenic	T6	M40	2	mg/kg	11	13	11
Asbestos ID	T27	AR			N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1
Chromium	T6	M40	1	mg/kg	29	31	29
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1
Copper	T6	M40	1	mg/kg	35	37	32
Lead	T6	M40	1	mg/kg	57	69	56
Mercury	T6	M40	1	mg/kg	<1	<1	<1
Nickel	T6	M40	1	mg/kg	24	27	25
pH	T7	AR			7.5	7.4	7.3
Soil Organic Matter	T287	A40	0.1	%	4.0	3.1	4.3
Zinc	T6	M40	1	mg/kg	74	70	63

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469									
Soil		Analysed as Soil							
Miscellaneous									
Concept Reference				709629 001	709629 002	709629 003	709629 004	709629 005	
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	AGG-IMP-6	AGG-IMP-7	
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	
Determinand	Method	Test Sample	LOD	Units					
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.	N.D.

Index to symbols used in 709629-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T2	Grav
T162	Grav (1 Dec) (105 C)
T6	ICP/OES
T27	PLM
T7	Probe
T909	GCxGC
T287	Calc TOC/0.58
T209	GC/MS (Head Space)(MCERTS)
T207	GC/MS (MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Moisture @105C	T162	AR	0.1	%	N	001-003
Retained on 10mm sieve	T2	M40	0.1	%	N	001-003
Arsenic	T6	M40	2	mg/kg	M	001-003
Asbestos ID	T27	AR			SU	001-005
Cadmium	T6	M40	1	mg/kg	M	001-003
Chromium	T6	M40	1	mg/kg	M	001-003
Chromium VI	T6	AR	1	mg/kg	N	001-003
Copper	T6	M40	1	mg/kg	M	001-003
Lead	T6	M40	1	mg/kg	M	001-003
Mercury	T6	M40	1	mg/kg	M	001-003
Nickel	T6	M40	1	mg/kg	M	001-003
pH	T7	AR			M	001-003
Soil Organic Matter	T287	A40	0.1	%	N	001-003
Zinc	T6	M40	1	mg/kg	M	001-003
Benzene	T209	M105	10	µg/kg	M	001-003

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Toluene	T209	M105	10	µg/kg	M	001-003
EthylBenzene	T209	M105	10	µg/kg	M	001-003
M/P Xylene	T209	M105	10	µg/kg	M	001-003
O Xylene	T209	M105	10	µg/kg	M	001-003
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	M	001-003
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-003
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	M	001-003
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	M	001-003
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aromatic)	T909	M105	1	mg/kg	M	001-003
Naphthalene	T207	M105	0.1	mg/kg	M	001-003
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-003
Acenaphthene	T207	M105	0.1	mg/kg	M	001-003
Fluorene	T207	M105	0.1	mg/kg	M	001-003
Phenanthrene	T207	M105	0.1	mg/kg	M	001-003
Anthracene	T207	M105	0.1	mg/kg	U	001-003
Fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Pyrene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Chrysene	T207	M105	0.1	mg/kg	M	001-003
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-003
PAH(total)	T207	M105	0.1	mg/kg	U	001-003

Topsoil Validation Record

Job number	R2469b	Depth ref:	R2469-R01-v4		Quality ref:		R2469-R01-v4		Other documents attached		✓		
Date	12.08.19	Area use:	garden			landscaped			stockpile		other		
Site name / location	Nomvula Park, Waterpark Drive, Knowsley	Size area (m):	14 x 10 and 14 x 10	Approx Area (m²):	280	Approx Depth Top (m):	0.7	Approx Volume Top (m³):	196	Approx Depth Sub (m):	0.72	Approx Volume Sub (m³):	39
Plots / location:	Plots 29, 30 and 31												
Compiled by:	CS	Number depth entries required			1 (1 per 3 gardens). 1 provided.		Number samples required:			3 TS & 3 SS (1 per 250m³ TS and 1 per 100m³ SS - minimum 3 samples per single source). 11 TS provided & 5 SS provided.			

Quality Validation		Inspection date/time:	15.11.17, 01.03.19	Inspected by:	SM, PRM	Photographed:	✓
Source Topsoil	1.	✓	Site won topsoil				
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets.				
Sample Topsoil	3.	✓	11 samples taken from onsite stockpile '1' (CLS ref: 697291 SW-TS-1 – SW-TS-4 & CLS ref: 709629-1, SP-TS-1 – SP-TS-7).				
Source Subsoil	4.	✓	Site won subsoil				
Description Subsoil	5.	✓	Reddish brown clay with occasional cobbles and gravel of mixed lithologies.				
Sample Subsoil	6.	✓	4 samples taken from onsite stockpile '5' and 1 taken in-situ from Plot 11 (Chemtest refs: 19-08072 & 19-08562).				

Topsoil Validation Record



Topsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	11-17	Yes
Cadmium	11	<1	Yes
Chromium III	910	29-38	Yes
Chromium VI	6	<1	Yes
Copper	2400	32-43	Yes
Lead	200	56-72	Yes
Mercury	40	<1	Yes
Nickel	130	24-30	Yes
Zinc	3700	63-79	Yes
Naphthalene	2.3	<0.1	Yes
Acenaphthene	210	<0.1	Yes
Acenaphthylene	170	<0.1	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	<0.1-0.2	Yes
Pyrene	620	<0.1-0.2	Yes
Benzo(a) anthracene	7.2	<0.1	Yes
Chrysene	15	<0.1	Yes
Benzo(b) fluoranthene	2.6	<0.1	Yes
Benzo(k) fluoranthene	77	<0.1	Yes
Benzo(a) pyrene	2.2	<0.1	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1	Yes
Dibenzo(ah) anthracene	0.24	<0.1	Yes
Benzo(ghi) perylene	320	<0.1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1	Yes
Aliphatic C21-C35	5000	<1	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	Yes
Aromatic C16-C21	260	<1	Yes
Aromatic C21-C35	1100	<1	Yes

Topsoil Validation Record



Subsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	8.2-8.7	Yes
Cadmium	11	0.8-2.8	Yes
Chromium III	910	7.4-17	Yes
Chromium VI	6	<0.1-0.23	Yes
Copper	2400	19-28	Yes
Lead	200	<0.5	Yes
Mercury	40	16-42	Yes
Nickel	130	13-120	Yes
Zinc	3700	<0.1-0.15	Yes
Naphthalene	2.3	24-37	Yes
Acenaphthene	210	41-120	Yes
Acenaphthylene	170	<0.1-0.43	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1-0.20	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	0.21-0.50	Yes
Pyrene	620	<0.1-0.16	Yes
Benzo(a) anthracene	7.2	0.25-1.3	Yes
Chrysene	15	0.22-1.4	Yes
Benzo(b) fluoranthene	2.6	<0.1-1.1	Yes
Benzo(k) fluoranthene	77	<0.1-0.97	Yes
Benzo(a) pyrene	2.2	<0.1-0.8	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1-0.4	Yes
Dibenzo(ah) anthracene	0.24	<0.1-0.4	Yes*
Benzo(ghi) perylene	320	<1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1-51	Yes
Aliphatic C21-C35	5000	<1	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	<1-2.2	Yes
Aromatic C16-C21	260	<1-130	Yes
Aromatic C21-C35	1100	<1-380	Yes

2 minor exceedances were reported for dibenzo(ah)anthracene at 0.3-0.4mg/kg out of the 5 samples taken; a PAH ratio cross plot has been undertaken (attached) which indicates that the source of the material is more likely of pyrolytic origin, rather than petrogenic, and is therefore unlikely to be readily bio-accessible. All other samples tested for dibenzo(ah)anthracene reported below or at the limit of detection (<0.1-0.1mg/kg). The material is therefore considered suitable for its intended use in gardens within the development.

Topsoil Validation Record

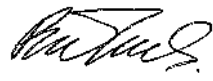
Depth Validation	Inspection date/time:	12.08.19	Inspected by:	CS	Photographed:	✓
Plot 29	Required Depth (mm)	600	Measured Depth (mm)	720	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	Site Won Subsoil					
Soil profile/description	0.00-0.70m.	Dark brown slightly sandy slightly gravelly clayey topsoil with frequent rootlets.				
	0.70-0.72m.	Light brown clayey sand				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



This area has PASSED inspection for depth and quality.

An additional inspection visit IS NOT required for these plots.

SGP Staff:	C Salwa BSc MSc FGS	Signed:		15.08.2019
SGP Member:	B J Thomas BSc, MSc, CIWEM, C.Env SiLC	Signed:		15.08.2019

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

Topsoil Validation Record

Job number	R2469b	Depth ref:	R2469-R01-v4		Quality ref:	R2469-R01-v4			Other documents attached			✓							
Date	12.08.19	Area use:	garden			landscaped			stockpile			other							
Site name / location	Nomvula Park, Waterpark Drive, Knowsley	Size area (m):	10 x 18		Approx Area (m²):	180		Approx Depth Top (m):	0.6		Approx Volume Top (m³):	108		Approx Depth Sub (m):	0.7		Approx Volume Sub (m³):	18	
Plots / location:	Plots 32, 33 and 34																		
Compiled by:	CS	Number depth entries required				1 (1 per 3 gardens). 1 provided.			Number samples required:			3 TS & 3 SS (1 per 250m³ TS and 1 per 100m³ SS - minimum 3 samples per single source). 11 TS provided & 5 SS provided.							

Quality Validation		Inspection date/time:	15.11.17, 01.03.19	Inspected by:	SM, PRM	Photographed:	✓
Source Topsoil	1.	✓	Site won topsoil				
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets.				
Sample Topsoil	3.	✓	11 samples taken from onsite stockpile '1' (CLS ref: 697291 SW-TS-1 – SW-TS-4 & CLS ref: 709629-1, SP-TS-1 – SP-TS-7).				
Source Subsoil	4.	✓	Site won subsoil				
Description Subsoil	5.	✓	Reddish brown clay with occasional cobbles and gravel of mixed lithologies.				
Sample Subsoil	6.	✓	4 samples taken from onsite stockpile '5' and 1 taken in-situ from Plot 11 (Chemtest refs: 19-08072 & 19-08562).				

Topsoil Validation Record



Topsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	11-17	Yes
Cadmium	11	<1	Yes
Chromium III	910	29-38	Yes
Chromium VI	6	<1	Yes
Copper	2400	32-43	Yes
Lead	200	56-72	Yes
Mercury	40	<1	Yes
Nickel	130	24-30	Yes
Zinc	3700	63-79	Yes
Naphthalene	2.3	<0.1	Yes
Acenaphthene	210	<0.1	Yes
Acenaphthylene	170	<0.1	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	<0.1-0.2	Yes
Pyrene	620	<0.1-0.2	Yes
Benzo(a) anthracene	7.2	<0.1	Yes
Chrysene	15	<0.1	Yes
Benzo(b) fluoranthene	2.6	<0.1	Yes
Benzo(k) fluoranthene	77	<0.1	Yes
Benzo(a) pyrene	2.2	<0.1	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1	Yes
Dibenzo(ah) anthracene	0.24	<0.1	Yes
Benzo(ghi) perylene	320	<0.1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1	Yes
Aliphatic C21-C35	5000	<1	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	Yes
Aromatic C16-C21	260	<1	Yes
Aromatic C21-C35	1100	<1	Yes

Topsoil Validation Record



Subsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	8.2-8.7	Yes
Cadmium	11	0.8-2.8	Yes
Chromium III	910	7.4-17	Yes
Chromium VI	6	<0.1-0.23	Yes
Copper	2400	19-28	Yes
Lead	200	<0.5	Yes
Mercury	40	16-42	Yes
Nickel	130	13-120	Yes
Zinc	3700	<0.1-0.15	Yes
Naphthalene	2.3	24-37	Yes
Acenaphthene	210	41-120	Yes
Acenaphthylene	170	<0.1-0.43	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1-0.20	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	0.21-0.50	Yes
Pyrene	620	<0.1-0.16	Yes
Benzo(a) anthracene	7.2	0.25-1.3	Yes
Chrysene	15	0.22-1.4	Yes
Benzo(b) fluoranthene	2.6	<0.1-1.1	Yes
Benzo(k) fluoranthene	77	<0.1-0.97	Yes
Benzo(a) pyrene	2.2	<0.1-0.8	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1-0.4	Yes
Dibenzo(ah) anthracene	0.24	<0.1-0.4	Yes*
Benzo(ghi) perylene	320	<1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1-51	Yes
Aliphatic C21-C35	5000	<1	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	<1-2.2	Yes
Aromatic C16-C21	260	<1-130	Yes
Aromatic C21-C35	1100	<1-380	Yes

* 2 minor exceedances were reported for dibenzo(ah)anthracene at 0.3-0.4mg/kg out of the 5 samples taken; a PAH ratio cross plot has been undertaken (attached) which indicates that the source of the material is more likely of pyrolytic origin, rather than petrogenic, and is therefore unlikely to be readily bio-accessible. All other samples tested for dibenzo(ah)anthracene reported below or at the limit of detection (<0.1-0.1mg/kg). The material is therefore considered suitable for its intended use in gardens within the development.

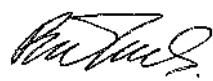
Topsoil Validation Record

Depth Validation	Inspection date/time:	12.08.19	Inspected by:	CS	Photographed:	✓
Plot 32	Required Depth (mm)	600	Measured Depth (mm)	720	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	Site Won Subsoil					
Soil profile/description	0.00-0.60m.	Dark greyish brown slightly sandy slightly gravelly clayey topsoil with frequent rootlets.				
	0.60-0.70m.	Light brown slightly clayey sand				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record

This area has PASSED inspection for depth and quality.

An additional inspection visit IS NOT required for these plots.

SGP Staff:	C Salwa BSc MSc FGS	Signed:		15.08.2019
SGP Member:	B J Thomas BSc, MSc, CIWEM, C.Env SiLC	Signed:		15.08.2019

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

Topsoil Validation Record

Job number	R2469b	Depth ref:	R2469-R01-v4		Quality ref:		R2469-R01-v4		Other documents attached		✓		
Date	12.08.19	Area use:	garden		landscaped		stockpile		other				
Site name / location	Nomvula Park, Waterpark Drive, Knowsley	Size area (m):	10 x 18	Approx Area (m²):	180	Approx Depth Top (m):	0.7	Approx Volume Top (m³):	126	Approx Depth Sub (m):	0.72	Approx Volume Sub (m³):	3.6
Plots / location:	Plots 35, 36 and 37												
Compiled by:	CS	Number depth entries required			1 (1 per 3 gardens). 1 provided.		Number samples required:		3 TS & 3 SS (1 per 250m³ TS and 1 per 100m³ SS - minimum 3 samples per single source). 11 TS provided & 5 SS provided.				

Quality Validation		Inspection date/time:	15.11.17, 01.03.19	Inspected by:	SM, PRM	Photographed:	✓
Source Topsoil	1.	✓	Site won topsoil				
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets.				
Sample Topsoil	3.	✓	11 samples taken from onsite stockpile '1' (CLS ref: 697291 SW-TS-1 – SW-TS-4 & CLS ref: 709629-1, SP-TS-1 – SP-TS-7).				
Source Subsoil	4.	✓	Site won subsoil				
Description Subsoil	5.	✓	Reddish brown clay with occasional cobbles and gravel of mixed lithologies.				
Sample Subsoil	6.	✓	4 samples taken from onsite stockpile '5' and 1 taken in-situ from Plot 11 (Chemtest refs: 19-08072 & 19-08562).				

Topsoil Validation Record



Topsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	11-17	Yes
Cadmium	11	<1	Yes
Chromium III	910	29-38	Yes
Chromium VI	6	<1	Yes
Copper	2400	32-43	Yes
Lead	200	56-72	Yes
Mercury	40	<1	Yes
Nickel	130	24-30	Yes
Zinc	3700	63-79	Yes
Naphthalene	2.3	<0.1	Yes
Acenaphthene	210	<0.1	Yes
Acenaphthylene	170	<0.1	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	<0.1-0.2	Yes
Pyrene	620	<0.1-0.2	Yes
Benzo(a) anthracene	7.2	<0.1	Yes
Chrysene	15	<0.1	Yes
Benzo(b) fluoranthene	2.6	<0.1	Yes
Benzo(k) fluoranthene	77	<0.1	Yes
Benzo(a) pyrene	2.2	<0.1	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1	Yes
Dibenzo(ah) anthracene	0.24	<0.1	Yes
Benzo(ghi) perylene	320	<0.1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1	Yes
Aliphatic C21-C35	5000	<1	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	Yes
Aromatic C16-C21	260	<1	Yes
Aromatic C21-C35	1100	<1	Yes

Topsoil Validation Record



Subsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	8.2-8.7	Yes
Cadmium	11	0.8-2.8	Yes
Chromium III	910	7.4-17	Yes
Chromium VI	6	<0.1-0.23	Yes
Copper	2400	19-28	Yes
Lead	200	<0.5	Yes
Mercury	40	16-42	Yes
Nickel	130	13-120	Yes
Zinc	3700	<0.1-0.15	Yes
Naphthalene	2.3	24-37	Yes
Acenaphthene	210	41-120	Yes
Acenaphthylene	170	<0.1-0.43	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1-0.20	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	0.21-0.50	Yes
Pyrene	620	<0.1-0.16	Yes
Benzo(a) anthracene	7.2	0.25-1.3	Yes
Chrysene	15	0.22-1.4	Yes
Benzo(b) fluoranthene	2.6	<0.1-1.1	Yes
Benzo(k) fluoranthene	77	<0.1-0.97	Yes
Benzo(a) pyrene	2.2	<0.1-0.8	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1-0.4	Yes
Dibenzo(ah) anthracene	0.24	<0.1-0.4	Yes*
Benzo(ghi) perylene	320	<1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1-51	Yes
Aliphatic C21-C35	5000	<1	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	<1-2.2	Yes
Aromatic C16-C21	260	<1-130	Yes
Aromatic C21-C35	1100	<1-380	Yes

2 minor exceedances were reported for dibenzo(ah)anthracene at 0.3-0.4mg/kg out of the 5 samples taken; a PAH ratio cross plot has been undertaken (attached) which indicates that the source of the material is more likely of pyrolytic origin, rather than petrogenic, and is therefore unlikely to be readily bio-accessible. All other samples tested for dibenzo(ah)anthracene reported below or at the limit of detection (<0.1-0.1mg/kg). The material is therefore considered suitable for its intended use in gardens within the development.

Topsoil Validation Record

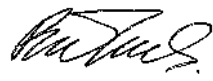
Depth Validation	Inspection date/time:	12.08.19	Inspected by:	CS	Photographed:	✓
Plot 35	Required Depth (mm)	600	Measured Depth (mm)	720	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	Site Won Subsoil					
Soil profile/description	0.00-0.70m.	Dark greyish brown slightly sandy slightly gravelly clayey topsoil with frequent rootlets.				
	0.70-0.72m.	Light brown slightly clayey sand				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



This area has PASSED inspection for depth and quality.

An additional inspection visit IS NOT required for these plots.

SGP Staff:	C Salwa BSc MSc FGS	Signed:		15.08.2019
SGP Member:	B J Thomas BSc, MSc, CIWEM, C.Env SiLC	Signed:		15.08.2019

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



Topsoil Validation Record

Job number	R2469b	Depth ref:	R2469-R01-v4		Quality ref:		R2469-R01-v4		Other documents attached		✓		
Date	23.09.19	Area use:	garden		landscaped			stockpile		other			
Site name / location	Nomvula Park, Waterpark Drive, Knowsley	Size area (m):	6 x 18	Approx Area (m²):	108	Approx Depth Top (m):	0.3	Approx Volume Top (m³):	32.5	Approx Depth Sub (m):	0.3	Approx Volume Sub (m³):	32.5
Plots / location:	Plots 38-40	Number depth entries required		1 (1 per 3 gardens). 1 provided.			Number samples required:		3 TS & 3 SS (1 per 250m³ TS and 1 per 100m³ SS - minimum 3 samples per single source). 11 TS provided & 5 SS provided.				
Compiled by:	PRM												

Quality Validation		Inspection date/time:	15.11.17, 01.03.19	Inspected by:	SM, PRM	Photographed:	✓
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Source Topsoil	1.	✓	Site won topsoil
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets.
Sample Topsoil	3.	✓	11 samples taken from onsite stockpile '1' (CLS ref: 697291 SW-TS-1 – SW-TS-4 & CLS ref: 709629-1, SP-TS-1 – SP-TS-7).
Source Subsoil	4.	✓	Site won subsoil
Description Subsoil	5.	✓	Reddish brown clay with occasional cobbles and gravel of mixed lithologies.
Sample Subsoil	6.	✓	4 samples taken from onsite stockpile '5' and 1 taken in-situ from Plot 11 (Chemtest refs: 19-08072 & 19-08562).

Topsoil Validation Record



Topsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	11-17	Yes
Cadmium	11	<1	Yes
Chromium III	910	29-38	Yes
Chromium VI	6	<1	Yes
Copper	2400	32-43	Yes
Lead	200	56-72	Yes
Mercury	40	<1	Yes
Nickel	130	24-30	Yes
Zinc	3700	63-79	Yes
Naphthalene	2.3	<0.1	Yes
Acenaphthene	210	<0.1	Yes
Acenaphthylene	170	<0.1	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	<0.1-0.2	Yes
Pyrene	620	<0.1-0.2	Yes
Benzo(a) anthracene	7.2	<0.1	Yes
Chrysene	15	<0.1	Yes
Benzo(b) fluoranthene	2.6	<0.1	Yes
Benzo(k) fluoranthene	77	<0.1	Yes
Benzo(a) pyrene	2.2	<0.1	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1	Yes
Dibenzo(ah) anthracene	0.24	<0.1	Yes
Benzo(ghi) perylene	320	<0.1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1	Yes
Aliphatic C21-C35	5000	<1	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	Yes
Aromatic C16-C21	260	<1	Yes
Aromatic C21-C35	1100	<1	Yes

Topsoil Validation Record



Subsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	8.2-8.7	Yes
Cadmium	11	0.8-2.8	Yes
Chromium III	910	7.4-17	Yes
Chromium VI	6	<0.1-0.23	Yes
Copper	2400	19-28	Yes
Lead	200	<0.5	Yes
Mercury	40	16-42	Yes
Nickel	130	13-120	Yes
Zinc	3700	<0.1-0.15	Yes
Naphthalene	2.3	24-37	Yes
Acenaphthene	210	41-120	Yes
Acenaphthylene	170	<0.1-0.43	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1-0.20	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	0.21-0.50	Yes
Pyrene	620	<0.1-0.16	Yes
Benzo(a) anthracene	7.2	0.25-1.3	Yes
Chrysene	15	0.22-1.4	Yes
Benzo(b) fluoranthene	2.6	<0.1-1.1	Yes
Benzo(k) fluoranthene	77	<0.1-0.97	Yes
Benzo(a) pyrene	2.2	<0.1-0.8	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1-0.4	Yes
Dibenzo(ah) anthracene	0.24	<0.1-0.4	Yes*
Benzo(ghi) perylene	320	<1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1-51	Yes
Aliphatic C21-C35	5000	<1	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	<1-2.2	Yes
Aromatic C16-C21	260	<1-130	Yes
Aromatic C21-C35	1100	<1-380	Yes

2 minor exceedances were reported for dibenzo(ah)anthracene at 0.3-0.4mg/kg out of the 5 samples taken; a PAH ratio cross plot has been undertaken (attached) which indicates that the source of the material is more likely of pyrolytic origin, rather than petrogenic, and is therefore unlikely to be readily bio-accessible. All other samples tested for dibenzo(ah)anthracene reported below or at the limit of detection (<0.1-0.1mg/kg). The material is therefore considered suitable for its intended use in gardens within the development.



Topsoil Validation Record

Depth Validation	Inspection date/time:	19.09.19	Inspected by:	PRM	Photographed:	✓
Plot 35	Required Depth	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	Site Won Subsoil					
Soil profile/description	0.00-0.30m.	Dark greyish brown slightly sandy slightly gravelly clayey topsoil with frequent rootlets.				
	0.30-0.60m.	Light brown slightly clayey sand				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



This area has PASSED inspection for depth and quality.

An additional inspection visit IS NOT required for these plots.

SGP Staff:	P R Magraw BSc FGS	Signed:		23.09.2019
SGP Member:	B J Thomas BSc, MSc, CIWEM, C.Env SiLC	Signed:		23.09.2019

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

Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 697291-1

Date of Report: 07-Dec-2017

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 16-Nov-2017

Date Analysis Started: 20-Nov-2017

Date Analysis Completed: 07-Dec-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Miajan Miah
Customer Service Advisor

Issued by :
Miajan Miah
Customer Service Advisor

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil MCERTS Preparation								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Moisture @105C	T162	AR	0.1	%	29	26	27	27
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1	<0.1

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Smith Grant Standard Suite 1								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Arsenic	T6	M40	2	mg/kg	14	13	13	17
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1	<1
Chromium	T6	M40	1	mg/kg	35	33	37	38
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1	<1
Copper	T6	M40	1	mg/kg	37	37	37	43
Lead	T6	M40	1	mg/kg	67	71	66	72
Mercury	T6	M40	1	mg/kg	<1	<1	<1	<1
Nickel	T6	M40	1	mg/kg	28	25	29	30
pH	T7	AR			6.0	5.7	6.0	7.3
Soil Organic Matter	T287	A40	0.1	%	4.1	5.1	4.3	5.4
Zinc	T6	M40	1	mg/kg	72	74	70	79

Value	Description
AR	As Received
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
A40	Assisted dried < 40C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T287	Calc TOC/0.58
T6	ICP/OES
T206	GC/FID (MCERTS)
T7	Probe
T162	Grav (1 Dec) (105 C)
T27	PLM
T2	Grav
T207	GC/MS (MCERTS)
T209	GC/MS (Head Space)(MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Arsenic	T6	M40	2	mg/kg	M	001-004
Asbestos ID	T27	AR			SU	001-004
Cadmium	T6	M40	1	mg/kg	M	001-004
Chromium	T6	M40	1	mg/kg	M	001-004
Chromium VI	T6	AR	1	mg/kg	N	001-004
Copper	T6	M40	1	mg/kg	M	001-004
Lead	T6	M40	1	mg/kg	M	001-004
Mercury	T6	M40	1	mg/kg	M	001-004
Nickel	T6	M40	1	mg/kg	M	001-004
pH	T7	AR			M	001-004
Soil Organic Matter	T287	A40	0.1	%	N	001-004
Zinc	T6	M40	1	mg/kg	M	001-004
Naphthalene	T207	M105	0.1	mg/kg	M	001-004
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-004
Acenaphthene	T207	M105	0.1	mg/kg	M	001-004
Fluorene	T207	M105	0.1	mg/kg	M	001-004
Phenanthrene	T207	M105	0.1	mg/kg	M	001-004
Anthracene	T207	M105	0.1	mg/kg	U	001-004
Fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Pyrene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Chrysene	T207	M105	0.1	mg/kg	M	001-004
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-004
PAH(total)	T207	M105	0.1	mg/kg	U	001-004
Benzene	T209	M105	0.010	mg/kg	M	001-004
Toluene	T209	M105	0.010	mg/kg	M	001-004
EthylBenzene	T209	M105	0.010	mg/kg	M	001-004
M/P Xylene	T209	M105	0.010	mg/kg	M	001-004

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
O Xylene	T209	M105	0.010	mg/kg	M	001-004
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	M	001-004
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-004
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	N	001-004
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	M	001-004
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	M	001-004
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	M	001-004
Moisture @105C	T162	AR	0.1	%	N	001-004
Retained on 10mm sieve	T2	M40	0.1	%	N	001-004



Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 709629-1

Date of Report: 30-Jan-2018

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 18-Jan-2018

Date Analysis Started: 19-Jan-2018

Date Analysis Completed: 30-Jan-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Aleksandra Pacula
Customer Service Advisor

Issued by :
Aleksandra Pacula
Customer Service Advisor



Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469									
Soil		Analysed as Soil							
MCERTS Preparation									
Concept Reference				709629 001		709629 002		709629 003	
Customer Sample Reference				SP-TS-5		SP-TS-6		SP-TS-7	
Date Sampled				16-JAN-2018		16-JAN-2018		16-JAN-2018	
Matrix Class				Sandy Soil		Sandy Soil		Sandy Soil	
Determinand		Method	Test Sample	LOD	Units				
Moisture @105C		T162	AR	0.1	%	26	18	28	
Retained on 10mm sieve		T2	M40	0.1	%	<0.1	<0.1	<0.1	

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
Smith Grant Standard Suite 1							
Concept Reference				709629 001	709629 002	709629 003	
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	
Determinand	Method	Test Sample	LOD	Units			
Arsenic	T6	M40	2	mg/kg	11	13	11
Asbestos ID	T27	AR			N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1
Chromium	T6	M40	1	mg/kg	29	31	29
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1
Copper	T6	M40	1	mg/kg	35	37	32
Lead	T6	M40	1	mg/kg	57	69	56
Mercury	T6	M40	1	mg/kg	<1	<1	<1
Nickel	T6	M40	1	mg/kg	24	27	25
pH	T7	AR			7.5	7.4	7.3
Soil Organic Matter	T287	A40	0.1	%	4.0	3.1	4.3
Zinc	T6	M40	1	mg/kg	74	70	63

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469									
Soil					Analysed as Soil				
Miscellaneous									
Concept Reference					709629 001	709629 002	709629 003	709629 004	709629 005
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7	AGG-IMP-6	AGG-IMP-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units					
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.	N.D.

Index to symbols used in 709629-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T2	Grav
T162	Grav (1 Dec) (105 C)
T6	ICP/OES
T27	PLM
T7	Probe
T909	GCxGC
T287	Calc TOC/0.58
T209	GC/MS (Head Space)(MCERTS)
T207	GC/MS (MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Moisture @105C	T162	AR	0.1	%	N	001-003
Retained on 10mm sieve	T2	M40	0.1	%	N	001-003
Arsenic	T6	M40	2	mg/kg	M	001-003
Asbestos ID	T27	AR			SU	001-005
Cadmium	T6	M40	1	mg/kg	M	001-003
Chromium	T6	M40	1	mg/kg	M	001-003
Chromium VI	T6	AR	1	mg/kg	N	001-003
Copper	T6	M40	1	mg/kg	M	001-003
Lead	T6	M40	1	mg/kg	M	001-003
Mercury	T6	M40	1	mg/kg	M	001-003
Nickel	T6	M40	1	mg/kg	M	001-003
pH	T7	AR			M	001-003
Soil Organic Matter	T287	A40	0.1	%	N	001-003
Zinc	T6	M40	1	mg/kg	M	001-003
Benzene	T209	M105	10	µg/kg	M	001-003

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Toluene	T209	M105	10	µg/kg	M	001-003
EthylBenzene	T209	M105	10	µg/kg	M	001-003
M/P Xylene	T209	M105	10	µg/kg	M	001-003
O Xylene	T209	M105	10	µg/kg	M	001-003
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	M	001-003
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-003
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	M	001-003
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	M	001-003
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aromatic)	T909	M105	1	mg/kg	M	001-003
Naphthalene	T207	M105	0.1	mg/kg	M	001-003
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-003
Acenaphthene	T207	M105	0.1	mg/kg	M	001-003
Fluorene	T207	M105	0.1	mg/kg	M	001-003
Phenanthrene	T207	M105	0.1	mg/kg	M	001-003
Anthracene	T207	M105	0.1	mg/kg	U	001-003
Fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Pyrene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Chrysene	T207	M105	0.1	mg/kg	M	001-003
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-003
PAH(total)	T207	M105	0.1	mg/kg	U	001-003



Final Report

Report No.: 19-08072-1

Initial Date of Issue: 13-Mar-2019

Client: Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Scott Miller

Project: R2469b Waterpark Drive

Quotation No.: Q15-02887 **Date Received:** 05-Mar-2019

Order No.: **Date Instructed:** 05-Mar-2019

No. of Samples: 3

Turnaround (Wkdays): 7 **Results Due:** 13-Mar-2019

Date Approved: 13-Mar-2019

Approved By:



Details: Martin Dyer, Laboratory Manager

Project: R2469b Waterpark Drive

Client: Smith Grant LLP	Chemtest Job No.:				19-08072	19-08072	19-08072
Quotation No.: Q15-02887	Chemtest Sample ID.:				787703	787704	787705
	Sample Location:				Clay-Plot 11	Clay SP-1	Clay SP-2
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				01-Mar-2019	01-Mar-2019	01-Mar-2019
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-
Moisture	N	2030	%	0.020	12	13	16
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Clay	Clay	Clay
pH	M	2010		N/A	8.7	8.5	8.2
Arsenic	M	2450	mg/kg	1.0	9.6	7.8	17
Cadmium	M	2450	mg/kg	0.10	0.18	0.12	< 0.10
Chromium	M	2450	mg/kg	1.0	21	19	28
Copper	M	2450	mg/kg	0.50	18	15	17
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	24	24	37
Lead	M	2450	mg/kg	0.50	31	23	13
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	48	43	41
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	2.8	1.1	0.81
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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
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	< 5.0	< 5.0
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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
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	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Project: R2469b Waterpark Drive

Client: Smith Grant LLP	Chemtest Job No.:				19-08072	19-08072	19-08072
Quotation No.: Q15-02887	Chemtest Sample ID.:				787703	787704	787705
	Sample Location:				Clay-Plot 11	Clay SP-1	Clay SP-2
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				01-Mar-2019	01-Mar-2019	01-Mar-2019
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.48	0.45	0.21
Anthracene	M	2700	mg/kg	0.10	0.12	0.15	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	0.95	0.97	0.25
Pyrene	M	2700	mg/kg	0.10	0.97	1.2	0.22
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.55	0.57	< 0.10
Chrysene	M	2700	mg/kg	0.10	0.41	0.27	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	0.50	0.80	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.22	0.40	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	0.49	0.79	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.23	0.42	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.11	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.29	0.59	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	5.2	6.7	< 2.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

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
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"

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 45 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



Final Report

Report No.: 19-08562-1

Initial Date of Issue: 19-Mar-2019

Client Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Scott Miller

Project R2469b Water Park Drive (Barratt Homes)

Quotation No.: Q15-02887

Order No.:

No. of Samples: 14

Turnaround (Wkdays): 7

Date Approved: 19-Mar-2019

Approved By:

Date Received: 08-Mar-2019

Date Instructed: 08-Mar-2019

Results Due: 18-Mar-2019

Details: Robert Monk, Technical Manager

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790227	790228	790229	790230	790231	790232	790233	790243	790244
	Sample Location:				SP3-S1	SP3-S2	SP3-S3	SP3-S4	SP3-S5	SP3-S6	SP3-S7	SP4-S1	SP4-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				DURHAM	COVENTRY	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	COVENTRY
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	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
ACM Detection Stage	U	2192		N/A	-	-	-	-	-	-	-	-	-
Moisture	N	2030	%	0.020	25	28	23	20	16	19	19	16	12
Soil Colour	N	2040		N/A	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,
Other Material	N	2040		N/A	Stones, Roots,	Roots, Stones,,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Roots, Stones,	Stones, Roots,
Soil Texture	N	2040		N/A	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,
pH	M	2010		N/A	8.0	8.1	8.3	7.8	7.8	8.1	8.0	7.1	7.1
Arsenic	M	2450	mg/kg	1.0	13	13	10	9.5	12	9.9	10	7.8	7.9
Cadmium	M	2450	mg/kg	0.10	0.35	0.24	0.29	0.28	0.28	0.24	0.31	0.29	0.22
Chromium	M	2450	mg/kg	1.0	23	24	23	21	23	19	22	17	21
Copper	M	2450	mg/kg	0.50	29	31	27	26	49	27	28	21	17
Mercury	M	2450	mg/kg	0.10	0.15	0.51	0.15	0.16	0.20	0.14	0.14	0.11	< 0.10
Nickel	M	2450	mg/kg	0.50	23	27	24	20	21	20	22	16	18
Lead	M	2450	mg/kg	0.50	58	61	58	55	46	59	58	39	28
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.26	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	76	88	74	61	54	84	74	77	47
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	M	2625	%	0.40	4.5	3.1	3.3	3.3	2.6	3.5	3.3	3.1	2.1
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	M	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	M	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	M	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	M	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	M	2680	mg/kg	1.0	< 1.0	75	< 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	75	< 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	M	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	M	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 >C12-C16	M	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 >C16-C21	U	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 >C21-C35	M	2680	mg/kg	1.0	< 1.0	380	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	14	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	400	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	470	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790227	790228	790229	790230	790231	790232	790233	790243	790244
	Sample Location:				SP3-S1	SP3-S2	SP3-S3	SP3-S4	SP3-S5	SP3-S6	SP3-S7	SP4-S1	SP4-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				DURHAM	COVENTRY	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	COVENTRY
Determinand	Accred.	SOP	Units	LOD									
Naphthalene	M	2700	mg/kg	0.10	0.44	0.59	0.46	0.48	< 0.10	0.56	0.47	0.38	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	0.24	0.26	< 0.10	0.46	< 0.10	< 0.10	0.31	0.21	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	0.75	0.11	0.15	< 0.10	0.30	0.11	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	0.62	0.12	0.21	< 0.10	0.27	0.12	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.59	4.6	0.89	1.9	0.67	2.0	1.0	0.59	0.18
Anthracene	M	2700	mg/kg	0.10	< 0.10	1.3	0.28	0.37	0.16	0.52	0.24	0.13	0.10
Fluoranthene	M	2700	mg/kg	0.10	0.45	7.2	0.90	1.9	0.65	2.6	1.4	0.73	0.21
Pyrene	M	2700	mg/kg	0.10	0.57	7.2	1.0	1.8	0.76	2.7	1.4	0.80	0.28
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	4.2	0.51	0.95	0.40	1.5	0.84	0.44	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	3.9	0.84	1.2	0.69	1.5	1.2	0.70	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	3.2	0.57	1.0	0.51	1.2	0.64	0.39	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	2.2	0.46	0.69	0.37	0.77	0.75	0.47	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	3.1	0.53	0.86	0.41	1.2	0.82	0.44	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	1.8	0.32	0.70	0.34	0.88	0.46	0.28	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.75	0.32	0.95	0.41	0.51	0.51	0.37	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	2.7	1.1	1.6	0.55	2.4	1.8	0.95	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	2.3	44	8.4	15	5.9	19	12	6.9	< 2.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	25	2.5	< 1.0	5.7	9.1	23	31	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	2.0	1.3	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	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	M	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

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790245	790246	790247	790254	790255
	Sample Location:				SP4-S3	SP4-S4	SP4-S5	SP5-S1	SP5-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD					
ACM Type	U	2192		N/A	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-	-	-
Moisture	N	2030	%	0.020	16	16	21	13	17
Soil Colour	N	2040		N/A	Brown,	Brown,	Brown,	Brown,	Brown,
Other Material	N	2040		N/A	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,
Soil Texture	N	2040		N/A	Clay,	Clay,	Clay	Clay,	Clay,
pH	M	2010		N/A	7.9	7.9	7.5	8.4	8.4
Arsenic	M	2450	mg/kg	1.0	8.4	11	12	12	7.4
Cadmium	M	2450	mg/kg	0.10	0.28	0.31	0.41	0.23	0.14
Chromium	M	2450	mg/kg	1.0	19	22	28	22	26
Copper	M	2450	mg/kg	0.50	23	23	30	42	19
Mercury	M	2450	mg/kg	0.10	0.15	0.24	0.17	0.15	< 0.10
Nickel	M	2450	mg/kg	0.50	20	21	24	27	30
Lead	M	2450	mg/kg	0.50	48	44	54	120	28
Selenium	M	2450	mg/kg	0.20	0.22	< 0.20	0.33	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	60	48	57	120	49
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	3.1	2.4	3.3	1.5	1.3
Aliphatic TPH >C5-C6	N	2680	mg/kg	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
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	51	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	3.3	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	54	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	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
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	2.2	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	130	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	3.4	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	140	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	190	< 10

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790245	790246	790247	790254	790255
	Sample Location:				SP4-S3	SP4-S4	SP4-S5	SP5-S1	SP5-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD					
Naphthalene	M	2700	mg/kg	0.10	< 0.10	0.36	0.40	0.43	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.14	0.20	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.31	0.27	0.46	0.50	0.48
Anthracene	M	2700	mg/kg	0.10	< 0.10	0.11	0.13	0.16	0.14
Fluoranthene	M	2700	mg/kg	0.10	0.37	0.41	0.58	1.3	0.65
Pyrene	M	2700	mg/kg	0.10	0.43	0.48	0.55	1.4	0.68
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.83	0.76	1.0	1.1	0.34
Chrysene	M	2700	mg/kg	0.10	0.51	0.41	0.66	0.97	0.66
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	0.29	0.27	0.37	0.17	0.39
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.43	0.21	< 0.10	0.67	0.21
Benzo[a]pyrene	M	2700	mg/kg	0.10	0.21	0.27	0.33	0.99	0.39
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.14	< 0.10	0.24	0.75	0.75
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	0.33	< 0.10	0.26	0.30	0.40
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.65	< 0.10	0.90	1.4	1.4
Total Of 16 PAH's	M	2700	mg/kg	2.0	4.5	3.6	6.0	10	6.5
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	2.4	7.2	< 1.0	1.9
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	4.5	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"

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 45 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

Job name	Waterpark Drive
Job no.	R2469b
Date:	25.03.19
Author:	SM
Laboratory:	Chemtest
Lab. Reference:	19-08562



PAH concentrations

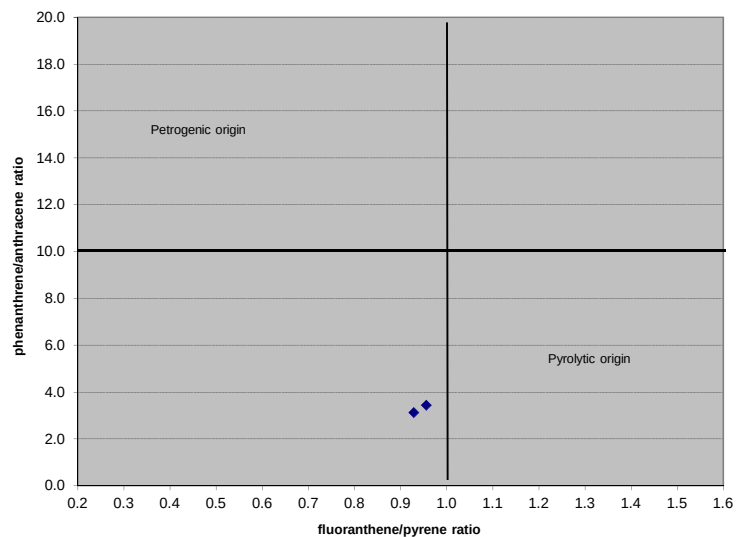
sample identity	SP5-S1	SP5-S2																	
phenanthrene	0.5	0.48																	
anthracene	0.16	0.14																	
fluoranthene	1.3	0.65																	
pyrene	1.4	0.68																	
benz(a)anthracene	1.1	0.34																	
chrysene	0.97	0.66																	

PAH units	mg/kg
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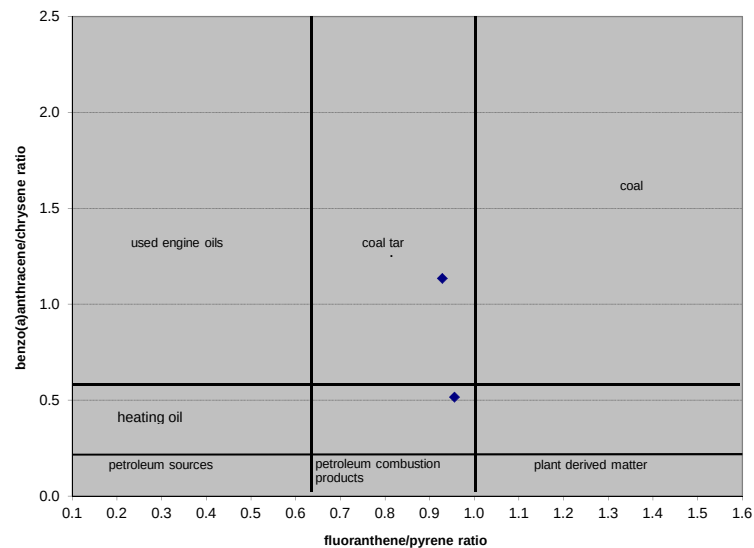
PAH ratios

phe/ant	3.125	3.429																	
flu/pyr	0.929	0.956																	
baa/chr	1.134	0.515																	

PAH source diagnosis



PAH source diagnosis





Topsoil Validation Record

Job number	R2469b	Depth ref:	R2469-R01-v4			Quality ref:		R2469-R01-v4		Other documents attached		✓	
Date	19.11.19	Area use:	garden			landscaped			stockpile		other		
Site name / location	Nomvula Park, Waterpark Drive, Knowsley	Size area (m):	L Shape	Approx Area (m²):	300	Approx Depth Top (m):	0.6	Approx Volume Top (m³):	180	Approx Depth Sub (m):	N/A	Approx Volume Sub (m³):	N/A
Plots / location:	Plots 42-46												
Compiled by:	PRM	Number depth entries required			2 (1 per 3 gardens). 2 provided.			Number samples required:		3 TS (1 per 250m³ TS - minimum 3 samples per single source). 11 TS provided.			

Quality Validation		Inspection date/time:	23.04.19, 02.10.19	Inspected by:	MJ, ALM	Photographed:	✓
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Source Topsoil	1.	✓	King's Quarter Barratts Development, Pewterspear, Warrington, WA4 5FR
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets.
Sample Topsoil	3.	✓	8 samples taken from onsite stockpile at source site (Lab ref: 19/6738 – TS1-TS8) and 2 samples taken from the POS area at the destination site (Lab ref: 19-33471 – S1-S2).
Source Subsoil	4.	X	N/A
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	NFD	NFD	Yes
Arsenic	37	6.4-13.5	Yes
Cadmium	11	0.18-0.3	Yes
Chromium III	910	19.0-115.8	Yes
Chromium VI	6	<1	Yes
Copper	2400	19-31	Yes
Lead	200	27-35	Yes
Mercury	40	<0.1	Yes
Nickel	130	16.0-26.6	Yes
Zinc	3700	50-76	Yes
Naphthalene	2.3	<0.04	Yes
Acenaphthene	210	<0.05	Yes
Acenaphthylene	170	<0.03	Yes
Fluorene	170	<0.04	Yes
Phenanthrene	95	<0.03-0.31	Yes
Anthracene	2400	<0.04-0.12	Yes
Fluoranthene	280	0.08-0.45	Yes
Pyrene	620	0.08-0.36	Yes
Benzo(a) anthracene	7.2	<0.06-1.2	Yes
Chrysene	15	0.05-0.68	Yes
Benzo(b) fluoranthene	2.6	0.06-0.24	Yes
Benzo(k) fluoranthene	77	0.03-0.09	Yes
Benzo(a) pyrene	2.2	<0.04-0.20	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.04-0.11	Yes
Dibenzo(ah) anthracene	0.24	<0.04	Yes
Benzo(ghi) perylene	320	<0.04-0.13	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	<0.2	Yes
Aliphatic C12-C16	1100	<4	Yes
Aliphatic C16-C21	5000	<7	Yes
Aliphatic C21-C35	5000	<7-100	Yes
Aromatic C6-C7	70	<0.1	Yes
Aromatic C7-C8	130	<0.1	Yes
Aromatic C8-C10	34	<0.1	Yes
Aromatic C10-C12	74	<0.2	Yes
Aromatic C12-C16	140	<4	Yes
Aromatic C16-C21	260	<7-35	Yes
Aromatic C21-C35	1100	<7	Yes



Topsoil Validation Record

Depth Validation	Inspection date/time:	15.11.19	Inspected by:	PRM	Photographed:	✓
Plots 43	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	King's Quarter Barratts Development, Pewterspear, Warrington, WA4 5FR					
Source Subsoil	N/A					
Soil profile/description	0.00-0.60m.	Brown locally grey slightly sandy slightly gravelly clay with occasional roots. Gravel is limestone and brick.				
	0.60m.	Base				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



Depth Validation	Inspection date/time:	15.11.19	Inspected by:	PRM	Photographed:	✓
Plots 45	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	King's Quarter Barratts Development, Pewterspear, Warrington, WA4 5FR					
Source Subsoil	N/A					
Soil profile/description	0.00-0.60m.	Brown locally grey slightly sandy slightly gravelly clay with occasional roots. Gravel is limestone and brick.				
	0.60m.	Base				

Photograph (location)



Photograph (depth profile)



Photograph (soil type)



Topsoil Validation Record



This area has PASSED inspection for depth and quality.

An additional inspection visit IS NOT required for these plots.

SGP Staff:	P Magraw BSc FGS	Signed:		19.11.2019
SGP Member:	B J Thomas BSc, MSc, CIWEM, C.Env SiLC	Signed:		19.11.2019

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.: 19-33471-1

Initial Date of Issue: 14-Oct-2019

Client Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Ben Thomas
Megan Jones

Project R2469B-T0255 Nomvula Park

Quotation No.: **Date Received:** 07-Oct-2019

Order No.: **Date Instructed:** 07-Oct-2019

No. of Samples: 2

Turnaround (Wkdays): 5 **Results Due:** 11-Oct-2019

Date Approved: 14-Oct-2019

Approved By:



Details: Robert Monk, Technical Manager

Project: R2469B-T0255 Nomvula Park

Client: Smith Grant LLP	Chemtest Job No.:				19-33471	19-33471
Quotation No.:	Chemtest Sample ID.:				901143	901144
	Client Sample ID.:				S1	S2
	Sample Location:				TS	TS
	Sample Type:				SOIL	SOIL
	Date Sampled (\$):				02-Oct-2019	02-Oct-2019
	Asbestos Lab:				COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-
Moisture	N	2030	%	0.020	18	17
pH	U	2010		N/A	7.0	7.3
Arsenic	U	2450	mg/kg	1.0	8.1	6.4
Cadmium	U	2450	mg/kg	0.10	0.27	0.18
Chromium	U	2450	mg/kg	1.0	25	19
Copper	U	2450	mg/kg	0.50	26	20
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	20	16
Lead	U	2450	mg/kg	0.50	32	27
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	65	50
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	2.1	2.1
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	100
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	100
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	35
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	110
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	150
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	250
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10

Project: R2469B-T0255 Nomvula Park

Client: Smith Grant LLP	Chemtest Job No.:				19-33471	19-33471
Quotation No.:	Chemtest Sample ID.:				901143	901144
	Client Sample ID.:				S1	S2
	Sample Location:				TS	TS
	Sample Type:				SOIL	SOIL
	Date Sampled (\$):				02-Oct-2019	02-Oct-2019
	Asbestos Lab:				COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD		
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	0.13	< 0.10
Anthracene	U	2700	mg/kg	0.10	0.12	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	0.45	0.44
Pyrene	U	2700	mg/kg	0.10	0.14	0.26
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	1.2
Chrysene	U	2700	mg/kg	0.10	< 0.10	0.68
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	2.6
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0

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.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"
- \$ This information has been supplied by the client and can affect the integrity of test data.

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 45 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



Exova Jones Environmental

Registered Office: Exova Environmental UK Limited, 10 Lower Grosvenor Place, London, SW1W 0EN. Reg No. 11371415

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Lancashire
WN8 9PL

Tel: +44 (0) 1244 833780
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Attention :	Alex Albon
Date :	1st May, 2019
Your reference :	30166
Our reference :	Test Report 19/6738 Batch 1
Location :	Pewterspear-Topsoil Stockpile
Date samples received :	25th April, 2019
Status :	Final report
Issue :	1

Eight samples were received for analysis on 25th April, 2019 of which eight were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

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

Compiled By:

Simon Gomery BSc
Project Manager

Client Name: ALM Consult Limited
Reference: 30166
Location: Pewterspear-Topsoil Stockpile
Contact: Alex Albon
JE Job No.: 19/6738

Report : Solid

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

J E Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16			Please see attached notes for all abbreviations and acronyms		
Sample ID	TS1	TS2	TS3	TS4	TS5	TS6	TS7	TS8					
Depth	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20					
COC No / misc													
Containers	J T	J T	J T	J T	J T	J T	J T	J T					
Sample Date	23/04/2019	23/04/2019	23/04/2019	23/04/2019	23/04/2019	23/04/2019	23/04/2019	23/04/2019					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	25/04/2019	25/04/2019	25/04/2019	25/04/2019	25/04/2019	25/04/2019	25/04/2019	25/04/2019			LOD/LOR	Units	Method No.
Arsenic #	8.5	13.5	9.0	8.8	8.2	9.0	8.1	9.9			<0.5	mg/kg	TM30/PM15
Cadmium #	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.2			<0.1	mg/kg	TM30/PM15
Chromium #	102.7	49.6	124.6	72.9	115.8	50.0	91.2	49.7			<0.5	mg/kg	TM30/PM15
Copper #	27	31	23	19	21	22	21	20			<1	mg/kg	TM30/PM15
Lead #	27	32	34	32	27	33	29	35			<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	mg/kg	TM30/PM15
Nickel #	21.1	20.0	21.4	23.8	26.6	19.4	19.9	19.7			<0.7	mg/kg	TM30/PM15
Selenium #	2	<1	2	1	<1	1	1	1			<1	mg/kg	TM30/PM15
Water Soluble Boron #	0.6	0.6	0.7	0.4	0.6	0.4	0.6	0.4			<0.1	mg/kg	TM74/PM32
Zinc #	66	70	72	72	76	69	69	70			<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03			<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.08	0.12	0.05	0.21	0.31	0.09	<0.03	0.09			<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04	0.07	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Fluoranthene #	0.21	0.20	0.08	0.31	0.37	0.15	0.08	0.15			<0.03	mg/kg	TM4/PM8
Pyrene #	0.19	0.18	0.08	0.31	0.36	0.13	0.08	0.13			<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.18	0.16	<0.06	0.23	0.25	0.11	0.09	0.10			<0.06	mg/kg	TM4/PM8
Chrysene #	0.10	0.10	0.06	0.15	0.16	0.06	0.05	0.08			<0.02	mg/kg	TM4/PM8
Benzo(b)fluoranthene #	0.21	0.18	0.09	0.33	0.30	0.11	0.09	0.13			<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.10	0.10	0.05	0.20	0.16	0.06	<0.04	0.07			<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.07	0.06	<0.04	0.11	0.10	<0.04	<0.04	0.04			<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.07	0.07	<0.04	0.13	0.10	<0.04	<0.04	0.04			<0.04	mg/kg	TM4/PM8
PAH 16 Total	1.2	1.2	<0.6	2.0	2.2	0.7	<0.6	0.8			<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.15	0.13	0.06	0.24	0.22	0.08	0.06	0.09			<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.06	0.05	0.03	0.09	0.08	0.03	0.03	0.04			<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	98	100	102	99	98	99	101	101			<0	%	TM4/PM8
TPH CWG													
Aliphatics													
>C5-C6 #	-	<0.1	-	<0.1	-	<0.1	-	<0.1			<0.1	mg/kg	TM36/PM12
>C6-C8 #	-	<0.1	-	<0.1	-	<0.1	-	<0.1			<0.1	mg/kg	TM36/PM12
>C8-C10	-	<0.1	-	<0.1	-	<0.1	-	<0.1			<0.1	mg/kg	TM36/PM12
>C10-C12 #	-	<0.2	-	<0.2	-	<0.2	-	<0.2			<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	-	<4	-	<4	-	<4	-	<4			<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	-	<7	-	<7	-	<7	-	<7			<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	-	<7	-	<7	-	<7	-	<7			<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	-	<19	-	<19	-	<19	-	<19			<19	mg/kg	TM5/PM8/PM16/PM12/PM15

Please see attached notes for all abbreviations and acronyms

Client Name: ALM Consult Limited
Reference: 30166
Location: Pewterspear-Topsoil Stockpile
Contact: Alex Albon

Note:

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

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

[illegible]

Client Name: ALM Consult Limited
Reference: 30166
Location: Pewterspear-Topsoil Stockpile
Contact: Alex Albon

[illegible]

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

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 19/6738

SOILS

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

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

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

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

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

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

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

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

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

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

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

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

WATERS

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

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

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

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

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

NOTE

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

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

REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Please include all sections of this report if it is reproduced

ABBREVIATIONS and ACRONYMS USED

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

JE Job No: 19/6738

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO ₂ generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

JE Job No: 19/6738

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes

Topsoil Validation Record

Job number	R2469b	Depth ref:	R2469-R01-v4		Quality ref:		R2469-R01-v4		Other documents attached		✓		
Date	18.10.19	Area use:	garden			landscaped			stockpile			other	
Site name / location	Nomvula Park, Waterpark Drive, Knowsley	Size area (m):	9 x 12	Approx Area (m²):	108	Approx Depth Top (m):	0.5	Approx Volume Top (m³):	54	Approx Depth Sub (m):	0.65	Approx Volume Sub (m³):	27
Plots / location:	Plots 47-48												
Compiled by:	CS	Number depth entries required			1 (1 per 3 gardens). 1 provided.		Number samples required:			3 TS & 3 SS (1 per 250m³ TS and 1 per 100m³ SS - minimum 3 samples per single source). 11 TS provided & 5 SS provided.			

Quality Validation		Inspection date/time:	15.11.17, 01.03.19, 23.04.19, 02.10.19	Inspected by:	SM, PRM, MJ, ALM	Photographed:	✓
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Source Topsoil	1.	✓	King's Quarter Barratts Development, Pewterspear, Warrington, WA4 5FR
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets.
Sample Topsoil	3.	✓	8 samples taken from onsite stockpile at source site (Lab ref: 19/6738 – TS1-TS8) and 2 samples taken from the POS area at the destination site (Lab ref: 19-33471 – S1-S2).
Source Subsoil	4.	✓	Site won subsoil
Description Subsoil	5.	✓	Reddish brown clay with occasional cobbles and gravel of mixed lithologies.
Sample Subsoil	6.	✓	4 samples taken from onsite stockpile '5' and 1 taken in-situ from Plot 11 (Chemtest refs: 19-08072 & 19-08562).

Topsoil Validation Record



Topsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	6.4-13.5	Yes
Cadmium	11	0.18-0.3	Yes
Chromium III	910	19.0-115.8	Yes
Chromium VI	6	<1	Yes
Copper	2400	19-31	Yes
Lead	200	27-35	Yes
Mercury	40	<0.1	Yes
Nickel	130	16.0-26.6	Yes
Zinc	3700	50-76	Yes
Naphthalene	2.3	<0.04	Yes
Acenaphthene	210	<0.05	Yes
Acenaphthylene	170	<0.03	Yes
Fluorene	170	<0.04	Yes
Phenanthrene	95	<0.03-0.31	Yes
Anthracene	2400	<0.04-0.12	Yes
Fluoranthene	280	0.08-0.45	Yes
Pyrene	620	0.08-0.36	Yes
Benzo(a) anthracene	7.2	<0.06-1.2	Yes
Chrysene	15	0.05-0.68	Yes
Benzo(b) fluoranthene	2.6	0.06-0.24	Yes
Benzo(k) fluoranthene	77	0.03-0.09	Yes
Benzo(a) pyrene	2.2	<0.04-0.20	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.04-0.11	Yes
Dibenzo(ah) anthracene	0.24	<0.04	Yes
Benzo(ghi) perylene	320	<0.04-0.13	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	<0.2	Yes
Aliphatic C12-C16	1100	<4	Yes
Aliphatic C16-C21	5000	<7	Yes
Aliphatic C21-C35	5000	<7-100	Yes
Aromatic C6-C7	70	<0.1	Yes
Aromatic C7-C8	130	<0.1	Yes
Aromatic C8-C10	34	<0.1	Yes
Aromatic C10-C12	74	<0.2	Yes
Aromatic C12-C16	140	<4	Yes
Aromatic C16-C21	260	<7-35	Yes
Aromatic C21-C35	1100	<7	Yes

Topsoil Validation Record



Subsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	8.2-8.7	Yes
Cadmium	11	0.8-2.8	Yes
Chromium III	910	7.4-17	Yes
Chromium VI	6	<0.1-0.23	Yes
Copper	2400	19-28	Yes
Lead	200	<0.5	Yes
Mercury	40	16-42	Yes
Nickel	130	13-120	Yes
Zinc	3700	<0.1-0.15	Yes
Naphthalene	2.3	24-37	Yes
Acenaphthene	210	41-120	Yes
Acenaphthylene	170	<0.1-0.43	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1-0.20	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	0.21-0.50	Yes
Pyrene	620	<0.1-0.16	Yes
Benzo(a) anthracene	7.2	0.25-1.3	Yes
Chrysene	15	0.22-1.4	Yes
Benzo(b) fluoranthene	2.6	<0.1-1.1	Yes
Benzo(k) fluoranthene	77	<0.1-0.97	Yes
Benzo(a) pyrene	2.2	<0.1-0.8	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1-0.4	Yes
Dibenzo(ah) anthracene	0.24	<0.1-0.4	Yes*
Benzo(ghi) perylene	320	<1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1-51	Yes
Aliphatic C21-C35	5000	<1	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	<1-2.2	Yes
Aromatic C16-C21	260	<1-130	Yes
Aromatic C21-C35	1100	<1-380	Yes

2 minor exceedances were reported for dibenzo(ah)anthracene at 0.3-0.4mg/kg out of the 5 samples taken; a PAH ratio cross plot has been undertaken (attached) which indicates that the source of the material is more likely of pyrolytic origin, rather than petrogenic, and is therefore unlikely to be readily bio-accessible. All other samples tested for dibenzo(ah)anthracene reported below or at the limit of detection (<0.1-0.1mg/kg). The material is therefore considered suitable for its intended use in gardens within the development.

Topsoil Validation Record

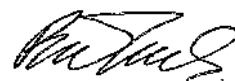
Depth Validation	Inspection date/time:	18.10.19	Inspected by:	CS	Photographed:	✓
Plots 47-48	Required Depth (mm)	600	Measured Depth (mm)	650	PASS	
Source Topsoil	King's Quarter Barratts Development, Pewterspear, Warrington, WA4 5FR					
Source Subsoil	Site Won Subsoil					
Soil profile/description	0.00-0.50m.	Brown locally grey slightly sandy slightly gravelly clay with occasional roots. Gravel is limestone and brick.				
	0.50-0.65m.	Light brown slightly clayey sand				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



This area has PASSED inspection for depth and quality.

An additional inspection visit IS NOT required for these plots.

SGP Staff:	C Salwa MSc FGS	Signed:		21.10.2019
SGP Member:	B J Thomas BSc, MSc, CIWEM, C.Env SiLC	Signed:		21.10.2019

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



Exova Jones Environmental

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Attention :	Alex Albon
Date :	1st May, 2019
Your reference :	30166
Our reference :	Test Report 19/6738 Batch 1
Location :	Pewterspear-Topsoil Stockpile
Date samples received :	25th April, 2019
Status :	Final report
Issue :	1

Eight samples were received for analysis on 25th April, 2019 of which eight were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

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

Compiled By:

Simon Gomery BSc
Project Manager

Client Name: ALM Consult Limited
Reference: 30166
Location: Pewterspear-Topsoil Stockpile
Contact: Alex Albon
JE Job No.: 19/6738

Report : Solid

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

J E Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16			Please see attached notes for all abbreviations and acronyms		
Sample ID	TS1	TS2	TS3	TS4	TS5	TS6	TS7	TS8					
Depth	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20					
COC No / misc													
Containers	J T	J T	J T	J T	J T	J T	J T	J T					
Sample Date	23/04/2019	23/04/2019	23/04/2019	23/04/2019	23/04/2019	23/04/2019	23/04/2019	23/04/2019					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	25/04/2019	25/04/2019	25/04/2019	25/04/2019	25/04/2019	25/04/2019	25/04/2019	25/04/2019			LOD/LOR	Units	Method No.
Arsenic #	8.5	13.5	9.0	8.8	8.2	9.0	8.1	9.9			<0.5	mg/kg	TM30/PM15
Cadmium #	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.2			<0.1	mg/kg	TM30/PM15
Chromium #	102.7	49.6	124.6	72.9	115.8	50.0	91.2	49.7			<0.5	mg/kg	TM30/PM15
Copper #	27	31	23	19	21	22	21	20			<1	mg/kg	TM30/PM15
Lead #	27	32	34	32	27	33	29	35			<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	mg/kg	TM30/PM15
Nickel #	21.1	20.0	21.4	23.8	26.6	19.4	19.9	19.7			<0.7	mg/kg	TM30/PM15
Selenium #	2	<1	2	1	<1	1	1	1			<1	mg/kg	TM30/PM15
Water Soluble Boron #	0.6	0.6	0.7	0.4	0.6	0.4	0.6	0.4			<0.1	mg/kg	TM74/PM32
Zinc #	66	70	72	72	76	69	69	70			<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03			<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.08	0.12	0.05	0.21	0.31	0.09	<0.03	0.09			<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04	0.07	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Fluoranthene #	0.21	0.20	0.08	0.31	0.37	0.15	0.08	0.15			<0.03	mg/kg	TM4/PM8
Pyrene #	0.19	0.18	0.08	0.31	0.36	0.13	0.08	0.13			<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.18	0.16	<0.06	0.23	0.25	0.11	0.09	0.10			<0.06	mg/kg	TM4/PM8
Chrysene #	0.10	0.10	0.06	0.15	0.16	0.06	0.05	0.08			<0.02	mg/kg	TM4/PM8
Benzo(b)fluoranthene #	0.21	0.18	0.09	0.33	0.30	0.11	0.09	0.13			<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.10	0.10	0.05	0.20	0.16	0.06	<0.04	0.07			<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.07	0.06	<0.04	0.11	0.10	<0.04	<0.04	0.04			<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.07	0.07	<0.04	0.13	0.10	<0.04	<0.04	0.04			<0.04	mg/kg	TM4/PM8
PAH 16 Total	1.2	1.2	<0.6	2.0	2.2	0.7	<0.6	0.8			<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.15	0.13	0.06	0.24	0.22	0.08	0.06	0.09			<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.06	0.05	0.03	0.09	0.08	0.03	0.03	0.04			<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	98	100	102	99	98	99	101	101			<0	%	TM4/PM8
TPH CWG													
Aliphatics													
>C5-C6 #	-	<0.1	-	<0.1	-	<0.1	-	<0.1			<0.1	mg/kg	TM36/PM12
>C6-C8 #	-	<0.1	-	<0.1	-	<0.1	-	<0.1			<0.1	mg/kg	TM36/PM12
>C8-C10	-	<0.1	-	<0.1	-	<0.1	-	<0.1			<0.1	mg/kg	TM36/PM12
>C10-C12 #	-	<0.2	-	<0.2	-	<0.2	-	<0.2			<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	-	<4	-	<4	-	<4	-	<4			<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	-	<7	-	<7	-	<7	-	<7			<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	-	<7	-	<7	-	<7	-	<7			<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	-	<19	-	<19	-	<19	-	<19			<19	mg/kg	TM5/PM8/PM16/PM12/PM15

Please see attached notes for all abbreviations and acronyms

Client Name: ALM Consult Limited
Reference: 30166
Location: Pewterspear-Topsoil Stockpile
Contact: Alex Albon

Note:

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

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

[illegible]

Client Name: ALM Consult Limited
Reference: 30166
Location: Pewterspear-Topsoil Stockpile
Contact: Alex Albon

[illegible]

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

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 19/6738

SOILS

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

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

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

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

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

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

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

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

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

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

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

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

WATERS

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

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

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

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

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

NOTE

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

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

REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Please include all sections of this report if it is reproduced

ABBREVIATIONS and ACRONYMS USED

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

JE Job No: 19/6738

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

JE Job No: 19/6738

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes



2183

Final Report

Report No.: 19-33471-1

Initial Date of Issue: 14-Oct-2019

Client Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Ben Thomas
Megan Jones

Project R2469B-T0255 Nomvula Park

Quotation No.: **Date Received:** 07-Oct-2019

Order No.: **Date Instructed:** 07-Oct-2019

No. of Samples: 2

Turnaround (Wkdays): 5 **Results Due:** 11-Oct-2019

Date Approved: 14-Oct-2019

Approved By:



Details: Robert Monk, Technical Manager

Project: R2469B-T0255 Nomvula Park

Client: Smith Grant LLP	Chemtest Job No.:				19-33471	19-33471
Quotation No.:	Chemtest Sample ID.:				901143	901144
	Client Sample ID.:				S1	S2
	Sample Location:				TS	TS
	Sample Type:				SOIL	SOIL
	Date Sampled (\$):				02-Oct-2019	02-Oct-2019
	Asbestos Lab:				COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-
Moisture	N	2030	%	0.020	18	17
pH	U	2010		N/A	7.0	7.3
Arsenic	U	2450	mg/kg	1.0	8.1	6.4
Cadmium	U	2450	mg/kg	0.10	0.27	0.18
Chromium	U	2450	mg/kg	1.0	25	19
Copper	U	2450	mg/kg	0.50	26	20
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	20	16
Lead	U	2450	mg/kg	0.50	32	27
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	65	50
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	2.1	2.1
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	100
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	100
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	35
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	110
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	150
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	250
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10

Project: R2469B-T0255 Nomvula Park

Client: Smith Grant LLP	Chemtest Job No.:				19-33471	19-33471
Quotation No.:	Chemtest Sample ID.:				901143	901144
	Client Sample ID.:				S1	S2
	Sample Location:				TS	TS
	Sample Type:				SOIL	SOIL
	Date Sampled (\$):				02-Oct-2019	02-Oct-2019
	Asbestos Lab:				COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD		
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	0.13	< 0.10
Anthracene	U	2700	mg/kg	0.10	0.12	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	0.45	0.44
Pyrene	U	2700	mg/kg	0.10	0.14	0.26
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	1.2
Chrysene	U	2700	mg/kg	0.10	< 0.10	0.68
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	2.6
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0

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.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"
- \$ This information has been supplied by the client and can affect the integrity of test data.

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 45 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

Topsoil Validation Record

Job number	R2469b	Depth ref:	R2469-R01-v4		Quality ref:		R2469-R01-v4		Other documents attached		✓		
Date	18.10.19	Area use:	garden			landscaped		stockpile		other			
Site name / location	Nomvula Park, Waterpark Drive, Knowsley	Size area (m):	9 x 15	Approx Area (m²):	135	Approx Depth Top (m):	0.3	Approx Volume Top (m³):	40.5	Approx Depth Sub (m):	0.6	Approx Volume Sub (m³):	40.5
Plots / location:	Plots 57-58												
Compiled by:	CS	Number depth entries required			1 (1 per 3 gardens). 1 provided.		Number samples required:		3 TS & 3 SS (1 per 250m³ TS and 1 per 100m³ SS - minimum 3 samples per single source). 11 TS provided & 5 SS provided.				

Quality Validation		Inspection date/time:	15.11.17, 01.03.19, 23.04.19, 02.10.19	Inspected by:	SM, PRM, MJ, ALM	Photographed:	✓
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Source Topsoil	1.	✓	King's Quarter Barratts Development, Pewterspear, Warrington, WA4 5FR
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets.
Sample Topsoil	3.	✓	8 samples taken from onsite stockpile at source site (Lab ref: 19/6738 – TS1-TS8) and 2 samples taken from the POS area at the destination site (Lab ref: 19-33471 – S1-S2).
Source Subsoil	4.	✓	Site won subsoil
Description Subsoil	5.	✓	Reddish brown clay with occasional cobbles and gravel of mixed lithologies.
Sample Subsoil	6.	✓	4 samples taken from onsite stockpile '5' and 1 taken in-situ from Plot 11 (Chemtest refs: 19-08072 & 19-08562).

Topsoil Validation Record



Topsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	6.4-13.5	Yes
Cadmium	11	0.18-0.3	Yes
Chromium III	910	19.0-115.8	Yes
Chromium VI	6	<1	Yes
Copper	2400	19-31	Yes
Lead	200	27-35	Yes
Mercury	40	<0.1	Yes
Nickel	130	16.0-26.6	Yes
Zinc	3700	50-76	Yes
Naphthalene	2.3	<0.04	Yes
Acenaphthene	210	<0.05	Yes
Acenaphthylene	170	<0.03	Yes
Fluorene	170	<0.04	Yes
Phenanthrene	95	<0.03-0.31	Yes
Anthracene	2400	<0.04-0.12	Yes
Fluoranthene	280	0.08-0.45	Yes
Pyrene	620	0.08-0.36	Yes
Benzo(a) anthracene	7.2	<0.06-1.2	Yes
Chrysene	15	0.05-0.68	Yes
Benzo(b) fluoranthene	2.6	0.06-0.24	Yes
Benzo(k) fluoranthene	77	0.03-0.09	Yes
Benzo(a) pyrene	2.2	<0.04-0.20	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.04-0.11	Yes
Dibenzo(ah) anthracene	0.24	<0.04	Yes
Benzo(ghi) perylene	320	<0.04-0.13	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	<0.2	Yes
Aliphatic C12-C16	1100	<4	Yes
Aliphatic C16-C21	5000	<7	Yes
Aliphatic C21-C35	5000	<7-100	Yes
Aromatic C6-C7	70	<0.1	Yes
Aromatic C7-C8	130	<0.1	Yes
Aromatic C8-C10	34	<0.1	Yes
Aromatic C10-C12	74	<0.2	Yes
Aromatic C12-C16	140	<4	Yes
Aromatic C16-C21	260	<7-35	Yes
Aromatic C21-C35	1100	<7	Yes

Topsoil Validation Record



Subsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	8.2-8.7	Yes
Cadmium	11	0.8-2.8	Yes
Chromium III	910	7.4-17	Yes
Chromium VI	6	<0.1-0.23	Yes
Copper	2400	19-28	Yes
Lead	200	<0.5	Yes
Mercury	40	16-42	Yes
Nickel	130	13-120	Yes
Zinc	3700	<0.1-0.15	Yes
Naphthalene	2.3	24-37	Yes
Acenaphthene	210	41-120	Yes
Acenaphthylene	170	<0.1-0.43	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1-0.20	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	0.21-0.50	Yes
Pyrene	620	<0.1-0.16	Yes
Benzo(a) anthracene	7.2	0.25-1.3	Yes
Chrysene	15	0.22-1.4	Yes
Benzo(b) fluoranthene	2.6	<0.1-1.1	Yes
Benzo(k) fluoranthene	77	<0.1-0.97	Yes
Benzo(a) pyrene	2.2	<0.1-0.8	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1-0.4	Yes
Dibenzo(ah) anthracene	0.24	<0.1-0.4	Yes*
Benzo(ghi) perylene	320	<1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1-51	Yes
Aliphatic C21-C35	5000	<1	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	<1-2.2	Yes
Aromatic C16-C21	260	<1-130	Yes
Aromatic C21-C35	1100	<1-380	Yes

2 minor exceedances were reported for dibenzo(ah)anthracene at 0.3-0.4mg/kg out of the 5 samples taken; a PAH ratio cross plot has been undertaken (attached) which indicates that the source of the material is more likely of pyrolytic origin, rather than petrogenic, and is therefore unlikely to be readily bio-accessible. All other samples tested for dibenzo(ah)anthracene reported below or at the limit of detection (<0.1-0.1mg/kg). The material is therefore considered suitable for its intended use in gardens within the development.

Topsoil Validation Record



Depth Validation	Inspection date/time:	18.10.19	Inspected by:	CS	Photographed:	✓
Plots 57-58	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	King's Quarter Barratts Development, Pewterspear, Warrington, WA4 5FR					
Source Subsoil	Site Won Subsoil					
Soil profile/description	0.00-0.30m.	Brown locally grey slightly sandy slightly gravelly clay with occasional roots. Gravel is limestone and brick.				
	0.30-0.60m.	Light brown slightly clayey sand				

Photograph (location)



Photograph (depth profile)



Photograph (soil type)

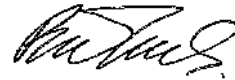


Topsoil Validation Record



This area has PASSED inspection for depth and quality.

An additional inspection visit IS NOT required for these plots.

SGP Staff:	P Salwa MSc FGS	Signed:		21.10.2019
SGP Member:	B J Thomas BSc, MSc, CIWEM, C.Env SiLC	Signed:		21.10.2019

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



Exova Jones Environmental

Registered Office: Exova Environmental UK Limited, 10 Lower Grosvenor Place, London, SW1W 0EN. Reg No. 11371415

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Attention :	Alex Albon
Date :	1st May, 2019
Your reference :	30166
Our reference :	Test Report 19/6738 Batch 1
Location :	Pewterspear-Topsoil Stockpile
Date samples received :	25th April, 2019
Status :	Final report
Issue :	1

Eight samples were received for analysis on 25th April, 2019 of which eight were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

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

Compiled By:

Simon Gomery BSc
Project Manager

Client Name: ALM Consult Limited
 Reference: 30166
 Location: Pewterspear-Topsoil Stockpile
 Contact: Alex Albon
 JE Job No.: 19/6738

Report : Solid

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

J E Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16			Please see attached notes for all abbreviations and acronyms		
Sample ID	TS1	TS2	TS3	TS4	TS5	TS6	TS7	TS8					
Depth	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20					
COC No / misc													
Containers	J T	J T	J T	J T	J T	J T	J T	J T					
Sample Date	23/04/2019	23/04/2019	23/04/2019	23/04/2019	23/04/2019	23/04/2019	23/04/2019	23/04/2019					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	25/04/2019	25/04/2019	25/04/2019	25/04/2019	25/04/2019	25/04/2019	25/04/2019	25/04/2019			LOD/LOR	Units	Method No.
Arsenic #	8.5	13.5	9.0	8.8	8.2	9.0	8.1	9.9			<0.5	mg/kg	TM30/PM15
Cadmium #	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.2			<0.1	mg/kg	TM30/PM15
Chromium #	102.7	49.6	124.6	72.9	115.8	50.0	91.2	49.7			<0.5	mg/kg	TM30/PM15
Copper #	27	31	23	19	21	22	21	20			<1	mg/kg	TM30/PM15
Lead #	27	32	34	32	27	33	29	35			<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	mg/kg	TM30/PM15
Nickel #	21.1	20.0	21.4	23.8	26.6	19.4	19.9	19.7			<0.7	mg/kg	TM30/PM15
Selenium #	2	<1	2	1	<1	1	1	1			<1	mg/kg	TM30/PM15
Water Soluble Boron #	0.6	0.6	0.7	0.4	0.6	0.4	0.6	0.4			<0.1	mg/kg	TM74/PM32
Zinc #	66	70	72	72	76	69	69	70			<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03			<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.08	0.12	0.05	0.21	0.31	0.09	<0.03	0.09			<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04	0.07	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Fluoranthene #	0.21	0.20	0.08	0.31	0.37	0.15	0.08	0.15			<0.03	mg/kg	TM4/PM8
Pyrene #	0.19	0.18	0.08	0.31	0.36	0.13	0.08	0.13			<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.18	0.16	<0.06	0.23	0.25	0.11	0.09	0.10			<0.06	mg/kg	TM4/PM8
Chrysene #	0.10	0.10	0.06	0.15	0.16	0.06	0.05	0.08			<0.02	mg/kg	TM4/PM8
Benzo(b)fluoranthene #	0.21	0.18	0.09	0.33	0.30	0.11	0.09	0.13			<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.10	0.10	0.05	0.20	0.16	0.06	<0.04	0.07			<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.07	0.06	<0.04	0.11	0.10	<0.04	<0.04	0.04			<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.07	0.07	<0.04	0.13	0.10	<0.04	<0.04	0.04			<0.04	mg/kg	TM4/PM8
PAH 16 Total	1.2	1.2	<0.6	2.0	2.2	0.7	<0.6	0.8			<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.15	0.13	0.06	0.24	0.22	0.08	0.06	0.09			<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.06	0.05	0.03	0.09	0.08	0.03	0.03	0.04			<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	98	100	102	99	98	99	101	101			<0	%	TM4/PM8
TPH CWG													
Aliphatics													
>C5-C6 #	-	<0.1	-	<0.1	-	<0.1	-	<0.1			<0.1	mg/kg	TM36/PM12
>C6-C8 #	-	<0.1	-	<0.1	-	<0.1	-	<0.1			<0.1	mg/kg	TM36/PM12
>C8-C10	-	<0.1	-	<0.1	-	<0.1	-	<0.1			<0.1	mg/kg	TM36/PM12
>C10-C12 #	-	<0.2	-	<0.2	-	<0.2	-	<0.2			<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	-	<4	-	<4	-	<4	-	<4			<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	-	<7	-	<7	-	<7	-	<7			<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	-	<7	-	<7	-	<7	-	<7			<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	-	<19	-	<19	-	<19	-	<19			<19	mg/kg	TM5/PM8/PM16/PM12/PM15

Please see attached notes for all abbreviations and acronyms

Client Name: ALM Consult Limited
Reference: 30166
Location: Pewterspear-Topsoil Stockpile
Contact: Alex Albon

Note:

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

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

[illegible]

Client Name: ALM Consult Limited
Reference: 30166
Location: Pewterspear-Topsoil Stockpile
Contact: Alex Albon

[illegible]

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

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 19/6738

SOILS

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

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

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

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

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

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

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

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

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

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

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

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

WATERS

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

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

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

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

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

NOTE

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

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

REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Please include all sections of this report if it is reproduced

ABBREVIATIONS and ACRONYMS USED

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

JE Job No: 19/6738

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO ₂ generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

JE Job No: 19/6738

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes



2183

Final Report

Report No.: 19-33471-1

Initial Date of Issue: 14-Oct-2019

Client Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Ben Thomas
Megan Jones

Project R2469B-T0255 Nomvula Park

Quotation No.:	Date Received:	07-Oct-2019
Order No.:	Date Instructed:	07-Oct-2019
No. of Samples:		2
Turnaround (Wkdays):	Results Due:	11-Oct-2019
Date Approved:		14-Oct-2019

Approved By:



Details: Robert Monk, Technical Manager

Project: R2469B-T0255 Nomvula Park

Client: Smith Grant LLP	Chemtest Job No.:				19-33471	19-33471
Quotation No.:	Chemtest Sample ID.:				901143	901144
	Client Sample ID.:				S1	S2
	Sample Location:				TS	TS
	Sample Type:				SOIL	SOIL
	Date Sampled (\$):				02-Oct-2019	02-Oct-2019
	Asbestos Lab:				COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-
Moisture	N	2030	%	0.020	18	17
pH	U	2010		N/A	7.0	7.3
Arsenic	U	2450	mg/kg	1.0	8.1	6.4
Cadmium	U	2450	mg/kg	0.10	0.27	0.18
Chromium	U	2450	mg/kg	1.0	25	19
Copper	U	2450	mg/kg	0.50	26	20
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	20	16
Lead	U	2450	mg/kg	0.50	32	27
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	65	50
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	2.1	2.1
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	100
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	100
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	35
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	110
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	150
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	250
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10

Project: R2469B-T0255 Nomvula Park

Client: Smith Grant LLP	Chemtest Job No.:				19-33471	19-33471
Quotation No.:	Chemtest Sample ID.:				901143	901144
	Client Sample ID.:				S1	S2
	Sample Location:				TS	TS
	Sample Type:				SOIL	SOIL
	Date Sampled (\$):				02-Oct-2019	02-Oct-2019
	Asbestos Lab:				COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD		
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	0.13	< 0.10
Anthracene	U	2700	mg/kg	0.10	0.12	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	0.45	0.44
Pyrene	U	2700	mg/kg	0.10	0.14	0.26
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	1.2
Chrysene	U	2700	mg/kg	0.10	< 0.10	0.68
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	2.6
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0

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.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"
- \$ This information has been supplied by the client and can affect the integrity of test data.

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 45 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

Topsoil Validation Record

Job number	R2469b	Depth ref:	R2469-R01-v4		Quality ref:		R2469-R01-v4		Other documents attached		✓		
Date	03.01.20	Area use:	garden		landscaped			stockpile		other			
Site name / location	Nomvula Park, Waterpark Drive, Knowsley	Size area (m):	6 x 24	Approx Area (m²):	144	Approx Depth Top (m):	0.3	Approx Volume Top (m³):	43	Approx Depth Sub (m):	N/A	Approx Volume Sub (m³):	N/A
Plots / location:	Plots 59-62	Number depth entries required		Formation Inspection Only. Soil already placed therefore 2 entries undertaken.			Number samples required:			3 TS (1 per 250m³ TS). 11 TS provided.			
Compiled by:	PRM												

Quality Validation		Inspection date/time:	23.04.19 & 02.10.19	Inspected by:	MJ, PRM	Photographed:	✓
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Source Topsoil	1.	✓	King's Quarter Barratts Development, Pewterspear, Warrington, WA4 5FR
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets.
Sample Topsoil	3.	✓	8 samples taken from onsite stockpile at source site (Lab ref: 19/6738 – TS1-TS8) and 2 samples taken from the POS area at the destination site (Lab ref: 19-33471 – S1-S2).
Source Subsoil	4.	X	Natural Underlying Subsoil
Description Subsoil	5.	X	Dark greyish brown clay.
Sample Subsoil	6.	X	N/A

Topsoil Validation Record



Topsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	6.4-13.5	Yes
Cadmium	11	0.18-0.3	Yes
Chromium III	910	19.0-115.8	Yes
Chromium VI	6	<1	Yes
Copper	2400	19-31	Yes
Lead	200	27-35	Yes
Mercury	40	<0.1	Yes
Nickel	130	16.0-26.6	Yes
Zinc	3700	50-76	Yes
Naphthalene	2.3	<0.04	Yes
Acenaphthene	210	<0.05	Yes
Acenaphthylene	170	<0.03	Yes
Fluorene	170	<0.04	Yes
Phenanthrene	95	<0.03-0.31	Yes
Anthracene	2400	<0.04-0.12	Yes
Fluoranthene	280	0.08-0.45	Yes
Pyrene	620	0.08-0.36	Yes
Benzo(a) anthracene	7.2	<0.06-1.2	Yes
Chrysene	15	0.05-0.68	Yes
Benzo(b) fluoranthene	2.6	0.06-0.24	Yes
Benzo(k) fluoranthene	77	0.03-0.09	Yes
Benzo(a) pyrene	2.2	<0.04-0.20	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.04-0.11	Yes
Dibenzo(ah) anthracene	0.24	<0.04	Yes
Benzo(ghi) perylene	320	<0.04-0.13	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	<0.2	Yes
Aliphatic C12-C16	1100	<4	Yes
Aliphatic C16-C21	5000	<7	Yes
Aliphatic C21-C35	5000	<7-100	Yes
Aromatic C6-C7	70	<0.1	Yes
Aromatic C7-C8	130	<0.1	Yes
Aromatic C8-C10	34	<0.1	Yes
Aromatic C10-C12	74	<0.2	Yes
Aromatic C12-C16	140	<4	Yes
Aromatic C16-C21	260	<7-35	Yes
Aromatic C21-C35	1100	<7	Yes

Topsoil Validation Record



Depth Validation	Inspection date/time:	03.01.20	Inspected by:	PRM	Photographed:	✓
Plot 59	Required Depth	N/A	Measured Depth (mm)	600	PASS	
Source Topsoil	King's Quarter Barratts Development, Pewterspear, Warrington, WA4 5FR					
Source Subsoil	Natural Underlying Subsoil					
Soil profile/description	0.00-0.30m	Dark greyish brown slightly sandy slightly gravelly clayey topsoil with frequent rootlets.				
	0.30-0.60m	Dark greyish brown clay.				

Photograph (location)



Photograph (depth profile)



Photograph (soil type)



Topsoil Validation Record



Depth Validation	Inspection date/time:	03.01.20	Inspected by:	PRM	Photographed:	✓
Plot 61	Required Depth	N/A	Measured Depth (mm)	600	PASS	
Source Topsoil	King's Quarter Barratts Development, Pewterspear, Warrington, WA4 5FR					
Source Subsoil	Natural Underlying Subsoil					
Soil profile/description	0.00-0.30m	0.00-0.30m				
	0.30-0.60m	0.30-0.60m				

Photograph (location)



Photograph (depth profile)



Photograph (soil type)



Topsoil Validation Record



This area has PASSED inspection for quality and inspection of the natural underlying subsoil.

An additional inspection visit IS NOT required for these plots.

SGP Staff:	P R Magraw BSc FGS	Signed:		08.01.2020
SGP Member:	B J Thomas BSc, MSc, CIWEM, C.Env SiLC	Signed:		08.01.2020

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

Topsoil Validation Record

Job number	R2469b	Depth ref:	R2469-R01-v4	Quality ref:	R2469-R01-v4	Other documents attached	✓						
Date	03.07.19	Area use:	garden	landscaped	stockpile	other							
Site name / location	Nomvula Park, Waterpark Drive, Knowsley	Size area (m):	15 x 10	Approx Area (m ²):	150	Approx Depth Top (m):	0.2	Approx Volume Top (m ³):	30	Approx Depth Sub (m):	0.4	Approx Volume Sub (m ³):	60
Plots / location:	Plots 63-64	Number depth entries required		1 (1 per 3 gardens). 1 provided.		Number samples required:		3 TS & 3 SS (1 per 250m ³ TS and 1 per 100m ³ SS - minimum 3 samples per single source). 11 TS provided & 5 SS provided.					
Compiled by:	SM												

Quality Validation		Inspection date/time:	15.11.17, 01.03.19	Inspected by:	SM, PRM	Photographed:	✓
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Source Topsoil	1.	✓	Site won topsoil
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets.
Sample Topsoil	3.	✓	11 samples taken from onsite stockpile '1' (CLS ref: 697291 SW-TS-1 – SW-TS-4 & CLS ref: 709629-1, SP-TS-1 – SP-TS-7).
Source Subsoil	4.	✓	Site won subsoil
Description Subsoil	5.	✓	Reddish brown clay with occasional cobbles and gravel of mixed lithologies.
Sample Subsoil	6.	✓	4 samples taken from onsite stockpile '5' and 1 taken in-situ from Plot 11 (Chemtest refs: 19-08072 & 19-08562).

Topsoil Validation Record



Topsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	11-17	Yes
Cadmium	11	<1	Yes
Chromium III	910	29-38	Yes
Chromium VI	6	<1	Yes
Copper	2400	32-43	Yes
Lead	200	56-72	Yes
Mercury	40	<1	Yes
Nickel	130	24-30	Yes
Zinc	3700	63-79	Yes
Naphthalene	2.3	<0.1	Yes
Acenaphthene	210	<0.1	Yes
Acenaphthylene	170	<0.1	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	<0.1-0.2	Yes
Pyrene	620	<0.1-0.2	Yes
Benzo(a) anthracene	7.2	<0.1	Yes
Chrysene	15	<0.1	Yes
Benzo(b) fluoranthene	2.6	<0.1	Yes
Benzo(k) fluoranthene	77	<0.1	Yes
Benzo(a) pyrene	2.2	<0.1	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1	Yes
Dibenzo(ah) anthracene	0.24	<0.1	Yes
Benzo(ghi) perylene	320	<0.1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1	Yes
Aliphatic C21-C35	5000	<1	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	Yes
Aromatic C16-C21	260	<1	Yes
Aromatic C21-C35	1100	<1	Yes

Topsoil Validation Record



Subsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	8.2-8.7	Yes
Cadmium	11	0.8-2.8	Yes
Chromium III	910	7.4-17	Yes
Chromium VI	6	<0.1-0.23	Yes
Copper	2400	19-28	Yes
Lead	200	<0.5	Yes
Mercury	40	16-42	Yes
Nickel	130	13-120	Yes
Zinc	3700	<0.1-0.15	Yes
Naphthalene	2.3	24-37	Yes
Acenaphthene	210	41-120	Yes
Acenaphthylene	170	<0.1-0.43	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1-0.20	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	0.21-0.50	Yes
Pyrene	620	<0.1-0.16	Yes
Benzo(a) anthracene	7.2	0.25-1.3	Yes
Chrysene	15	0.22-1.4	Yes
Benzo(b) fluoranthene	2.6	<0.1-1.1	Yes
Benzo(k) fluoranthene	77	<0.1-0.97	Yes
Benzo(a) pyrene	2.2	<0.1-0.8	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1-0.4	Yes
Dibenzo(ah) anthracene	0.24	<0.1-0.4	Yes*
Benzo(ghi) perylene	320	<1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1-51	Yes
Aliphatic C21-C35	5000	<1	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	<1-2.2	Yes
Aromatic C16-C21	260	<1-130	Yes
Aromatic C21-C35	1100	<1-380	Yes

* 2 minor exceedances were reported for dibenzo(ah)anthracene at 0.3-0.4mg/kg out of the 5 samples taken; a PAH ratio cross plot has been undertaken (attached) which indicates that the source of the material is more likely of pyrolytic origin, rather than petrogenic, and is therefore unlikely to be readily bio-accessible. All other samples tested for dibenzo(ah)anthracene reported below or at the limit of detection (<0.1-0.1mg/kg). The material is therefore considered suitable for its intended use in gardens within the development.

Topsoil Validation Record

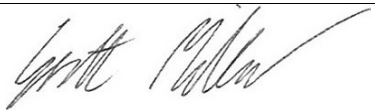
Depth Validation	Inspection date/time:	02.07.19	Inspected by:	SM	Photographed:	✓
Plot 64	Required Depth	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	Site Won Subsoil					
Soil profile/description	0.00-0.20m.	Dark brown slightly sandy clayey topsoil with frequent rootlets.				
	0.20-0.60m.	Reddish brown clay with occasional cobbles and gravel				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record



This area has PASSED inspection for depth and quality.

An additional inspection visit IS NOT required for these plots.

SGP Staff:	S D Miller BSc MCIWEM	Signed:		03.07.2019
SGP Member:	D Wayland BSc MSc AssocCIWM MCIWEM C.WEM	Signed:		03.07.2019

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

Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 697291-1

Date of Report: 07-Dec-2017

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 16-Nov-2017

Date Analysis Started: 20-Nov-2017

Date Analysis Completed: 07-Dec-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

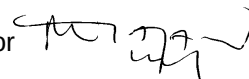
Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Miajan Miah
Customer Service Advisor

Issued by :
Miajan Miah
Customer Service Advisor



Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil MCERTS Preparation								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Moisture @105C	T162	AR	0.1	%	29	26	27	27
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1	<0.1

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Smith Grant Standard Suite 1								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Arsenic	T6	M40	2	mg/kg	14	13	13	17
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1	<1
Chromium	T6	M40	1	mg/kg	35	33	37	38
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1	<1
Copper	T6	M40	1	mg/kg	37	37	37	43
Lead	T6	M40	1	mg/kg	67	71	66	72
Mercury	T6	M40	1	mg/kg	<1	<1	<1	<1
Nickel	T6	M40	1	mg/kg	28	25	29	30
pH	T7	AR			6.0	5.7	6.0	7.3
Soil Organic Matter	T287	A40	0.1	%	4.1	5.1	4.3	5.4
Zinc	T6	M40	1	mg/kg	72	74	70	79

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil PAH US EPA 16 (B and K split)								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.2
Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.2
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
PAH(total)	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.4

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Total Petroleum Hydrocarbons CWG								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Benzene	T209	M105	0.010	mg/kg	(13) <0.010	(13) <0.010	(13) <0.010	(13) <0.010
Toluene	T209	M105	0.010	mg/kg	(13) <0.010	(13) <0.010	(13) <0.010	(13) <0.010
EthylBenzene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
M/P Xylene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
O Xylene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100	<0.100	<0.100
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	(13) <2	(13) <2	(13) <2	(13) <2
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	(13) <4	(13) <4	(13) <4	(13) <4
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) 2
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) 4

Index to symbols used in 697291-1

Value	Description
AR	As Received
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
A40	Assisted dried < 40C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T287	Calc TOC/0.58
T6	ICP/OES
T206	GC/FID (MCERTS)
T7	Probe
T162	Grav (1 Dec) (105 C)
T27	PLM
T2	Grav
T207	GC/MS (MCERTS)
T209	GC/MS (Head Space)(MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Arsenic	T6	M40	2	mg/kg	M	001-004
Asbestos ID	T27	AR			SU	001-004
Cadmium	T6	M40	1	mg/kg	M	001-004
Chromium	T6	M40	1	mg/kg	M	001-004
Chromium VI	T6	AR	1	mg/kg	N	001-004
Copper	T6	M40	1	mg/kg	M	001-004
Lead	T6	M40	1	mg/kg	M	001-004
Mercury	T6	M40	1	mg/kg	M	001-004
Nickel	T6	M40	1	mg/kg	M	001-004
pH	T7	AR			M	001-004
Soil Organic Matter	T287	A40	0.1	%	N	001-004
Zinc	T6	M40	1	mg/kg	M	001-004
Naphthalene	T207	M105	0.1	mg/kg	M	001-004
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-004
Acenaphthene	T207	M105	0.1	mg/kg	M	001-004
Fluorene	T207	M105	0.1	mg/kg	M	001-004
Phenanthrene	T207	M105	0.1	mg/kg	M	001-004
Anthracene	T207	M105	0.1	mg/kg	U	001-004
Fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Pyrene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Chrysene	T207	M105	0.1	mg/kg	M	001-004
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-004
PAH(total)	T207	M105	0.1	mg/kg	U	001-004
Benzene	T209	M105	0.010	mg/kg	M	001-004
Toluene	T209	M105	0.010	mg/kg	M	001-004
EthylBenzene	T209	M105	0.010	mg/kg	M	001-004
M/P Xylene	T209	M105	0.010	mg/kg	M	001-004

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
O Xylene	T209	M105	0.010	mg/kg	M	001-004
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	M	001-004
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-004
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	N	001-004
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	M	001-004
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	M	001-004
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	M	001-004
Moisture @105C	T162	AR	0.1	%	N	001-004
Retained on 10mm sieve	T2	M40	0.1	%	N	001-004



Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 709629-1

Date of Report: 30-Jan-2018

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 18-Jan-2018

Date Analysis Started: 19-Jan-2018

Date Analysis Completed: 30-Jan-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Aleksandra Pacula
Customer Service Advisor

Issued by :
Aleksandra Pacula
Customer Service Advisor

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
MCERTS Preparation							
Concept Reference					709629 001	709629 002	709629 003
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Moisture @105C	T162	AR	0.1	%	26	18	28
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
Smith Grant Standard Suite 1							
Concept Reference				709629 001	709629 002	709629 003	
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	
Determinand	Method	Test Sample	LOD	Units			
Arsenic	T6	M40	2	mg/kg	11	13	11
Asbestos ID	T27	AR			N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1
Chromium	T6	M40	1	mg/kg	29	31	29
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1
Copper	T6	M40	1	mg/kg	35	37	32
Lead	T6	M40	1	mg/kg	57	69	56
Mercury	T6	M40	1	mg/kg	<1	<1	<1
Nickel	T6	M40	1	mg/kg	24	27	25
pH	T7	AR			7.5	7.4	7.3
Soil Organic Matter	T287	A40	0.1	%	4.0	3.1	4.3
Zinc	T6	M40	1	mg/kg	74	70	63

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469									
Soil		Analysed as Soil							
Miscellaneous									
Concept Reference				709629 001	709629 002	709629 003	709629 004	709629 005	
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	AGG-IMP-6	AGG-IMP-7	
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	
Determinand	Method	Test Sample	LOD	Units					
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.	N.D.

Index to symbols used in 709629-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T2	Grav
T162	Grav (1 Dec) (105 C)
T6	ICP/OES
T27	PLM
T7	Probe
T909	GCxGC
T287	Calc TOC/0.58
T209	GC/MS (Head Space)(MCERTS)
T207	GC/MS (MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Moisture @105C	T162	AR	0.1	%	N	001-003
Retained on 10mm sieve	T2	M40	0.1	%	N	001-003
Arsenic	T6	M40	2	mg/kg	M	001-003
Asbestos ID	T27	AR			SU	001-005
Cadmium	T6	M40	1	mg/kg	M	001-003
Chromium	T6	M40	1	mg/kg	M	001-003
Chromium VI	T6	AR	1	mg/kg	N	001-003
Copper	T6	M40	1	mg/kg	M	001-003
Lead	T6	M40	1	mg/kg	M	001-003
Mercury	T6	M40	1	mg/kg	M	001-003
Nickel	T6	M40	1	mg/kg	M	001-003
pH	T7	AR			M	001-003
Soil Organic Matter	T287	A40	0.1	%	N	001-003
Zinc	T6	M40	1	mg/kg	M	001-003
Benzene	T209	M105	10	µg/kg	M	001-003

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Toluene	T209	M105	10	µg/kg	M	001-003
EthylBenzene	T209	M105	10	µg/kg	M	001-003
M/P Xylene	T209	M105	10	µg/kg	M	001-003
O Xylene	T209	M105	10	µg/kg	M	001-003
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	M	001-003
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-003
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	M	001-003
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	M	001-003
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aromatic)	T909	M105	1	mg/kg	M	001-003
Naphthalene	T207	M105	0.1	mg/kg	M	001-003
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-003
Acenaphthene	T207	M105	0.1	mg/kg	M	001-003
Fluorene	T207	M105	0.1	mg/kg	M	001-003
Phenanthrene	T207	M105	0.1	mg/kg	M	001-003
Anthracene	T207	M105	0.1	mg/kg	U	001-003
Fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Pyrene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Chrysene	T207	M105	0.1	mg/kg	M	001-003
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-003
PAH(total)	T207	M105	0.1	mg/kg	U	001-003



Final Report

Report No.: 19-08072-1

Initial Date of Issue: 13-Mar-2019

Client: Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Scott Miller

Project: R2469b Waterpark Drive

Quotation No.: Q15-02887 **Date Received:** 05-Mar-2019

Order No.: **Date Instructed:** 05-Mar-2019

No. of Samples: 3

Turnaround (Wkdays): 7 **Results Due:** 13-Mar-2019

Date Approved: 13-Mar-2019

Approved By:



Details: Martin Dyer, Laboratory Manager

Project: R2469b Waterpark Drive

Client: Smith Grant LLP	Chemtest Job No.:				19-08072	19-08072	19-08072
Quotation No.: Q15-02887	Chemtest Sample ID.:				787703	787704	787705
	Sample Location:				Clay-Plot 11	Clay SP-1	Clay SP-2
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				01-Mar-2019	01-Mar-2019	01-Mar-2019
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-
Moisture	N	2030	%	0.020	12	13	16
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Clay	Clay	Clay
pH	M	2010		N/A	8.7	8.5	8.2
Arsenic	M	2450	mg/kg	1.0	9.6	7.8	17
Cadmium	M	2450	mg/kg	0.10	0.18	0.12	< 0.10
Chromium	M	2450	mg/kg	1.0	21	19	28
Copper	M	2450	mg/kg	0.50	18	15	17
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	24	24	37
Lead	M	2450	mg/kg	0.50	31	23	13
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	48	43	41
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	2.8	1.1	0.81
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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
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	< 5.0	< 5.0
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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
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	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Project: R2469b Waterpark Drive

Client: Smith Grant LLP	Chemtest Job No.:				19-08072	19-08072	19-08072
Quotation No.: Q15-02887	Chemtest Sample ID.:				787703	787704	787705
	Sample Location:				Clay-Plot 11	Clay SP-1	Clay SP-2
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				01-Mar-2019	01-Mar-2019	01-Mar-2019
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.48	0.45	0.21
Anthracene	M	2700	mg/kg	0.10	0.12	0.15	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	0.95	0.97	0.25
Pyrene	M	2700	mg/kg	0.10	0.97	1.2	0.22
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.55	0.57	< 0.10
Chrysene	M	2700	mg/kg	0.10	0.41	0.27	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	0.50	0.80	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.22	0.40	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	0.49	0.79	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.23	0.42	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.11	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.29	0.59	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	5.2	6.7	< 2.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

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
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"

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 45 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



Final Report

Report No.: 19-08562-1

Initial Date of Issue: 19-Mar-2019

Client: Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Scott Miller

Project: R2469b Water Park Drive (Barratt Homes)

Quotation No.: Q15-02887 **Date Received:** 08-Mar-2019

Order No.: **Date Instructed:** 08-Mar-2019

No. of Samples: 14

Turnaround (Wkdays): 7 **Results Due:** 18-Mar-2019

Date Approved: 19-Mar-2019

Approved By:



Details: Robert Monk, Technical Manager

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790227	790228	790229	790230	790231	790232	790233	790243	790244
	Sample Location:				SP3-S1	SP3-S2	SP3-S3	SP3-S4	SP3-S5	SP3-S6	SP3-S7	SP4-S1	SP4-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				DURHAM	COVENTRY	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	COVENTRY
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	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
ACM Detection Stage	U	2192		N/A	-	-	-	-	-	-	-	-	-
Moisture	N	2030	%	0.020	25	28	23	20	16	19	19	16	12
Soil Colour	N	2040		N/A	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,
Other Material	N	2040		N/A	Stones, Roots,	Roots, Stones,,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Roots, Stones,	Stones, Roots,
Soil Texture	N	2040		N/A	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,
pH	M	2010		N/A	8.0	8.1	8.3	7.8	7.8	8.1	8.0	7.1	7.1
Arsenic	M	2450	mg/kg	1.0	13	13	10	9.5	12	9.9	10	7.8	7.9
Cadmium	M	2450	mg/kg	0.10	0.35	0.24	0.29	0.28	0.28	0.24	0.31	0.29	0.22
Chromium	M	2450	mg/kg	1.0	23	24	23	21	23	19	22	17	21
Copper	M	2450	mg/kg	0.50	29	31	27	26	49	27	28	21	17
Mercury	M	2450	mg/kg	0.10	0.15	0.51	0.15	0.16	0.20	0.14	0.14	0.11	< 0.10
Nickel	M	2450	mg/kg	0.50	23	27	24	20	21	20	22	16	18
Lead	M	2450	mg/kg	0.50	58	61	58	55	46	59	58	39	28
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.26	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	76	88	74	61	54	84	74	77	47
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	M	2625	%	0.40	4.5	3.1	3.3	3.3	2.6	3.5	3.3	3.1	2.1
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	M	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	M	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	M	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	M	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	M	2680	mg/kg	1.0	< 1.0	75	< 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	75	< 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	M	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	M	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 >C12-C16	M	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 >C16-C21	U	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 >C21-C35	M	2680	mg/kg	1.0	< 1.0	380	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	14	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	400	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	470	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790227	790228	790229	790230	790231	790232	790233	790243	790244
	Sample Location:				SP3-S1	SP3-S2	SP3-S3	SP3-S4	SP3-S5	SP3-S6	SP3-S7	SP4-S1	SP4-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				DURHAM	COVENTRY	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	COVENTRY
Determinand	Accred.	SOP	Units	LOD									
Naphthalene	M	2700	mg/kg	0.10	0.44	0.59	0.46	0.48	< 0.10	0.56	0.47	0.38	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	0.24	0.26	< 0.10	0.46	< 0.10	< 0.10	0.31	0.21	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	0.75	0.11	0.15	< 0.10	0.30	0.11	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	0.62	0.12	0.21	< 0.10	0.27	0.12	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.59	4.6	0.89	1.9	0.67	2.0	1.0	0.59	0.18
Anthracene	M	2700	mg/kg	0.10	< 0.10	1.3	0.28	0.37	0.16	0.52	0.24	0.13	0.10
Fluoranthene	M	2700	mg/kg	0.10	0.45	7.2	0.90	1.9	0.65	2.6	1.4	0.73	0.21
Pyrene	M	2700	mg/kg	0.10	0.57	7.2	1.0	1.8	0.76	2.7	1.4	0.80	0.28
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	4.2	0.51	0.95	0.40	1.5	0.84	0.44	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	3.9	0.84	1.2	0.69	1.5	1.2	0.70	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	3.2	0.57	1.0	0.51	1.2	0.64	0.39	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	2.2	0.46	0.69	0.37	0.77	0.75	0.47	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	3.1	0.53	0.86	0.41	1.2	0.82	0.44	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	1.8	0.32	0.70	0.34	0.88	0.46	0.28	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.75	0.32	0.95	0.41	0.51	0.51	0.37	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	2.7	1.1	1.6	0.55	2.4	1.8	0.95	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	2.3	44	8.4	15	5.9	19	12	6.9	< 2.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	25	2.5	< 1.0	5.7	9.1	23	31	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	2.0	1.3	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	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	M	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

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790245	790246	790247	790254	790255
	Sample Location:				SP4-S3	SP4-S4	SP4-S5	SP5-S1	SP5-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD					
ACM Type	U	2192		N/A	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-	-	-
Moisture	N	2030	%	0.020	16	16	21	13	17
Soil Colour	N	2040		N/A	Brown,	Brown,	Brown,	Brown,	Brown,
Other Material	N	2040		N/A	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,
Soil Texture	N	2040		N/A	Clay,	Clay,	Clay	Clay,	Clay,
pH	M	2010		N/A	7.9	7.9	7.5	8.4	8.4
Arsenic	M	2450	mg/kg	1.0	8.4	11	12	12	7.4
Cadmium	M	2450	mg/kg	0.10	0.28	0.31	0.41	0.23	0.14
Chromium	M	2450	mg/kg	1.0	19	22	28	22	26
Copper	M	2450	mg/kg	0.50	23	23	30	42	19
Mercury	M	2450	mg/kg	0.10	0.15	0.24	0.17	0.15	< 0.10
Nickel	M	2450	mg/kg	0.50	20	21	24	27	30
Lead	M	2450	mg/kg	0.50	48	44	54	120	28
Selenium	M	2450	mg/kg	0.20	0.22	< 0.20	0.33	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	60	48	57	120	49
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	3.1	2.4	3.3	1.5	1.3
Aliphatic TPH >C5-C6	N	2680	mg/kg	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
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	51	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	3.3	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	54	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	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
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	2.2	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	130	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	3.4	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	140	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	190	< 10

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790245	790246	790247	790254	790255
	Sample Location:				SP4-S3	SP4-S4	SP4-S5	SP5-S1	SP5-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD					
Naphthalene	M	2700	mg/kg	0.10	< 0.10	0.36	0.40	0.43	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.14	0.20	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.31	0.27	0.46	0.50	0.48
Anthracene	M	2700	mg/kg	0.10	< 0.10	0.11	0.13	0.16	0.14
Fluoranthene	M	2700	mg/kg	0.10	0.37	0.41	0.58	1.3	0.65
Pyrene	M	2700	mg/kg	0.10	0.43	0.48	0.55	1.4	0.68
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.83	0.76	1.0	1.1	0.34
Chrysene	M	2700	mg/kg	0.10	0.51	0.41	0.66	0.97	0.66
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	0.29	0.27	0.37	0.17	0.39
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.43	0.21	< 0.10	0.67	0.21
Benzo[a]pyrene	M	2700	mg/kg	0.10	0.21	0.27	0.33	0.99	0.39
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.14	< 0.10	0.24	0.75	0.75
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	0.33	< 0.10	0.26	0.30	0.40
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.65	< 0.10	0.90	1.4	1.4
Total Of 16 PAH's	M	2700	mg/kg	2.0	4.5	3.6	6.0	10	6.5
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	2.4	7.2	< 1.0	1.9
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	4.5	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"

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 45 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

Job name	Waterpark Drive
Job no.	R2469b
Date:	25.03.19
Author:	SM
Laboratory:	Chemtest
Lab. Reference:	19-08562



PAH concentrations

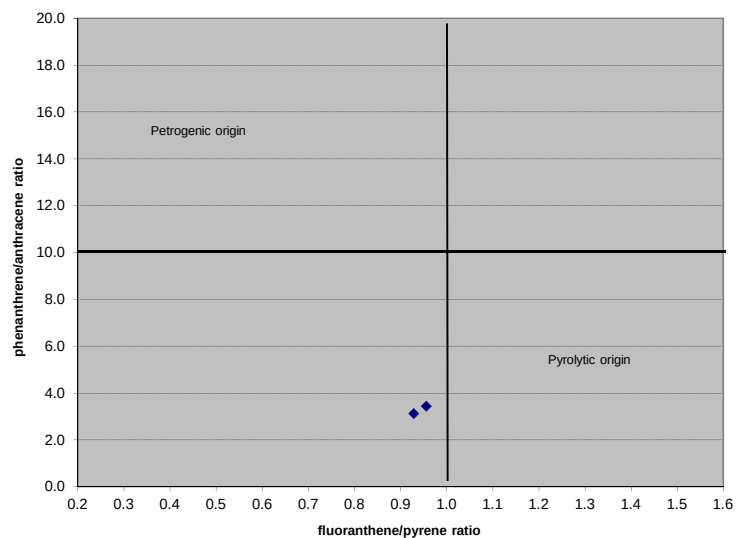
sample identity	SP5-S1	SP5-S2																	
phenanthrene	0.5	0.48																	
anthracene	0.16	0.14																	
fluoranthene	1.3	0.65																	
pyrene	1.4	0.68																	
benz(a)anthracene	1.1	0.34																	
chrysene	0.97	0.66																	

PAH units	mg/kg
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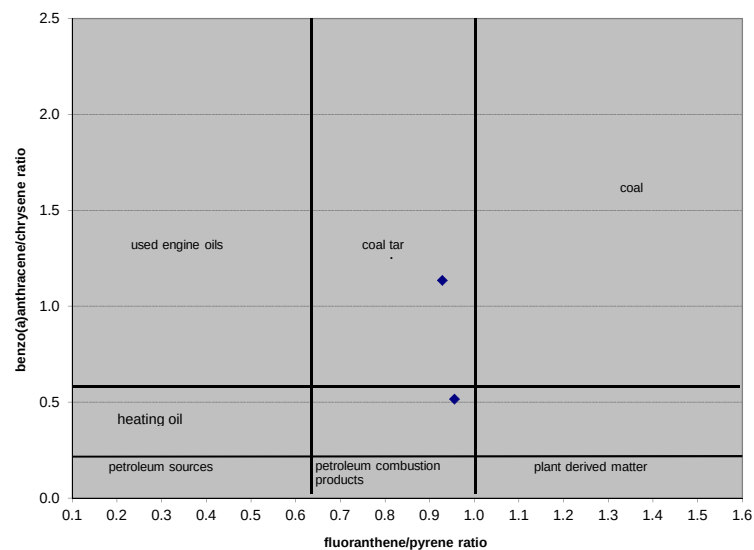
PAH ratios

phe/ant	3.125	3.429																	
flu/pyr	0.929	0.956																	
baa/chr	1.134	0.515																	

PAH source diagnosis



PAH source diagnosis



Topsoil Validation Record

Job number	R2469b	Depth ref:	R2469-R01-v4	Quality ref:	R2469-R01-v4	Other documents attached	✓						
Date	04.06.19	Area use:	garden	landscaped	stockpile	other							
Site name / location	Nomvula Park, Waterpark Drive, Knowsley	Size area (m):	Av. 8 x 11 (Plots 77-79) Irregular (Plots 65-68)	Approx Area (m²):	264 260	Approx Depth Top (m):	0.6 0.3	Approx Volume Top (m³):	158 78	Approx Depth Sub (m):	0 0.3	Approx Volume Sub (m³):	0 78
Plot/ location:	65-68 & 77-79	Number depth entries required	3 (1 per 3 gardens). 3 provided.		Number samples required:	3 TS & 3 SS (1 per 250m³ TS and 1 per 100m³ SS - minimum 3 samples per single source). 11 TS provided & 5 SS provided.							
Compiled by:	SM												

Quality Validation		Inspection date/time:	15.11.17, 01.03.19	Inspected by:	SM, PRM	Photographed:	✓
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Source Topsoil	1.	✓	Site won topsoil
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets.
Sample Topsoil	3.	✓	11 samples taken from onsite stockpile '1' (CLS ref: 697291 SW-TS-1 – SW-TS-4 & CLS ref: 709629-1, SP-TS-1 – SP-TS-7).
Source Subsoil	4.	✓	Site won subsoil
Description Subsoil	5.	✓	Reddish brown clay with occasional cobbles and gravel of mixed lithologies.
Sample Subsoil	6.	✓	4 samples taken from onsite stockpile '5' and 1 taken in-situ from Plot 11 (Chemtest refs: 19-08072 & 19-08562).

Topsoil Validation Record



Topsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	11-17	Yes
Cadmium	11	<1	Yes
Chromium III	910	29-38	Yes
Chromium VI	6	<1	Yes
Copper	2400	32-43	Yes
Lead	200	56-72	Yes
Mercury	40	<1	Yes
Nickel	130	24-30	Yes
Zinc	3700	63-79	Yes
Naphthalene	2.3	<0.1	Yes
Acenaphthene	210	<0.1	Yes
Acenaphthylene	170	<0.1	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	<0.1-0.2	Yes
Pyrene	620	<0.1-0.2	Yes
Benzo(a) anthracene	7.2	<0.1	Yes
Chrysene	15	<0.1	Yes
Benzo(b) fluoranthene	2.6	<0.1	Yes
Benzo(k) fluoranthene	77	<0.1	Yes
Benzo(a) pyrene	2.2	<0.1	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1	Yes
Dibenzo(ah) anthracene	0.24	<0.1	Yes
Benzo(ghi) perylene	320	<0.1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1	Yes
Aliphatic C21-C35	5000	<1	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	Yes
Aromatic C16-C21	260	<1	Yes
Aromatic C21-C35	1100	<1	Yes

Topsoil Validation Record



Subsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	8.2-8.7	Yes
Cadmium	11	0.8-2.8	Yes
Chromium III	910	7.4-17	Yes
Chromium VI	6	<0.1-0.23	Yes
Copper	2400	19-28	Yes
Lead	200	<0.5	Yes
Mercury	40	16-42	Yes
Nickel	130	13-120	Yes
Zinc	3700	<0.1-0.15	Yes
Naphthalene	2.3	24-37	Yes
Acenaphthene	210	41-120	Yes
Acenaphthylene	170	<0.1-0.43	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1-0.20	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	0.21-0.50	Yes
Pyrene	620	<0.1-0.16	Yes
Benzo(a) anthracene	7.2	0.25-1.3	Yes
Chrysene	15	0.22-1.4	Yes
Benzo(b) fluoranthene	2.6	<0.1-1.1	Yes
Benzo(k) fluoranthene	77	<0.1-0.97	Yes
Benzo(a) pyrene	2.2	<0.1-0.8	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1-0.4	Yes
Dibenzo(ah) anthracene	0.24	<0.1-1.4	Yes*
Benzo(ghi) perylene	320	<1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1-51	Yes
Aliphatic C21-C35	5000	<1	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	<1-2.2	Yes
Aromatic C16-C21	260	<1-130	Yes
Aromatic C21-C35	1100	<1-380	Yes

* 2 minor exceedances were reported for dibenzo(ah)anthracene at 0.3-0.4mg/kg out of the 5 samples taken; a PAH ratio cross plot has been undertaken (attached) which indicates that the source of the material is more likely of pyrolytic origin, rather than petrogenic, and is therefore unlikely to be readily bio-accessible. All other samples tested for dibenzo(ah)anthracene reported below or at the limit of detection (<0.1-0.1mg/kg). The material is therefore considered suitable for its intended use in gardens within the development.

Topsoil Validation Record

Depth Validation	Inspection date/time:	04.06.19	Inspected by:	SM	Photographed:	✓
Plot 65	Required Depth	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	Site Won Subsoil					
Soil profile/description	0.00-0.40m.	Dark brown slightly sandy topsoil with frequent rootlets.				
	0.40-0.60m.	Reddish brown clay with occasional cobbles and gravel				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record

Depth Validation	Inspection date/time:	04.06.19	Inspected by:	SM	Photographed:	✓
Plot 67	Required Depth	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	Site Won Subsoil					
Soil profile/description	0.00-0.20m.	Dark brown slightly sandy topsoil with frequent rootlets.				
	0.20-0.60m.	Reddish brown clay with occasional cobbles and gravel				
Photograph (location)		Photograph (depth profile)		Photograph (soil type)		
						

Topsoil Validation Record

Depth Validation	Inspection date/time:	04.06.19	Inspected by:	SM	Photographed:	✓
Plot 78	Required Depth	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	Site Won Subsoil					
Soil profile/description	0.00-0.60m.	Dark brown slightly sandy topsoil with frequent rootlets.				

Photograph (location)



Photograph (depth profile)



Photograph (soil type)

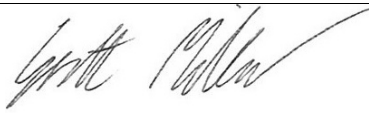


Topsoil Validation Record



This area has PASSED inspection for depth and quality.

An additional inspection visit IS NOT required for these plots.

SGP Staff:	S D Miller BSc MCIWEM	Signed:		04.06.2019
SGP Member:	B Thomas BSc MSc MCIWEM C.Env SiLC	Signed:		06.06.2019

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

Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 697291-1

Date of Report: 07-Dec-2017

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 16-Nov-2017

Date Analysis Started: 20-Nov-2017

Date Analysis Completed: 07-Dec-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

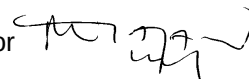
Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Miajan Miah
Customer Service Advisor

Issued by :
Miajan Miah
Customer Service Advisor



Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil MCERTS Preparation								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Moisture @105C	T162	AR	0.1	%	29	26	27	27
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1	<0.1

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Smith Grant Standard Suite 1								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Arsenic	T6	M40	2	mg/kg	14	13	13	17
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1	<1
Chromium	T6	M40	1	mg/kg	35	33	37	38
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1	<1
Copper	T6	M40	1	mg/kg	37	37	37	43
Lead	T6	M40	1	mg/kg	67	71	66	72
Mercury	T6	M40	1	mg/kg	<1	<1	<1	<1
Nickel	T6	M40	1	mg/kg	28	25	29	30
pH	T7	AR			6.0	5.7	6.0	7.3
Soil Organic Matter	T287	A40	0.1	%	4.1	5.1	4.3	5.4
Zinc	T6	M40	1	mg/kg	72	74	70	79

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil PAH US EPA 16 (B and K split)								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.2
Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.2
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
PAH(total)	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.4

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Total Petroleum Hydrocarbons CWG								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Benzene	T209	M105	0.010	mg/kg	(13) <0.010	(13) <0.010	(13) <0.010	(13) <0.010
Toluene	T209	M105	0.010	mg/kg	(13) <0.010	(13) <0.010	(13) <0.010	(13) <0.010
EthylBenzene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
M/P Xylene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
O Xylene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100	<0.100	<0.100
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	(13) <2	(13) <2	(13) <2	(13) <2
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	(13) <4	(13) <4	(13) <4	(13) <4
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) 2
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) 4

Index to symbols used in 697291-1

Value	Description
AR	As Received
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
A40	Assisted dried < 40C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T287	Calc TOC/0.58
T6	ICP/OES
T206	GC/FID (MCERTS)
T7	Probe
T162	Grav (1 Dec) (105 C)
T27	PLM
T2	Grav
T207	GC/MS (MCERTS)
T209	GC/MS (Head Space)(MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Arsenic	T6	M40	2	mg/kg	M	001-004
Asbestos ID	T27	AR			SU	001-004
Cadmium	T6	M40	1	mg/kg	M	001-004
Chromium	T6	M40	1	mg/kg	M	001-004
Chromium VI	T6	AR	1	mg/kg	N	001-004
Copper	T6	M40	1	mg/kg	M	001-004
Lead	T6	M40	1	mg/kg	M	001-004
Mercury	T6	M40	1	mg/kg	M	001-004
Nickel	T6	M40	1	mg/kg	M	001-004
pH	T7	AR			M	001-004
Soil Organic Matter	T287	A40	0.1	%	N	001-004
Zinc	T6	M40	1	mg/kg	M	001-004
Naphthalene	T207	M105	0.1	mg/kg	M	001-004
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-004
Acenaphthene	T207	M105	0.1	mg/kg	M	001-004
Fluorene	T207	M105	0.1	mg/kg	M	001-004
Phenanthrene	T207	M105	0.1	mg/kg	M	001-004
Anthracene	T207	M105	0.1	mg/kg	U	001-004
Fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Pyrene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Chrysene	T207	M105	0.1	mg/kg	M	001-004
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-004
PAH(total)	T207	M105	0.1	mg/kg	U	001-004
Benzene	T209	M105	0.010	mg/kg	M	001-004
Toluene	T209	M105	0.010	mg/kg	M	001-004
EthylBenzene	T209	M105	0.010	mg/kg	M	001-004
M/P Xylene	T209	M105	0.010	mg/kg	M	001-004

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
O Xylene	T209	M105	0.010	mg/kg	M	001-004
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	M	001-004
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-004
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	N	001-004
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	M	001-004
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	M	001-004
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	M	001-004
Moisture @105C	T162	AR	0.1	%	N	001-004
Retained on 10mm sieve	T2	M40	0.1	%	N	001-004



Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 709629-1

Date of Report: 30-Jan-2018

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 18-Jan-2018

Date Analysis Started: 19-Jan-2018

Date Analysis Completed: 30-Jan-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Aleksandra Pacula
Customer Service Advisor

Issued by :
Aleksandra Pacula
Customer Service Advisor



Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469									
Soil		Analysed as Soil							
MCERTS Preparation									
Concept Reference				709629 001		709629 002		709629 003	
Customer Sample Reference				SP-TS-5		SP-TS-6		SP-TS-7	
Date Sampled				16-JAN-2018		16-JAN-2018		16-JAN-2018	
Matrix Class				Sandy Soil		Sandy Soil		Sandy Soil	
Determinand		Method	Test Sample	LOD	Units				
Moisture @105C		T162	AR	0.1	%	26	18	28	
Retained on 10mm sieve		T2	M40	0.1	%	<0.1	<0.1	<0.1	

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
Smith Grant Standard Suite 1							
Concept Reference				709629 001	709629 002	709629 003	
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	
Determinand	Method	Test Sample	LOD	Units			
Arsenic	T6	M40	2	mg/kg	11	13	11
Asbestos ID	T27	AR			N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1
Chromium	T6	M40	1	mg/kg	29	31	29
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1
Copper	T6	M40	1	mg/kg	35	37	32
Lead	T6	M40	1	mg/kg	57	69	56
Mercury	T6	M40	1	mg/kg	<1	<1	<1
Nickel	T6	M40	1	mg/kg	24	27	25
pH	T7	AR			7.5	7.4	7.3
Soil Organic Matter	T287	A40	0.1	%	4.0	3.1	4.3
Zinc	T6	M40	1	mg/kg	74	70	63

Concept Reference: 709629							
Project Site: Waterpark Drive							
Customer Reference: R2469							
Soil				Analysed as Soil			
TPH (CWG) with MTBE, BTEX							
Concept Reference					709629 001	709629 002	709629 003
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Benzene	T209	M105	10	µg/kg	(13) <10	(13) <10	(13) <10
Toluene	T209	M105	10	µg/kg	<10	<10	<10
EthylBenzene	T209	M105	10	µg/kg	<10	<10	<10
M/P Xylene	T209	M105	10	µg/kg	<10	<10	<10
O Xylene	T209	M105	10	µg/kg	<10	<10	<10
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	<10	<10	<10
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100	<0.100
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	(13) <2	(13) <2	(13) <2
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	(13) <2	(13) <2	(13) <2
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aromatic)	T909	M105	1	mg/ka	(13) <1	(13) <1	(13) <1

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
PAH US EPA 16 (B and K split)							
Concept Reference					709629 001	709629 002	709629 003
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
PAH(tot(a))	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1

Concept Reference: 709629										
Project Site: Waterpark Drive										
Customer Reference: R2469										
Soil		Analysed as Soil								
Miscellaneous										
Concept Reference				709629 001	709629 002	709629 003	709629 004	709629 005		
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	AGG-IMP-6	AGG-IMP-7		
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018		
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil		
Determinand		Method	Test Sample	LOD	Units					
Asbestos ID		T27	AR			N.D.	N.D.	N.D.	N.D.	N.D.

Index to symbols used in 709629-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T2	Grav
T162	Grav (1 Dec) (105 C)
T6	ICP/OES
T27	PLM
T7	Probe
T909	GCxGC
T287	Calc TOC/0.58
T209	GC/MS (Head Space)(MCERTS)
T207	GC/MS (MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Moisture @105C	T162	AR	0.1	%	N	001-003
Retained on 10mm sieve	T2	M40	0.1	%	N	001-003
Arsenic	T6	M40	2	mg/kg	M	001-003
Asbestos ID	T27	AR			SU	001-005
Cadmium	T6	M40	1	mg/kg	M	001-003
Chromium	T6	M40	1	mg/kg	M	001-003
Chromium VI	T6	AR	1	mg/kg	N	001-003
Copper	T6	M40	1	mg/kg	M	001-003
Lead	T6	M40	1	mg/kg	M	001-003
Mercury	T6	M40	1	mg/kg	M	001-003
Nickel	T6	M40	1	mg/kg	M	001-003
pH	T7	AR			M	001-003
Soil Organic Matter	T287	A40	0.1	%	N	001-003
Zinc	T6	M40	1	mg/kg	M	001-003
Benzene	T209	M105	10	µg/kg	M	001-003

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Toluene	T209	M105	10	µg/kg	M	001-003
EthylBenzene	T209	M105	10	µg/kg	M	001-003
M/P Xylene	T209	M105	10	µg/kg	M	001-003
O Xylene	T209	M105	10	µg/kg	M	001-003
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	M	001-003
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-003
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	M	001-003
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	M	001-003
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aromatic)	T909	M105	1	mg/kg	M	001-003
Naphthalene	T207	M105	0.1	mg/kg	M	001-003
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-003
Acenaphthene	T207	M105	0.1	mg/kg	M	001-003
Fluorene	T207	M105	0.1	mg/kg	M	001-003
Phenanthrene	T207	M105	0.1	mg/kg	M	001-003
Anthracene	T207	M105	0.1	mg/kg	U	001-003
Fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Pyrene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Chrysene	T207	M105	0.1	mg/kg	M	001-003
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-003
PAH(total)	T207	M105	0.1	mg/kg	U	001-003



2183



Final Report

Report No.: 19-08072-1

Initial Date of Issue: 13-Mar-2019

Client Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Scott Miller

Project R2469b Waterpark Drive

Quotation No.: Q15-02887 **Date Received:** 05-Mar-2019

Order No.: **Date Instructed:** 05-Mar-2019

No. of Samples: 3

Turnaround (Wkdays): 7 **Results Due:** 13-Mar-2019

Date Approved: 13-Mar-2019

Approved By:



Details: Martin Dyer, Laboratory Manager

Project: R2469b Waterpark Drive

Client: Smith Grant LLP	Chemtest Job No.:				19-08072	19-08072	19-08072
Quotation No.: Q15-02887	Chemtest Sample ID.:				787703	787704	787705
	Sample Location:				Clay-Plot 11	Clay SP-1	Clay SP-2
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				01-Mar-2019	01-Mar-2019	01-Mar-2019
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-
Moisture	N	2030	%	0.020	12	13	16
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Clay	Clay	Clay
pH	M	2010		N/A	8.7	8.5	8.2
Arsenic	M	2450	mg/kg	1.0	9.6	7.8	17
Cadmium	M	2450	mg/kg	0.10	0.18	0.12	< 0.10
Chromium	M	2450	mg/kg	1.0	21	19	28
Copper	M	2450	mg/kg	0.50	18	15	17
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	24	24	37
Lead	M	2450	mg/kg	0.50	31	23	13
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	48	43	41
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	2.8	1.1	0.81
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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
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	< 5.0	< 5.0
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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
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	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Project: R2469b Waterpark Drive

Client: Smith Grant LLP	Chemtest Job No.:				19-08072	19-08072	19-08072
Quotation No.: Q15-02887	Chemtest Sample ID.:				787703	787704	787705
	Sample Location:				Clay-Plot 11	Clay SP-1	Clay SP-2
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				01-Mar-2019	01-Mar-2019	01-Mar-2019
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.48	0.45	0.21
Anthracene	M	2700	mg/kg	0.10	0.12	0.15	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	0.95	0.97	0.25
Pyrene	M	2700	mg/kg	0.10	0.97	1.2	0.22
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.55	0.57	< 0.10
Chrysene	M	2700	mg/kg	0.10	0.41	0.27	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	0.50	0.80	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.22	0.40	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	0.49	0.79	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.23	0.42	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.11	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.29	0.59	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	5.2	6.7	< 2.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

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
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"

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 45 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



Final Report

Report No.: 19-08562-1

Initial Date of Issue: 19-Mar-2019

Client: Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Scott Miller

Project: R2469b Water Park Drive (Barratt Homes)

Quotation No.: Q15-02887 **Date Received:** 08-Mar-2019

Order No.: **Date Instructed:** 08-Mar-2019

No. of Samples: 14

Turnaround (Wkdays): 7 **Results Due:** 18-Mar-2019

Date Approved: 19-Mar-2019

Approved By:



Details: Robert Monk, Technical Manager

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790227	790228	790229	790230	790231	790232	790233	790243	790244
	Sample Location:				SP3-S1	SP3-S2	SP3-S3	SP3-S4	SP3-S5	SP3-S6	SP3-S7	SP4-S1	SP4-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				DURHAM	COVENTRY	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	COVENTRY
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	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
ACM Detection Stage	U	2192		N/A	-	-	-	-	-	-	-	-	-
Moisture	N	2030	%	0.020	25	28	23	20	16	19	19	16	12
Soil Colour	N	2040		N/A	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,
Other Material	N	2040		N/A	Stones, Roots,	Roots, Stones,,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Roots, Stones,	Stones, Roots,
Soil Texture	N	2040		N/A	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,
pH	M	2010		N/A	8.0	8.1	8.3	7.8	7.8	8.1	8.0	7.1	7.1
Arsenic	M	2450	mg/kg	1.0	13	13	10	9.5	12	9.9	10	7.8	7.9
Cadmium	M	2450	mg/kg	0.10	0.35	0.24	0.29	0.28	0.28	0.24	0.31	0.29	0.22
Chromium	M	2450	mg/kg	1.0	23	24	23	21	23	19	22	17	21
Copper	M	2450	mg/kg	0.50	29	31	27	26	49	27	28	21	17
Mercury	M	2450	mg/kg	0.10	0.15	0.51	0.15	0.16	0.20	0.14	0.14	0.11	< 0.10
Nickel	M	2450	mg/kg	0.50	23	27	24	20	21	20	22	16	18
Lead	M	2450	mg/kg	0.50	58	61	58	55	46	59	58	39	28
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.26	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	76	88	74	61	54	84	74	77	47
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	M	2625	%	0.40	4.5	3.1	3.3	3.3	2.6	3.5	3.3	3.1	2.1
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	M	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	M	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	M	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	M	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	M	2680	mg/kg	1.0	< 1.0	75	< 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	75	< 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	M	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	M	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 >C12-C16	M	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 >C16-C21	U	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 >C21-C35	M	2680	mg/kg	1.0	< 1.0	380	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	14	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	400	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	470	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790227	790228	790229	790230	790231	790232	790233	790243	790244
	Sample Location:				SP3-S1	SP3-S2	SP3-S3	SP3-S4	SP3-S5	SP3-S6	SP3-S7	SP4-S1	SP4-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				DURHAM	COVENTRY	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	COVENTRY
Determinand	Accred.	SOP	Units	LOD									
Naphthalene	M	2700	mg/kg	0.10	0.44	0.59	0.46	0.48	< 0.10	0.56	0.47	0.38	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	0.24	0.26	< 0.10	0.46	< 0.10	< 0.10	0.31	0.21	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	0.75	0.11	0.15	< 0.10	0.30	0.11	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	0.62	0.12	0.21	< 0.10	0.27	0.12	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.59	4.6	0.89	1.9	0.67	2.0	1.0	0.59	0.18
Anthracene	M	2700	mg/kg	0.10	< 0.10	1.3	0.28	0.37	0.16	0.52	0.24	0.13	0.10
Fluoranthene	M	2700	mg/kg	0.10	0.45	7.2	0.90	1.9	0.65	2.6	1.4	0.73	0.21
Pyrene	M	2700	mg/kg	0.10	0.57	7.2	1.0	1.8	0.76	2.7	1.4	0.80	0.28
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	4.2	0.51	0.95	0.40	1.5	0.84	0.44	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	3.9	0.84	1.2	0.69	1.5	1.2	0.70	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	3.2	0.57	1.0	0.51	1.2	0.64	0.39	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	2.2	0.46	0.69	0.37	0.77	0.75	0.47	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	3.1	0.53	0.86	0.41	1.2	0.82	0.44	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	1.8	0.32	0.70	0.34	0.88	0.46	0.28	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.75	0.32	0.95	0.41	0.51	0.51	0.37	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	2.7	1.1	1.6	0.55	2.4	1.8	0.95	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	2.3	44	8.4	15	5.9	19	12	6.9	< 2.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	25	2.5	< 1.0	5.7	9.1	23	31	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	2.0	1.3	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	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	M	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

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790245	790246	790247	790254	790255
	Sample Location:				SP4-S3	SP4-S4	SP4-S5	SP5-S1	SP5-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD					
ACM Type	U	2192		N/A	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-	-	-
Moisture	N	2030	%	0.020	16	16	21	13	17
Soil Colour	N	2040		N/A	Brown,	Brown,	Brown,	Brown,	Brown,
Other Material	N	2040		N/A	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,
Soil Texture	N	2040		N/A	Clay,	Clay,	Clay	Clay,	Clay,
pH	M	2010		N/A	7.9	7.9	7.5	8.4	8.4
Arsenic	M	2450	mg/kg	1.0	8.4	11	12	12	7.4
Cadmium	M	2450	mg/kg	0.10	0.28	0.31	0.41	0.23	0.14
Chromium	M	2450	mg/kg	1.0	19	22	28	22	26
Copper	M	2450	mg/kg	0.50	23	23	30	42	19
Mercury	M	2450	mg/kg	0.10	0.15	0.24	0.17	0.15	< 0.10
Nickel	M	2450	mg/kg	0.50	20	21	24	27	30
Lead	M	2450	mg/kg	0.50	48	44	54	120	28
Selenium	M	2450	mg/kg	0.20	0.22	< 0.20	0.33	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	60	48	57	120	49
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	3.1	2.4	3.3	1.5	1.3
Aliphatic TPH >C5-C6	N	2680	mg/kg	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
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	51	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	3.3	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	54	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	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
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	2.2	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	130	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	3.4	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	140	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	190	< 10

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790245	790246	790247	790254	790255
	Sample Location:				SP4-S3	SP4-S4	SP4-S5	SP5-S1	SP5-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD					
Naphthalene	M	2700	mg/kg	0.10	< 0.10	0.36	0.40	0.43	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.14	0.20	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.31	0.27	0.46	0.50	0.48
Anthracene	M	2700	mg/kg	0.10	< 0.10	0.11	0.13	0.16	0.14
Fluoranthene	M	2700	mg/kg	0.10	0.37	0.41	0.58	1.3	0.65
Pyrene	M	2700	mg/kg	0.10	0.43	0.48	0.55	1.4	0.68
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.83	0.76	1.0	1.1	0.34
Chrysene	M	2700	mg/kg	0.10	0.51	0.41	0.66	0.97	0.66
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	0.29	0.27	0.37	0.17	0.39
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.43	0.21	< 0.10	0.67	0.21
Benzo[a]pyrene	M	2700	mg/kg	0.10	0.21	0.27	0.33	0.99	0.39
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.14	< 0.10	0.24	0.75	0.75
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	0.33	< 0.10	0.26	0.30	0.40
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.65	< 0.10	0.90	1.4	1.4
Total Of 16 PAH's	M	2700	mg/kg	2.0	4.5	3.6	6.0	10	6.5
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	2.4	7.2	< 1.0	1.9
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	4.5	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"

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 45 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



Topsoil Validation Record

Job number	R2469b	Depth ref:	R2469-R01-v3		Quality ref:		R2469-R01-v3		Other documents attached		✓		
Date	18.02.19	Area use:	garden		landscaped			stockpile		other			
Site name / location	Nomvula Park, Waterpark Drive, Knowsley	Size area (m):	6 x 10 6 x 10	Approx Area (m²):	120	Approx Depth Top (m):	0.6	Approx Volume Top (m³):	72	Approx Depth Sub (m):	N/A	Approx Volume Sub (m³):	N/A
Plot/ location:	69-70	Number depth entries required		2 (1 per 3 gardens). 2 provided.			Number samples required:		1 TS (1 per 250m³ TS) (minimum 3 samples per single source), 11 TS provided				
Compiled by:	MJ												

Quality Validation		Inspection date/time:	18.02.19	Inspected by:	MJ	Photographed:	✓
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Source Topsoil	1.	✓	Site won topsoil
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets.
Sample Topsoil	3.	✓	11 samples taken from onsite stockpile '1' (CLS ref: 697291SW-TS-1 – SW-TS-4 & CLS ref:709629-1, SP-TS-1 – SP-TS-7)
Source Subsoil	4.	x	N/A
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	NFD	NFD	Yes
Arsenic	37	11-17	Yes
Cadmium	11	<1	Yes
Chromium III	910	29-38	Yes
Chromium VI	6	<1	Yes
Copper	2400	32-43	Yes
Lead	200	56-72	Yes
Mercury	40	<1	Yes
Nickel	130	24-30	Yes
Zinc	3700	63-79	Yes
Naphthalene	2.3	<0.1	Yes
Acenaphthene	210	<0.1	Yes
Acenaphthylene	170	<0.1	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	<0.1-0.2	Yes
Pyrene	620	<0.1-0.2	Yes
Benzo(a) anthracene	7.2	<0.1	Yes
Chrysene	15	<0.1	Yes
Benzo(b) fluoranthene	2.6	<0.1	Yes
Benzo(k) fluoranthene	77	<0.1	Yes
Benzo(a) pyrene	2.2	<0.1	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1	Yes
Dibenzo(ah) anthracene	0.24	<0.1	Yes
Benzo(ghi) perylene	320	<0.1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1	Yes
Aliphatic C21-C35	5000	<1	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	Yes
Aromatic C16-C21	260	<1	Yes
Aromatic C21-C35	1100	<1	Yes

Soil Standards are adopted from published SGV's where available, other sources include the LQM/CIEH and CLAIR GACs.

The appropriate land use is residential, and 1% SOM is assumed.



Topsoil Validation Record

Depth Validation	Inspection date/time:	18.02.19	Inspected by:	MJ	Photographed:	✓
Plot 69	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	N/A					
Soil profile/description	0.00-0.60m. 0.60m	Dark brown slightly sandy topsoil with frequent rootlets. Base				
Photograph (Plot 69 location) 		Photograph (Plot 69 depth profile) 		Photograph (Plot 69 soil type) 		

Topsoil Validation Record



This area has PASSED inspection for depth and quality.
An additional inspection visit IS NOT required for these plots.

SGP Staff:	M Jones BSc MSc	Signed:		18.02.2019
SGP Member:	B Thomas BSc MSc MCIWEM C.Env SiLC	Signed:		18.02.2019

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

Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 697291-1

Date of Report: 07-Dec-2017

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 16-Nov-2017

Date Analysis Started: 20-Nov-2017

Date Analysis Completed: 07-Dec-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

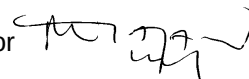
Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Miajan Miah
Customer Service Advisor

Issued by :
Miajan Miah
Customer Service Advisor



Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil MCERTS Preparation								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Moisture @105C	T162	AR	0.1	%	29	26	27	27
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1	<0.1

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Smith Grant Standard Suite 1								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Arsenic	T6	M40	2	mg/kg	14	13	13	17
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1	<1
Chromium	T6	M40	1	mg/kg	35	33	37	38
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1	<1
Copper	T6	M40	1	mg/kg	37	37	37	43
Lead	T6	M40	1	mg/kg	67	71	66	72
Mercury	T6	M40	1	mg/kg	<1	<1	<1	<1
Nickel	T6	M40	1	mg/kg	28	25	29	30
pH	T7	AR			6.0	5.7	6.0	7.3
Soil Organic Matter	T287	A40	0.1	%	4.1	5.1	4.3	5.4
Zinc	T6	M40	1	mg/kg	72	74	70	79

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil PAH US EPA 16 (B and K split)								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.2
Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.2
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
PAH(total)	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.4

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Total Petroleum Hydrocarbons CWG								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Benzene	T209	M105	0.010	mg/kg	(13) <0.010	(13) <0.010	(13) <0.010	(13) <0.010
Toluene	T209	M105	0.010	mg/kg	(13) <0.010	(13) <0.010	(13) <0.010	(13) <0.010
EthylBenzene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
M/P Xylene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
O Xylene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100	<0.100	<0.100
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	(13) <2	(13) <2	(13) <2	(13) <2
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	(13) <4	(13) <4	(13) <4	(13) <4
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) 2
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) 4

Index to symbols used in 697291-1

Value	Description
AR	As Received
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
A40	Assisted dried < 40C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T287	Calc TOC/0.58
T6	ICP/OES
T206	GC/FID (MCERTS)
T7	Probe
T162	Grav (1 Dec) (105 C)
T27	PLM
T2	Grav
T207	GC/MS (MCERTS)
T209	GC/MS (Head Space)(MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Arsenic	T6	M40	2	mg/kg	M	001-004
Asbestos ID	T27	AR			SU	001-004
Cadmium	T6	M40	1	mg/kg	M	001-004
Chromium	T6	M40	1	mg/kg	M	001-004
Chromium VI	T6	AR	1	mg/kg	N	001-004
Copper	T6	M40	1	mg/kg	M	001-004
Lead	T6	M40	1	mg/kg	M	001-004
Mercury	T6	M40	1	mg/kg	M	001-004
Nickel	T6	M40	1	mg/kg	M	001-004
pH	T7	AR			M	001-004
Soil Organic Matter	T287	A40	0.1	%	N	001-004
Zinc	T6	M40	1	mg/kg	M	001-004
Naphthalene	T207	M105	0.1	mg/kg	M	001-004
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-004
Acenaphthene	T207	M105	0.1	mg/kg	M	001-004
Fluorene	T207	M105	0.1	mg/kg	M	001-004
Phenanthrene	T207	M105	0.1	mg/kg	M	001-004
Anthracene	T207	M105	0.1	mg/kg	U	001-004
Fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Pyrene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Chrysene	T207	M105	0.1	mg/kg	M	001-004
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-004
PAH(total)	T207	M105	0.1	mg/kg	U	001-004
Benzene	T209	M105	0.010	mg/kg	M	001-004
Toluene	T209	M105	0.010	mg/kg	M	001-004
EthylBenzene	T209	M105	0.010	mg/kg	M	001-004
M/P Xylene	T209	M105	0.010	mg/kg	M	001-004

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
O Xylene	T209	M105	0.010	mg/kg	M	001-004
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	M	001-004
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-004
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	N	001-004
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	M	001-004
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	M	001-004
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	M	001-004
Moisture @105C	T162	AR	0.1	%	N	001-004
Retained on 10mm sieve	T2	M40	0.1	%	N	001-004



Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 709629-1

Date of Report: 30-Jan-2018

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 18-Jan-2018

Date Analysis Started: 19-Jan-2018

Date Analysis Completed: 30-Jan-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Aleksandra Pacula
Customer Service Advisor

Issued by :
Aleksandra Pacula
Customer Service Advisor



Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469								
Soil		Analysed as Soil						
MCERTS Preparation								
Concept Reference				709629 001		709629 002	709629 003	
Customer Sample Reference				SP-TS-5		SP-TS-6	SP-TS-7	
Date Sampled				16-JAN-2018		16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil		Sandy Soil	Sandy Soil	
Determinand		Method	Test Sample	LOD	Units			
Moisture @105C		T162	AR	0.1	%	26	18	28
Retained on 10mm sieve		T2	M40	0.1	%	<0.1	<0.1	<0.1

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
Smith Grant Standard Suite 1							
Concept Reference				709629 001	709629 002	709629 003	
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	
Determinand	Method	Test Sample	LOD	Units			
Arsenic	T6	M40	2	mg/kg	11	13	11
Asbestos ID	T27	AR			N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1
Chromium	T6	M40	1	mg/kg	29	31	29
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1
Copper	T6	M40	1	mg/kg	35	37	32
Lead	T6	M40	1	mg/kg	57	69	56
Mercury	T6	M40	1	mg/kg	<1	<1	<1
Nickel	T6	M40	1	mg/kg	24	27	25
pH	T7	AR			7.5	7.4	7.3
Soil Organic Matter	T287	A40	0.1	%	4.0	3.1	4.3
Zinc	T6	M40	1	mg/kg	74	70	63

Concept Reference: 709629							
Project Site: Waterpark Drive							
Customer Reference: R2469							
Soil				Analysed as Soil			
TPH (CWG) with MTBE, BTEX							
Concept Reference					709629 001	709629 002	709629 003
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Benzene	T209	M105	10	µg/kg	(13) <10	(13) <10	(13) <10
Toluene	T209	M105	10	µg/kg	<10	<10	<10
EthylBenzene	T209	M105	10	µg/kg	<10	<10	<10
M/P Xylene	T209	M105	10	µg/kg	<10	<10	<10
O Xylene	T209	M105	10	µg/kg	<10	<10	<10
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	<10	<10	<10
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100	<0.100
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	(13) <2	(13) <2	(13) <2
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	(13) <2	(13) <2	(13) <2
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aromatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
PAH US EPA 16 (B and K split)							
Concept Reference					709629 001	709629 002	709629 003
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
PAH(tot(a))	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1

Concept Reference: 709629										
Project Site: Waterpark Drive										
Customer Reference: R2469										
Soil		Analysed as Soil								
Miscellaneous										
Concept Reference				709629 001	709629 002	709629 003	709629 004	709629 005		
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	AGG-IMP-6	AGG-IMP-7		
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018		
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil		
Determinand		Method	Test Sample	LOD	Units					
Asbestos ID		T27	AR			N.D.	N.D.	N.D.	N.D.	N.D.

Index to symbols used in 709629-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T2	Grav
T162	Grav (1 Dec) (105 C)
T6	ICP/OES
T27	PLM
T7	Probe
T909	GCxGC
T287	Calc TOC/0.58
T209	GC/MS (Head Space)(MCERTS)
T207	GC/MS (MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Moisture @105C	T162	AR	0.1	%	N	001-003
Retained on 10mm sieve	T2	M40	0.1	%	N	001-003
Arsenic	T6	M40	2	mg/kg	M	001-003
Asbestos ID	T27	AR			SU	001-005
Cadmium	T6	M40	1	mg/kg	M	001-003
Chromium	T6	M40	1	mg/kg	M	001-003
Chromium VI	T6	AR	1	mg/kg	N	001-003
Copper	T6	M40	1	mg/kg	M	001-003
Lead	T6	M40	1	mg/kg	M	001-003
Mercury	T6	M40	1	mg/kg	M	001-003
Nickel	T6	M40	1	mg/kg	M	001-003
pH	T7	AR			M	001-003
Soil Organic Matter	T287	A40	0.1	%	N	001-003
Zinc	T6	M40	1	mg/kg	M	001-003
Benzene	T209	M105	10	µg/kg	M	001-003

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Toluene	T209	M105	10	µg/kg	M	001-003
EthylBenzene	T209	M105	10	µg/kg	M	001-003
M/P Xylene	T209	M105	10	µg/kg	M	001-003
O Xylene	T209	M105	10	µg/kg	M	001-003
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	M	001-003
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-003
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	M	001-003
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	M	001-003
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aromatic)	T909	M105	1	mg/kg	M	001-003
Naphthalene	T207	M105	0.1	mg/kg	M	001-003
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-003
Acenaphthene	T207	M105	0.1	mg/kg	M	001-003
Fluorene	T207	M105	0.1	mg/kg	M	001-003
Phenanthrene	T207	M105	0.1	mg/kg	M	001-003
Anthracene	T207	M105	0.1	mg/kg	U	001-003
Fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Pyrene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Chrysene	T207	M105	0.1	mg/kg	M	001-003
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-003
PAH(total)	T207	M105	0.1	mg/kg	U	001-003



Topsoil Validation Record

Job number	R2469b	Depth ref:	R2469-R01-v3	Quality ref:	R2469-R01-v3	Other documents attached	✓						
Date	06.02.19	Area use:	garden	landscaped	stockpile	other							
Site name / location	Nomvula Park, Waterpark Drive, Knowsley	Size area (m):	6 x 10 6 x 10	Approx Area (m²):	120	Approx Depth Top (m):	0.6	Approx Volume Top (m³):	72	Approx Depth Sub (m):	N/A	Approx Volume Sub (m³):	N/A
Plot/ location:	71-73, 9-11	Number depth entries required		2 (1 per 3 gardens). 2 provided.		Number samples required:		1 TS (1 per 250m³ TS) (minimum 3 samples per single source), 11 TS provided					
Compiled by:	MJ												

Quality Validation		Inspection date/time:	05.02.19	Inspected by:	BT, MJ	Photographed:	✓
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Source Topsoil	1.	✓	Site won topsoil
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets.
Sample Topsoil	3.	✓	11 samples taken from onsite stockpile '1' (CLS ref: 697291SW-TS-1 – SW-TS-4 & 709629-1, SP-TS-1 – SP-TS-7)
Source Subsoil	4.	x	N/A
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	NFD	NFD	Yes
Arsenic	37	11-17	Yes
Cadmium	11	<1	Yes
Chromium III	910	29-38	Yes
Chromium VI	6	<1	Yes
Copper	2400	32-43	Yes
Lead	200	56-72	Yes
Mercury	40	<1	Yes
Nickel	130	24-30	Yes
Zinc	3700	63-79	Yes
Naphthalene	2.3	<0.1	Yes
Acenaphthene	210	<0.1	Yes
Acenaphthylene	170	<0.1	Yes
Fluorene	170	<0.1	Yes
Phenanthrene	95	<0.1	Yes
Anthracene	2400	<0.1	Yes
Fluoranthene	280	<0.1-0.2	Yes
Pyrene	620	<0.1-0.2	Yes
Benzo(a) anthracene	7.2	<0.1	Yes
Chrysene	15	<0.1	Yes
Benzo(b) fluoranthene	2.6	<0.1	Yes
Benzo(k) fluoranthene	77	<0.1	Yes
Benzo(a) pyrene	2.2	<0.1	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.1	Yes
Dibenzo(ah) anthracene	0.24	<0.1	Yes
Benzo(ghi) perylene	320	<0.1	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	1100	<1	Yes
Aliphatic C16-C21	5000	<1	Yes
Aliphatic C21-C35	5000	<1	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	Yes
Aromatic C16-C21	260	<1	Yes
Aromatic C21-C35	1100	<1	Yes

Soil Standards are adopted from published SGV's where available, other sources include the LQM/CIEH and CLAIR GACs.

The appropriate land use is residential, and 1% SOM is assumed.

Topsoil Validation Record



Depth Validation	Inspection date/time:	05.02.19	Inspected by:	BT, MJ	Photographed:	✓
Plot 72	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	N/A					
Soil profile/description	0.00-0.60m. 0.60m	Dark brown slightly sandy topsoil with frequent rootlets. Base				
Photograph (Plot 72 location)			Photograph (Plot 72 depth profile)		Photograph (Plot 72 soil type)	
						



Topsoil Validation Record

Depth Validation	Inspection date/time:	05.02.19	Inspected by:	BT, MJ	Photographed:	✓
Plot 73	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	N/A					
Soil profile/description	0.00-0.60m. 0.60m	Dark brown slightly sandy topsoil with frequent rootlets. Base				

Photograph (Plot 73 location)



Photograph (Plot 73 depth profile)



Topsoil Validation Record



Depth Validation	Inspection date/time:	05.02.19	Inspected by:	BT, MJ	Photographed:	✓
Plot 9	Required Depth (mm)	600	Measured Depth (mm)	600	PASS	
Source Topsoil	Site Won Topsoil					
Source Subsoil	N/A					
Soil profile/description	0.00-0.60m. 0.60m	Dark brown slightly sandy topsoil with frequent rootlets. Base				

Photograph (Plot 9 location)



Photograph (Plot 9 depth profile)



Photograph (Plot 9 soil type)



Topsoil Validation Record



This area has PASSED inspection for depth and quality.
An additional inspection visit IS NOT required for these plots.

SGP Staff:	M Jones BSc MSc	Signed:		06.02.2019
SGP Member:	D Wayland BSc MSc MCIWEM C.WEM	Signed:		06.02.2019

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

Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 697291-1

Date of Report: 07-Dec-2017

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 16-Nov-2017

Date Analysis Started: 20-Nov-2017

Date Analysis Completed: 07-Dec-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

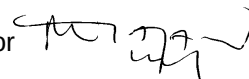
Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Miajan Miah
Customer Service Advisor

Issued by :
Miajan Miah
Customer Service Advisor



Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil MCERTS Preparation								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Moisture @105C	T162	AR	0.1	%	29	26	27	27
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1	<0.1

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Smith Grant Standard Suite 1								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Arsenic	T6	M40	2	mg/kg	14	13	13	17
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1	<1
Chromium	T6	M40	1	mg/kg	35	33	37	38
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1	<1
Copper	T6	M40	1	mg/kg	37	37	37	43
Lead	T6	M40	1	mg/kg	67	71	66	72
Mercury	T6	M40	1	mg/kg	<1	<1	<1	<1
Nickel	T6	M40	1	mg/kg	28	25	29	30
pH	T7	AR			6.0	5.7	6.0	7.3
Soil Organic Matter	T287	A40	0.1	%	4.1	5.1	4.3	5.4
Zinc	T6	M40	1	mg/kg	72	74	70	79

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil PAH US EPA 16 (B and K split)								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.2
Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.2
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1
PAH(total)	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	0.4

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Total Petroleum Hydrocarbons CWG								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Benzene	T209	M105	0.010	mg/kg	(13) <0.010	(13) <0.010	(13) <0.010	(13) <0.010
Toluene	T209	M105	0.010	mg/kg	(13) <0.010	(13) <0.010	(13) <0.010	(13) <0.010
EthylBenzene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
M/P Xylene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
O Xylene	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100	<0.100	<0.100
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	(13) <2	(13) <2	(13) <2	(13) <2
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	(13) <4	(13) <4	(13) <4	(13) <4
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) 2
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	(13) <1	(13) <1	(13) <1	(13) 4

Index to symbols used in 697291-1

Value	Description
AR	As Received
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
A40	Assisted dried < 40C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T287	Calc TOC/0.58
T6	ICP/OES
T206	GC/FID (MCERTS)
T7	Probe
T162	Grav (1 Dec) (105 C)
T27	PLM
T2	Grav
T207	GC/MS (MCERTS)
T209	GC/MS (Head Space)(MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Arsenic	T6	M40	2	mg/kg	M	001-004
Asbestos ID	T27	AR			SU	001-004
Cadmium	T6	M40	1	mg/kg	M	001-004
Chromium	T6	M40	1	mg/kg	M	001-004
Chromium VI	T6	AR	1	mg/kg	N	001-004
Copper	T6	M40	1	mg/kg	M	001-004
Lead	T6	M40	1	mg/kg	M	001-004
Mercury	T6	M40	1	mg/kg	M	001-004
Nickel	T6	M40	1	mg/kg	M	001-004
pH	T7	AR			M	001-004
Soil Organic Matter	T287	A40	0.1	%	N	001-004
Zinc	T6	M40	1	mg/kg	M	001-004
Naphthalene	T207	M105	0.1	mg/kg	M	001-004
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-004
Acenaphthene	T207	M105	0.1	mg/kg	M	001-004
Fluorene	T207	M105	0.1	mg/kg	M	001-004
Phenanthrene	T207	M105	0.1	mg/kg	M	001-004
Anthracene	T207	M105	0.1	mg/kg	U	001-004
Fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Pyrene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Chrysene	T207	M105	0.1	mg/kg	M	001-004
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-004
PAH(total)	T207	M105	0.1	mg/kg	U	001-004
Benzene	T209	M105	0.010	mg/kg	M	001-004
Toluene	T209	M105	0.010	mg/kg	M	001-004
EthylBenzene	T209	M105	0.010	mg/kg	M	001-004
M/P Xylene	T209	M105	0.010	mg/kg	M	001-004

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
O Xylene	T209	M105	0.010	mg/kg	M	001-004
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	M	001-004
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-004
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	N	001-004
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	M	001-004
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	M	001-004
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	M	001-004
Moisture @105C	T162	AR	0.1	%	N	001-004
Retained on 10mm sieve	T2	M40	0.1	%	N	001-004



Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 709629-1

Date of Report: 30-Jan-2018

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 18-Jan-2018

Date Analysis Started: 19-Jan-2018

Date Analysis Completed: 30-Jan-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Aleksandra Pacula
Customer Service Advisor

Issued by :
Aleksandra Pacula
Customer Service Advisor



Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469								
Soil		Analysed as Soil						
MCERTS Preparation								
Concept Reference				709629 001		709629 002	709629 003	
Customer Sample Reference				SP-TS-5		SP-TS-6	SP-TS-7	
Date Sampled				16-JAN-2018		16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil		Sandy Soil	Sandy Soil	
Determinand		Method	Test Sample	LOD	Units			
Moisture @105C		T162	AR	0.1	%	26	18	28
Retained on 10mm sieve		T2	M40	0.1	%	<0.1	<0.1	<0.1

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
Smith Grant Standard Suite 1							
Concept Reference				709629 001	709629 002	709629 003	
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	
Determinand	Method	Test Sample	LOD	Units			
Arsenic	T6	M40	2	mg/kg	11	13	11
Asbestos ID	T27	AR			N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1
Chromium	T6	M40	1	mg/kg	29	31	29
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1
Copper	T6	M40	1	mg/kg	35	37	32
Lead	T6	M40	1	mg/kg	57	69	56
Mercury	T6	M40	1	mg/kg	<1	<1	<1
Nickel	T6	M40	1	mg/kg	24	27	25
pH	T7	AR			7.5	7.4	7.3
Soil Organic Matter	T287	A40	0.1	%	4.0	3.1	4.3
Zinc	T6	M40	1	mg/kg	74	70	63

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469									
Soil		Analysed as Soil							
Miscellaneous									
Concept Reference				709629 001	709629 002	709629 003	709629 004	709629 005	
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	AGG-IMP-6	AGG-IMP-7	
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	
Determinand	Method	Test Sample	LOD	Units					
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.	N.D.

Index to symbols used in 709629-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T2	Grav
T162	Grav (1 Dec) (105 C)
T6	ICP/OES
T27	PLM
T7	Probe
T909	GCxGC
T287	Calc TOC/0.58
T209	GC/MS (Head Space)(MCERTS)
T207	GC/MS (MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Moisture @105C	T162	AR	0.1	%	N	001-003
Retained on 10mm sieve	T2	M40	0.1	%	N	001-003
Arsenic	T6	M40	2	mg/kg	M	001-003
Asbestos ID	T27	AR			SU	001-005
Cadmium	T6	M40	1	mg/kg	M	001-003
Chromium	T6	M40	1	mg/kg	M	001-003
Chromium VI	T6	AR	1	mg/kg	N	001-003
Copper	T6	M40	1	mg/kg	M	001-003
Lead	T6	M40	1	mg/kg	M	001-003
Mercury	T6	M40	1	mg/kg	M	001-003
Nickel	T6	M40	1	mg/kg	M	001-003
pH	T7	AR			M	001-003
Soil Organic Matter	T287	A40	0.1	%	N	001-003
Zinc	T6	M40	1	mg/kg	M	001-003
Benzene	T209	M105	10	µg/kg	M	001-003

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Toluene	T209	M105	10	µg/kg	M	001-003
EthylBenzene	T209	M105	10	µg/kg	M	001-003
M/P Xylene	T209	M105	10	µg/kg	M	001-003
O Xylene	T209	M105	10	µg/kg	M	001-003
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	M	001-003
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-003
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	M	001-003
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	M	001-003
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aromatic)	T909	M105	1	mg/kg	M	001-003
Naphthalene	T207	M105	0.1	mg/kg	M	001-003
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-003
Acenaphthene	T207	M105	0.1	mg/kg	M	001-003
Fluorene	T207	M105	0.1	mg/kg	M	001-003
Phenanthrene	T207	M105	0.1	mg/kg	M	001-003
Anthracene	T207	M105	0.1	mg/kg	U	001-003
Fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Pyrene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Chrysene	T207	M105	0.1	mg/kg	M	001-003
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-003
PAH(total)	T207	M105	0.1	mg/kg	U	001-003

Topsoil Validation Record

Job number	R2469b	Depth ref:	R2469-R01-v4		Quality ref:		R2469-R01-v4		Other documents attached		✓		
Date	19.02.20	Area use:	garden		landscaped			stockpile		other			
Site name / location	Nomvula Park, Waterpark Drive, Knowsley	Size area (m):	50 x 7	Approx Area (m²):	350	Approx Depth Top (m):	0.3	Approx Volume Top (m³):	105	Approx Depth Sub (m):	N/A	Approx Volume Sub (m³):	N/A
Plots / location:	Plots 49-56	Number depth entries required		Formation Inspection Only.		Number samples required:			3 TS (1 per 250m³ TS). 11 TS provided.				
Compiled by:	PRM												

Quality Validation		Inspection date/time:	23.04.19 & 02.10.19	Inspected by:	MJ, PRM	Photographed:	✓
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Source Topsoil	1.	✓	King's Quarter Barratts Development, Pewterspear, Warrington, WA4 5FR
Description Topsoil	2.	✓	Dark brown slightly sandy clayey topsoil with frequent rootlets.
Sample Topsoil	3.	✓	8 samples taken from onsite stockpile at source site (Lab ref: 19/6738 – TS1-TS8) and 2 samples taken from the POS area at the destination site (Lab ref: 19-33471 – S1-S2).
Source Subsoil	4.	X	Natural Underlying Subsoil
Description Subsoil	5.	X	Dark greyish brown clay.
Sample Subsoil	6.	X	N/A

Topsoil Validation Record



Topsoil Results Summary

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Asbestos Fibres	NFD	NFD	Yes
Arsenic	37	6.4-13.5	Yes
Cadmium	11	0.18-0.3	Yes
Chromium III	910	19.0-115.8	Yes
Chromium VI	6	<1	Yes
Copper	2400	19-31	Yes
Lead	200	27-35	Yes
Mercury	40	<0.1	Yes
Nickel	130	16.0-26.6	Yes
Zinc	3700	50-76	Yes
Naphthalene	2.3	<0.04	Yes
Acenaphthene	210	<0.05	Yes
Acenaphthylene	170	<0.03	Yes
Fluorene	170	<0.04	Yes
Phenanthrene	95	<0.03-0.31	Yes
Anthracene	2400	<0.04-0.12	Yes
Fluoranthene	280	0.08-0.45	Yes
Pyrene	620	0.08-0.36	Yes
Benzo(a) anthracene	7.2	<0.06-1.2	Yes
Chrysene	15	0.05-0.68	Yes
Benzo(b) fluoranthene	2.6	0.06-0.24	Yes
Benzo(k) fluoranthene	77	0.03-0.09	Yes
Benzo(a) pyrene	2.2	<0.04-0.20	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
Indeno(123cd) pyrene	27	<0.04-0.11	Yes
Dibenzo(ah) anthracene	0.24	<0.04	Yes
Benzo(ghi) perylene	320	<0.04-0.13	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	<0.2	Yes
Aliphatic C12-C16	1100	<4	Yes
Aliphatic C16-C21	5000	<7	Yes
Aliphatic C21-C35	5000	<7-100	Yes
Aromatic C6-C7	70	<0.1	Yes
Aromatic C7-C8	130	<0.1	Yes
Aromatic C8-C10	34	<0.1	Yes
Aromatic C10-C12	74	<0.2	Yes
Aromatic C12-C16	140	<4	Yes
Aromatic C16-C21	260	<7-35	Yes
Aromatic C21-C35	1100	<7	Yes

Topsoil Validation Record



Formation Inspection	Inspection date/time:	08.07.19	Inspected by:	MJ	Photographed:	✓
Plot 49-56	Required Depth	N/A	Measured Depth (mm)	N/A	PASS	
Source Topsoil	King's Quarter Barratts Development, Pewterspear, Warrington, WA4 5FR					
Source Subsoil	Natural Underlying Subsoil					
Soil profile/description	0.00-0.30m	Dark greyish brown slightly sandy slightly gravelly clayey topsoil with frequent rootlets.				
	>0.30m	Dark greyish brown clay.				

Photograph (Formation at Plot 52-53)



Photograph (Formation at Plot 56)



Photograph (Formation at 54-55)



Topsoil Validation Record



This area has PASSED inspection for quality and inspection of the natural underlying subsoil.

An additional inspection visit IS NOT required for these plots.

SGP Staff:	P R Magraw BSc FGS	Signed:		19.02.2020
SGP Member:	B J Thomas BSc, MSc, CIWEM, C.Env SiLC	Signed:		19.02.2020

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

APPENDIX C

Laboratory Certificates



Final Report

Report No.: 19-08072-1

Initial Date of Issue: 13-Mar-2019

Client: Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Scott Miller

Project: R2469b Waterpark Drive

Quotation No.: Q15-02887 **Date Received:** 05-Mar-2019

Order No.: **Date Instructed:** 05-Mar-2019

No. of Samples: 3

Turnaround (Wkdays): 7 **Results Due:** 13-Mar-2019

Date Approved: 13-Mar-2019

Approved By:



Details: Martin Dyer, Laboratory Manager

Project: R2469b Waterpark Drive

Client: Smith Grant LLP	Chemtest Job No.:				19-08072	19-08072	19-08072
Quotation No.: Q15-02887	Chemtest Sample ID.:				787703	787704	787705
	Sample Location:				Clay-Plot 11	Clay SP-1	Clay SP-2
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				01-Mar-2019	01-Mar-2019	01-Mar-2019
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-
Moisture	N	2030	%	0.020	12	13	16
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Clay	Clay	Clay
pH	M	2010		N/A	8.7	8.5	8.2
Arsenic	M	2450	mg/kg	1.0	9.6	7.8	17
Cadmium	M	2450	mg/kg	0.10	0.18	0.12	< 0.10
Chromium	M	2450	mg/kg	1.0	21	19	28
Copper	M	2450	mg/kg	0.50	18	15	17
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	24	24	37
Lead	M	2450	mg/kg	0.50	31	23	13
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	48	43	41
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	2.8	1.1	0.81
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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
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	< 5.0	< 5.0
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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
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	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Project: R2469b Waterpark Drive

Client: Smith Grant LLP	Chemtest Job No.:				19-08072	19-08072	19-08072
Quotation No.: Q15-02887	Chemtest Sample ID.:				787703	787704	787705
	Sample Location:				Clay-Plot 11	Clay SP-1	Clay SP-2
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				01-Mar-2019	01-Mar-2019	01-Mar-2019
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.48	0.45	0.21
Anthracene	M	2700	mg/kg	0.10	0.12	0.15	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	0.95	0.97	0.25
Pyrene	M	2700	mg/kg	0.10	0.97	1.2	0.22
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.55	0.57	< 0.10
Chrysene	M	2700	mg/kg	0.10	0.41	0.27	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	0.50	0.80	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.22	0.40	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	0.49	0.79	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.23	0.42	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.11	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.29	0.59	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	5.2	6.7	< 2.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

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
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"

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 45 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

Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 697291-1

Date of Report: 07-Dec-2017

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 16-Nov-2017

Date Analysis Started: 20-Nov-2017

Date Analysis Completed: 07-Dec-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

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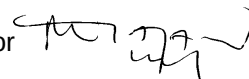
Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Miajan Miah
Customer Service Advisor

Issued by :
Miajan Miah
Customer Service Advisor



Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil MCERTS Preparation								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Moisture @105C	T162	AR	0.1	%	29	26	27	27
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1	<0.1

Concept Reference: 697291 Project Site: Waterpark Drive Customer Reference: R2469 Soil Analysed as Soil Smith Grant Standard Suite 1								
Concept Reference					697291 001	697291 002	697291 003	697291 004
Customer Sample Reference					SW-TS - 1	SW-TS - 2	SW-TS - 3	SW-TS - 4
Date Sampled					15-NOV-2017	15-NOV-2017	15-NOV-2017	15-NOV-2017
Matrix Class					Clay	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Arsenic	T6	M40	2	mg/kg	14	13	13	17
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1	<1
Chromium	T6	M40	1	mg/kg	35	33	37	38
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1	<1
Copper	T6	M40	1	mg/kg	37	37	37	43
Lead	T6	M40	1	mg/kg	67	71	66	72
Mercury	T6	M40	1	mg/kg	<1	<1	<1	<1
Nickel	T6	M40	1	mg/kg	28	25	29	30
pH	T7	AR			6.0	5.7	6.0	7.3
Soil Organic Matter	T287	A40	0.1	%	4.1	5.1	4.3	5.4
Zinc	T6	M40	1	mg/kg	72	74	70	79

Value	Description
AR	As Received
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
A40	Assisted dried < 40C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T287	Calc TOC/0.58
T6	ICP/OES
T206	GC/FID (MCERTS)
T7	Probe
T162	Grav (1 Dec) (105 C)
T27	PLM
T2	Grav
T207	GC/MS (MCERTS)
T209	GC/MS (Head Space)(MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Arsenic	T6	M40	2	mg/kg	M	001-004
Asbestos ID	T27	AR			SU	001-004
Cadmium	T6	M40	1	mg/kg	M	001-004
Chromium	T6	M40	1	mg/kg	M	001-004
Chromium VI	T6	AR	1	mg/kg	N	001-004
Copper	T6	M40	1	mg/kg	M	001-004
Lead	T6	M40	1	mg/kg	M	001-004
Mercury	T6	M40	1	mg/kg	M	001-004
Nickel	T6	M40	1	mg/kg	M	001-004
pH	T7	AR			M	001-004
Soil Organic Matter	T287	A40	0.1	%	N	001-004
Zinc	T6	M40	1	mg/kg	M	001-004
Naphthalene	T207	M105	0.1	mg/kg	M	001-004
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-004
Acenaphthene	T207	M105	0.1	mg/kg	M	001-004
Fluorene	T207	M105	0.1	mg/kg	M	001-004
Phenanthrene	T207	M105	0.1	mg/kg	M	001-004
Anthracene	T207	M105	0.1	mg/kg	U	001-004
Fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Pyrene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Chrysene	T207	M105	0.1	mg/kg	M	001-004
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-004
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-004
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-004
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-004
PAH(total)	T207	M105	0.1	mg/kg	U	001-004
Benzene	T209	M105	0.010	mg/kg	M	001-004
Toluene	T209	M105	0.010	mg/kg	M	001-004
EthylBenzene	T209	M105	0.010	mg/kg	M	001-004
M/P Xylene	T209	M105	0.010	mg/kg	M	001-004

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
O Xylene	T209	M105	0.010	mg/kg	M	001-004
Methyl tert-Butyl Ether	T209	M105	0.010	mg/kg	M	001-004
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-004
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	N	001-004
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	M	001-004
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	M	001-004
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-004
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C12-C16 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	M	001-004
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	M	001-004
Moisture @105C	T162	AR	0.1	%	N	001-004
Retained on 10mm sieve	T2	M40	0.1	%	N	001-004



Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 709629-1

Date of Report: 30-Jan-2018

Customer: Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL

Customer Contact: Mr Scott Miller

Customer Job Reference: R2469

Customer Site Reference: Waterpark Drive

Date Job Received at Concept: 18-Jan-2018

Date Analysis Started: 19-Jan-2018

Date Analysis Completed: 30-Jan-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Aleksandra Pacula
Customer Service Advisor

Issued by :
Aleksandra Pacula
Customer Service Advisor



Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
MCERTS Preparation							
Concept Reference					709629 001	709629 002	709629 003
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Moisture @105C	T162	AR	0.1	%	26	18	28
Retained on 10mm sieve	T2	M40	0.1	%	<0.1	<0.1	<0.1

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
Smith Grant Standard Suite 1							
Concept Reference				709629 001	709629 002	709629 003	
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	
Determinand	Method	Test Sample	LOD	Units			
Arsenic	T6	M40	2	mg/kg	11	13	11
Asbestos ID	T27	AR			N.D.	N.D.	N.D.
Cadmium	T6	M40	1	mg/kg	<1	<1	<1
Chromium	T6	M40	1	mg/kg	29	31	29
Chromium VI	T6	AR	1	mg/kg	<1	<1	<1
Copper	T6	M40	1	mg/kg	35	37	32
Lead	T6	M40	1	mg/kg	57	69	56
Mercury	T6	M40	1	mg/kg	<1	<1	<1
Nickel	T6	M40	1	mg/kg	24	27	25
pH	T7	AR			7.5	7.4	7.3
Soil Organic Matter	T287	A40	0.1	%	4.0	3.1	4.3
Zinc	T6	M40	1	mg/kg	74	70	63

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil				Analysed as Soil			
TPH (CWG) with MTBE, BTEX							
Concept Reference					709629 001	709629 002	709629 003
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Benzene	T209	M105	10	µg/kg	(13) <10	(13) <10	(13) <10
Toluene	T209	M105	10	µg/kg	<10	<10	<10
EthylBenzene	T209	M105	10	µg/kg	<10	<10	<10
M/P Xylene	T209	M105	10	µg/kg	<10	<10	<10
O Xylene	T209	M105	10	µg/kg	<10	<10	<10
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	<10	<10	<10
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100	<0.100
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	(13) <2	(13) <2	(13) <2
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	<0.10	<0.10	<0.10
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	(13) <2	(13) <2	(13) <2
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	(13) <1	(13) <1	(13) <1
TPH (C21-C35 aromatic)	T909	M105	1	mg/ka	(13) <1	(13) <1	(13) <1

Concept Reference: 709629 Project Site: Waterpark Drive Customer Reference: R2469							
Soil		Analysed as Soil					
PAH US EPA 16 (B and K split)							
Concept Reference					709629 001	709629 002	709629 003
Customer Sample Reference					SP-TS-5	SP-TS-6	SP-TS-7
Date Sampled					16-JAN-2018	16-JAN-2018	16-JAN-2018
Matrix Class					Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method	Test Sample	LOD	Units			
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1
PAH(tot(a))	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1

Concept Reference: 709629									
Project Site: Waterpark Drive									
Customer Reference: R2469									
Soil		Analysed as Soil							
Miscellaneous									
Concept Reference				709629 001	709629 002	709629 003	709629 004	709629 005	
Customer Sample Reference				SP-TS-5	SP-TS-6	SP-TS-7	AGG-IMP-6	AGG-IMP-7	
Date Sampled				16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018	16-JAN-2018	
Matrix Class				Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	
Determinand		Method	Test Sample	LOD	Units				
Asbestos ID		T27	AR			N.D.	N.D.	N.D.	N.D.
						N.D.	N.D.	N.D.	N.D.

Index to symbols used in 709629-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T2	Grav
T162	Grav (1 Dec) (105 C)
T6	ICP/OES
T27	PLM
T7	Probe
T909	GCxGC
T287	Calc TOC/0.58
T209	GC/MS (Head Space)(MCERTS)
T207	GC/MS (MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Moisture @105C	T162	AR	0.1	%	N	001-003
Retained on 10mm sieve	T2	M40	0.1	%	N	001-003
Arsenic	T6	M40	2	mg/kg	M	001-003
Asbestos ID	T27	AR			SU	001-005
Cadmium	T6	M40	1	mg/kg	M	001-003
Chromium	T6	M40	1	mg/kg	M	001-003
Chromium VI	T6	AR	1	mg/kg	N	001-003
Copper	T6	M40	1	mg/kg	M	001-003
Lead	T6	M40	1	mg/kg	M	001-003
Mercury	T6	M40	1	mg/kg	M	001-003
Nickel	T6	M40	1	mg/kg	M	001-003
pH	T7	AR			M	001-003
Soil Organic Matter	T287	A40	0.1	%	N	001-003
Zinc	T6	M40	1	mg/kg	M	001-003
Benzene	T209	M105	10	µg/kg	M	001-003

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Toluene	T209	M105	10	µg/kg	M	001-003
EthylBenzene	T209	M105	10	µg/kg	M	001-003
M/P Xylene	T209	M105	10	µg/kg	M	001-003
O Xylene	T209	M105	10	µg/kg	M	001-003
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	M	001-003
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	N	001-003
TPH (C6-C8 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aliphatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C12-C16 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aliphatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aliphatic)	T909	M105	2	mg/kg	M	001-003
TPH (C6-C7 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C7-C8 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C8-C10 aromatic)	T209	M105	0.10	mg/kg	N	001-003
TPH (C10-C12 aromatic)	T909	M105	2	mg/kg	M	001-003
TPH (C12-C16 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C16-C21 aromatic)	T909	M105	1	mg/kg	M	001-003
TPH (C21-C35 aromatic)	T909	M105	1	mg/kg	M	001-003
Naphthalene	T207	M105	0.1	mg/kg	M	001-003
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-003
Acenaphthene	T207	M105	0.1	mg/kg	M	001-003
Fluorene	T207	M105	0.1	mg/kg	M	001-003
Phenanthrene	T207	M105	0.1	mg/kg	M	001-003
Anthracene	T207	M105	0.1	mg/kg	U	001-003
Fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Pyrene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Chrysene	T207	M105	0.1	mg/kg	M	001-003
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	001-003
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-003
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-003
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-003
PAH(total)	T207	M105	0.1	mg/kg	U	001-003



2183

Final Report

Report No.: 19-33471-1

Initial Date of Issue: 14-Oct-2019

Client Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Ben Thomas
Megan Jones

Project R2469B-T0255 Nomvula Park

Quotation No.: **Date Received:** 07-Oct-2019

Order No.: **Date Instructed:** 07-Oct-2019

No. of Samples: 2

Turnaround (Wkdays): 5 **Results Due:** 11-Oct-2019

Date Approved: 14-Oct-2019

Approved By:



Details: Robert Monk, Technical Manager

Client: Smith Grant LLP	Chemtest Job No.:				19-33471	19-33471
Quotation No.:	Chemtest Sample ID.:				901143	901144
	Client Sample ID.:				S1	S2
	Sample Location:				TS	TS
	Sample Type:				SOIL	SOIL
	Date Sampled (\$):				02-Oct-2019	02-Oct-2019
	Asbestos Lab:				COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-
Moisture	N	2030	%	0.020	18	17
pH	U	2010		N/A	7.0	7.3
Arsenic	U	2450	mg/kg	1.0	8.1	6.4
Cadmium	U	2450	mg/kg	0.10	0.27	0.18
Chromium	U	2450	mg/kg	1.0	25	19
Copper	U	2450	mg/kg	0.50	26	20
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	20	16
Lead	U	2450	mg/kg	0.50	32	27
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	65	50
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	2.1	2.1
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	100
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	100
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	35
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	110
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	150
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	250
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10

Project: R2469B-T0255 Nomvula Park

Client: Smith Grant LLP	Chemtest Job No.:				19-33471	19-33471
Quotation No.:	Chemtest Sample ID.:				901143	901144
	Client Sample ID.:				S1	S2
	Sample Location:				TS	TS
	Sample Type:				SOIL	SOIL
	Date Sampled (\$):				02-Oct-2019	02-Oct-2019
	Asbestos Lab:				COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD		
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	0.13	< 0.10
Anthracene	U	2700	mg/kg	0.10	0.12	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	0.45	0.44
Pyrene	U	2700	mg/kg	0.10	0.14	0.26
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	1.2
Chrysene	U	2700	mg/kg	0.10	< 0.10	0.68
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	2.6
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0

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.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"
- \$ This information has been supplied by the client and can affect the integrity of test data.

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 45 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



Exova Jones Environmental

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Attention :	Alex Albon
Date :	1st May, 2019
Your reference :	30166
Our reference :	Test Report 19/6738 Batch 1
Location :	Pewterspear-Topsoil Stockpile
Date samples received :	25th April, 2019
Status :	Final report
Issue :	1

Eight samples were received for analysis on 25th April, 2019 of which eight were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

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

Compiled By:

Simon Gomery BSc
Project Manager

Client Name: ALM Consult Limited
Reference: 30166
Location: Pewterspear-Topsoil Stockpile
Contact: Alex Albon
JE Job No.: 19/6738

Report : Solid

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

J E Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16			Please see attached notes for all abbreviations and acronyms		
Sample ID	TS1	TS2	TS3	TS4	TS5	TS6	TS7	TS8					
Depth	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20					
COC No / misc													
Containers	J T	J T	J T	J T	J T	J T	J T	J T					
Sample Date	23/04/2019	23/04/2019	23/04/2019	23/04/2019	23/04/2019	23/04/2019	23/04/2019	23/04/2019					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	25/04/2019	25/04/2019	25/04/2019	25/04/2019	25/04/2019	25/04/2019	25/04/2019	25/04/2019			LOD/LOR	Units	Method No.
Arsenic #	8.5	13.5	9.0	8.8	8.2	9.0	8.1	9.9			<0.5	mg/kg	TM30/PM15
Cadmium #	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.2			<0.1	mg/kg	TM30/PM15
Chromium #	102.7	49.6	124.6	72.9	115.8	50.0	91.2	49.7			<0.5	mg/kg	TM30/PM15
Copper #	27	31	23	19	21	22	21	20			<1	mg/kg	TM30/PM15
Lead #	27	32	34	32	27	33	29	35			<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	mg/kg	TM30/PM15
Nickel #	21.1	20.0	21.4	23.8	26.6	19.4	19.9	19.7			<0.7	mg/kg	TM30/PM15
Selenium #	2	<1	2	1	<1	1	1	1			<1	mg/kg	TM30/PM15
Water Soluble Boron #	0.6	0.6	0.7	0.4	0.6	0.4	0.6	0.4			<0.1	mg/kg	TM74/PM32
Zinc #	66	70	72	72	76	69	69	70			<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03			<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.08	0.12	0.05	0.21	0.31	0.09	<0.03	0.09			<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04	0.07	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Fluoranthene #	0.21	0.20	0.08	0.31	0.37	0.15	0.08	0.15			<0.03	mg/kg	TM4/PM8
Pyrene #	0.19	0.18	0.08	0.31	0.36	0.13	0.08	0.13			<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.18	0.16	<0.06	0.23	0.25	0.11	0.09	0.10			<0.06	mg/kg	TM4/PM8
Chrysene #	0.10	0.10	0.06	0.15	0.16	0.06	0.05	0.08			<0.02	mg/kg	TM4/PM8
Benzo(b)fluoranthene #	0.21	0.18	0.09	0.33	0.30	0.11	0.09	0.13			<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.10	0.10	0.05	0.20	0.16	0.06	<0.04	0.07			<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.07	0.06	<0.04	0.11	0.10	<0.04	<0.04	0.04			<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.07	0.07	<0.04	0.13	0.10	<0.04	<0.04	0.04			<0.04	mg/kg	TM4/PM8
PAH 16 Total	1.2	1.2	<0.6	2.0	2.2	0.7	<0.6	0.8			<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.15	0.13	0.06	0.24	0.22	0.08	0.06	0.09			<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.06	0.05	0.03	0.09	0.08	0.03	0.03	0.04			<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	98	100	102	99	98	99	101	101			<0	%	TM4/PM8
TPH CWG													
Aliphatics													
>C5-C6 #	-	<0.1	-	<0.1	-	<0.1	-	<0.1			<0.1	mg/kg	TM36/PM12
>C6-C8 #	-	<0.1	-	<0.1	-	<0.1	-	<0.1			<0.1	mg/kg	TM36/PM12
>C8-C10	-	<0.1	-	<0.1	-	<0.1	-	<0.1			<0.1	mg/kg	TM36/PM12
>C10-C12 #	-	<0.2	-	<0.2	-	<0.2	-	<0.2			<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	-	<4	-	<4	-	<4	-	<4			<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	-	<7	-	<7	-	<7	-	<7			<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	-	<7	-	<7	-	<7	-	<7			<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	-	<19	-	<19	-	<19	-	<19			<19	mg/kg	TM5/PM8/PM16/PM12/PM15

Client Name: ALM Consult Limited
Reference: 30166
Location: Pewterspear-Topsoil Stockpile
Contact: Alex Albon

Note:

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

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

[illegible]

Client Name: ALM Consult Limited
Reference: 30166
Location: Pewterspear-Topsoil Stockpile
Contact: Alex Albon

[illegible]

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

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 19/6738

SOILS

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

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

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

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

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

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

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

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

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

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

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

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

WATERS

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

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

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

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

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

NOTE

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

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

REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Please include all sections of this report if it is reproduced

ABBREVIATIONS and ACRONYMS USED

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

JE Job No: 19/6738

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO ₂ generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

JE Job No: 19/6738

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes



Final Report

Report No.: 19-08562-1

Initial Date of Issue: 19-Mar-2019

Client: Smith Grant LLP

Client Address: Station House, Station Road
Ruabon
Wrexham
LL14 6DL

Contact(s): Scott Miller

Project: R2469b Water Park Drive (Barratt Homes)

Quotation No.: Q15-02887 **Date Received:** 08-Mar-2019

Order No.: **Date Instructed:** 08-Mar-2019

No. of Samples: 14

Turnaround (Wkdays): 7 **Results Due:** 18-Mar-2019

Date Approved: 19-Mar-2019

Approved By:



Details: Robert Monk, Technical Manager

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790227	790228	790229	790230	790231	790232	790233	790243	790244
	Sample Location:				SP3-S1	SP3-S2	SP3-S3	SP3-S4	SP3-S5	SP3-S6	SP3-S7	SP4-S1	SP4-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				DURHAM	COVENTRY	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	COVENTRY
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	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
ACM Detection Stage	U	2192		N/A	-	-	-	-	-	-	-	-	-
Moisture	N	2030	%	0.020	25	28	23	20	16	19	19	16	12
Soil Colour	N	2040		N/A	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,
Other Material	N	2040		N/A	Stones, Roots,	Roots, Stones,,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Roots, Stones,	Stones, Roots,
Soil Texture	N	2040		N/A	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,	Clay,
pH	M	2010		N/A	8.0	8.1	8.3	7.8	7.8	8.1	8.0	7.1	7.1
Arsenic	M	2450	mg/kg	1.0	13	13	10	9.5	12	9.9	10	7.8	7.9
Cadmium	M	2450	mg/kg	0.10	0.35	0.24	0.29	0.28	0.28	0.24	0.31	0.29	0.22
Chromium	M	2450	mg/kg	1.0	23	24	23	21	23	19	22	17	21
Copper	M	2450	mg/kg	0.50	29	31	27	26	49	27	28	21	17
Mercury	M	2450	mg/kg	0.10	0.15	0.51	0.15	0.16	0.20	0.14	0.14	0.11	< 0.10
Nickel	M	2450	mg/kg	0.50	23	27	24	20	21	20	22	16	18
Lead	M	2450	mg/kg	0.50	58	61	58	55	46	59	58	39	28
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.26	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	76	88	74	61	54	84	74	77	47
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	M	2625	%	0.40	4.5	3.1	3.3	3.3	2.6	3.5	3.3	3.1	2.1
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	M	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	M	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	M	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	M	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	M	2680	mg/kg	1.0	< 1.0	75	< 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	75	< 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	M	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	M	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 >C12-C16	M	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 >C16-C21	U	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 >C21-C35	M	2680	mg/kg	1.0	< 1.0	380	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	14	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	400	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	470	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790227	790228	790229	790230	790231	790232	790233	790243	790244
	Sample Location:				SP3-S1	SP3-S2	SP3-S3	SP3-S4	SP3-S5	SP3-S6	SP3-S7	SP4-S1	SP4-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				DURHAM	COVENTRY	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	COVENTRY
Determinand	Accred.	SOP	Units	LOD									
Naphthalene	M	2700	mg/kg	0.10	0.44	0.59	0.46	0.48	< 0.10	0.56	0.47	0.38	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	0.24	0.26	< 0.10	0.46	< 0.10	< 0.10	0.31	0.21	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	0.75	0.11	0.15	< 0.10	0.30	0.11	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	0.62	0.12	0.21	< 0.10	0.27	0.12	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.59	4.6	0.89	1.9	0.67	2.0	1.0	0.59	0.18
Anthracene	M	2700	mg/kg	0.10	< 0.10	1.3	0.28	0.37	0.16	0.52	0.24	0.13	0.10
Fluoranthene	M	2700	mg/kg	0.10	0.45	7.2	0.90	1.9	0.65	2.6	1.4	0.73	0.21
Pyrene	M	2700	mg/kg	0.10	0.57	7.2	1.0	1.8	0.76	2.7	1.4	0.80	0.28
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	4.2	0.51	0.95	0.40	1.5	0.84	0.44	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	3.9	0.84	1.2	0.69	1.5	1.2	0.70	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	3.2	0.57	1.0	0.51	1.2	0.64	0.39	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	2.2	0.46	0.69	0.37	0.77	0.75	0.47	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	3.1	0.53	0.86	0.41	1.2	0.82	0.44	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	1.8	0.32	0.70	0.34	0.88	0.46	0.28	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.75	0.32	0.95	0.41	0.51	0.51	0.37	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	2.7	1.1	1.6	0.55	2.4	1.8	0.95	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	2.3	44	8.4	15	5.9	19	12	6.9	< 2.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	25	2.5	< 1.0	5.7	9.1	23	31	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	2.0	1.3	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	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	M	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

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790245	790246	790247	790254	790255
	Sample Location:				SP4-S3	SP4-S4	SP4-S5	SP5-S1	SP5-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD					
ACM Type	U	2192		N/A	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-	-	-
Moisture	N	2030	%	0.020	16	16	21	13	17
Soil Colour	N	2040		N/A	Brown,	Brown,	Brown,	Brown,	Brown,
Other Material	N	2040		N/A	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,	Stones, Roots,
Soil Texture	N	2040		N/A	Clay,	Clay,	Clay	Clay,	Clay,
pH	M	2010		N/A	7.9	7.9	7.5	8.4	8.4
Arsenic	M	2450	mg/kg	1.0	8.4	11	12	12	7.4
Cadmium	M	2450	mg/kg	0.10	0.28	0.31	0.41	0.23	0.14
Chromium	M	2450	mg/kg	1.0	19	22	28	22	26
Copper	M	2450	mg/kg	0.50	23	23	30	42	19
Mercury	M	2450	mg/kg	0.10	0.15	0.24	0.17	0.15	< 0.10
Nickel	M	2450	mg/kg	0.50	20	21	24	27	30
Lead	M	2450	mg/kg	0.50	48	44	54	120	28
Selenium	M	2450	mg/kg	0.20	0.22	< 0.20	0.33	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	60	48	57	120	49
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	3.1	2.4	3.3	1.5	1.3
Aliphatic TPH >C5-C6	N	2680	mg/kg	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
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	51	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	3.3	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	54	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	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
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	2.2	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	130	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	3.4	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	140	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	190	< 10

Results - Soil

Client: Smith Grant LLP	Chemtest Job No.:				19-08562	19-08562	19-08562	19-08562	19-08562
Quotation No.: Q15-02887	Chemtest Sample ID.:				790245	790246	790247	790254	790255
	Sample Location:				SP4-S3	SP4-S4	SP4-S5	SP5-S1	SP5-S2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:				07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019	07-Mar-2019
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD					
Naphthalene	M	2700	mg/kg	0.10	< 0.10	0.36	0.40	0.43	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.14	0.20	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.31	0.27	0.46	0.50	0.48
Anthracene	M	2700	mg/kg	0.10	< 0.10	0.11	0.13	0.16	0.14
Fluoranthene	M	2700	mg/kg	0.10	0.37	0.41	0.58	1.3	0.65
Pyrene	M	2700	mg/kg	0.10	0.43	0.48	0.55	1.4	0.68
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.83	0.76	1.0	1.1	0.34
Chrysene	M	2700	mg/kg	0.10	0.51	0.41	0.66	0.97	0.66
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	0.29	0.27	0.37	0.17	0.39
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.43	0.21	< 0.10	0.67	0.21
Benzo[a]pyrene	M	2700	mg/kg	0.10	0.21	0.27	0.33	0.99	0.39
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.14	< 0.10	0.24	0.75	0.75
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	0.33	< 0.10	0.26	0.30	0.40
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.65	< 0.10	0.90	1.4	1.4
Total Of 16 PAH's	M	2700	mg/kg	2.0	4.5	3.6	6.0	10	6.5
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	2.4	7.2	< 1.0	1.9
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	4.5	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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"

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 45 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