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Dandy's Topsoil
4th Avenue, Zone 2
Deeside Industrial Park
Deeside
Flintshire
CH5 2NR

Attention: Simon Hughes

CERTIFICATE OF ANALYSIS

Date of report Generation:	17 July 2023
Customer:	Dandy's Topsoil
Sample Delivery Group (SDG):	230708-19
Your Reference:	Unscreened Soil - Stockpile
Location:	Sealand Road
Report No:	696577
Order Number:	DT02837

We received 1 sample on Friday July 07, 2023 and 1 of these samples were scheduled for analysis which was completed on Monday July 17, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan
Operations Manager

CERTIFICATE OF ANALYSIS

SDG: 230708-19 **Report Number:** 696577 **Superseded Report:**
Client Ref.: Unscreened Soil - Stockpile **Location:** Sealand Road

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28292931	UNSCREENED SOIL- STOCKPILE			

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

CERTIFICATE OF ANALYSIS

SDG: 230708-19 **Report Number:** 696577 **Superseded Report:**
Client Ref.: Unscreened Soil - Stockpile **Location:** Sealand Road

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

	Lab Sample No(s)		28292931
	Customer Sample Reference		UNSCREENED SOIL-STOCKPILE
	AGS Reference		
	Depth (m)		
	Container		Bulk Bag
	Sample Type		S
Boron Water Soluble	All	NDPs: 0 Tests: 1	X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1	X
Easily Liberated Sulphide	All	NDPs: 0 Tests: 1	X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1	X
Metals in solid samples by OES	All	NDPs: 0 Tests: 1	X
PAH by GCMS	All	NDPs: 0 Tests: 1	X
pH	All	NDPs: 0 Tests: 1	X
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1	X
Sample description	All	NDPs: 0 Tests: 1	X
Total Sulphate	All	NDPs: 0 Tests: 1	X
Total Sulphur	All	NDPs: 0 Tests: 1	X

CERTIFICATE OF ANALYSIS

SDG: 230708-19 **Report Number:** 696577 **Superseded Report:**
Client Ref.: Unscreened Soil - Stockpile **Location:** Sealand Road

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28292931	UNSCREENED SOIL- STOCKPILE		Dark Brown	Sandy Clay Loam	Vegetation	None

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

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

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

CERTIFICATE OF ANALYSIS

SDG: 230708-19 **Report Number:** 696577 **Superseded Report:**
Client Ref.: Unscreened Soil - Stockpile **Location:** Sealand Road

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			UNSCREENED SOIL- STOCKPILE	.	Soil/Solid (S)	-	.	07/07/2023	230708-19	28292931	
Moisture Content Ratio (% of as received sample)	%	PM024	18 §								
Catechol	<0.01 mg/kg	TM062 (S)	<0.01 §								
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 § M								
Cresols	<0.01 mg/kg	TM062 (S)	0.0122 § M								
Resorcinol	<0.05 mg/kg	TM062 (S)	<0.05 §								
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 § M								
1-Naphthol	<0.01 mg/kg	TM062 (S)	<0.01 §								
2,3,5-Trimethylphenol	<0.01 mg/kg	TM062 (S)	<0.01 § M								
2-Isopropylphenol	<0.015 mg/kg	TM062 (S)	<0.015 § M								
Phenols, Total Detected 5 speciated	<0.06 mg/kg	TM062 (S)	<0.06 § M								
Phenols, Total Detected 8 Speciated	<0.13 mg/kg	TM062 (S)	<0.13 §								
Sulphur, Total	<0.02 %	TM132	0.0449 § #								
pH	1 pH Units	TM133	6.58 § M								
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 § M								
Cyanide, Total	<1 mg/kg	TM153	<1 § M								
Cyanide, Free	<1 mg/kg	TM153	<1 § M								
Thiocyanate	<1 mg/kg	TM153	<1 § M								
Sulphide, Easily liberated	<15 mg/kg	TM180	<15 § M								
Arsenic	<0.6 mg/kg	TM181	11.6 § M								
Cadmium	<0.02 mg/kg	TM181	0.0802 § M								
Chromium	<0.9 mg/kg	TM181	24 § M								
Copper	<1.4 mg/kg	TM181	19.3 § M								
Lead	<0.7 mg/kg	TM181	122 § M								
Mercury	<0.1 mg/kg	TM181	<0.1 § M								
Nickel	<0.2 mg/kg	TM181	20.2 § M								
Selenium	<1 mg/kg	TM181	<1 § #								
Zinc	<1.9 mg/kg	TM181	75.3 § M								
Sulphate, Total	<48 mg/kg	TM221	263 § M								
Boron, water soluble	<1 mg/kg	TM222	<1 § M								

CERTIFICATE OF ANALYSIS

SDG: 230708-19 **Report Number:** 696577 **Superseded Report:**
Client Ref.: Unscreened Soil - Stockpile **Location:** Sealand Road

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4 ♦ § @ Sample deviation (see appendix)

Customer Sample Ref.	UNSCREENED SOIL- STOCKPILE
Depth (m)	.
Sample Type	Soil/Solid (S)
Date Sampled	-
Sample Time	.
Date Received	07/07/2023
SDG Ref	230708-19
Lab Sample No.(s)	28292931
AGS Reference	

Component	LOD/Units	Method	
Naphthalene-d8 % recovery**	%	TM218	92.6 §
Acenaphthene-d10 % recovery**	%	TM218	95.2 §
Phenanthrene-d10 % recovery**	%	TM218	99 §
Chrysene-d12 % recovery**	%	TM218	81.2 §
Perylene-d12 % recovery**	%	TM218	84.2 §
Naphthalene	<9 µg/kg	TM218	<9 § M
Acenaphthylene	<12 µg/kg	TM218	<12 § M
Acenaphthene	<8 µg/kg	TM218	<8 § M
Fluorene	<10 µg/kg	TM218	<10 § M
Phenanthrene	<15 µg/kg	TM218	26.5 § M
Anthracene	<16 µg/kg	TM218	<16 § M
Fluoranthene	<17 µg/kg	TM218	86.5 § M
Pyrene	<15 µg/kg	TM218	86.8 § M
Benz(a)anthracene	<14 µg/kg	TM218	53.5 § M
Chrysene	<10 µg/kg	TM218	60.4 § M
Benzo(b)fluoranthene	<15 µg/kg	TM218	88 § M
Benzo(k)fluoranthene	<14 µg/kg	TM218	29.8 § M
Benzo(a)pyrene	<15 µg/kg	TM218	64.7 § M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	53.3 § M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 § M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	50.1 § M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	600 §

Table of Results - Appendix

Method No	Description
TM180	The Determination Of Easily Liberated Sulphide In Soil Samples by Ion Selective Electrode Technique
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM151	Determination of Hexavalent Chromium using Kone analyser
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM062 (S)	Determination of Phenols in Soils by HPLC
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM218	The determination of PAH in soil samples by GC-MS
TM222	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.

NA = not applicable.

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

CERTIFICATE OF ANALYSIS

SDG: 230708-19 **Report Number:** 696577 **Superseded Report:**
Client Ref.: Unscreened Soil - Stockpile **Location:** Sealand Road

Test Completion Dates

Lab Sample No(s)	28292931
Customer Sample Ref.	UNSCREENED SOIL - STOCKPILE
AGS Ref.	
Depth	
Type	Soil/Solid (S)
Boron Water Soluble	14-Jul-2023
Cyanide Comp/Free/Total/Thiocyanate	12-Jul-2023
Easily Liberated Sulphide	11-Jul-2023
Hexavalent Chromium (s)	13-Jul-2023
Metals in solid samples by OES	13-Jul-2023
PAH by GCMS	17-Jul-2023
pH	12-Jul-2023
Phenols by HPLC (S)	12-Jul-2023
Sample description	08-Jul-2023
Total Sulphate	13-Jul-2023
Total Sulphur	13-Jul-2023

Appendix

General

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

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

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

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

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

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

7. Results relate only to the items tested.

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

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

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

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

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

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

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

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

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

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

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

19. **Sample Deviations**

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

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

20. **Asbestos**

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

Identification of Asbestos in Bulk Materials & Soils

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

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

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

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

Respirable Fibres

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

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

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