

Sirius Geotechnical Ltd Russel House, Mill Road Langley Moor Durham DH7 8HJ

0191 378 9972 www.thesiriusgroup.com

Elliot Martindale
Partner Construction Limited
Ribble House
Mandale Business Park
Belmont Industrial Estate
Durham
DL1 1TH

Date: 19th March 2024

Our ref: C8785E/8547/GH/MG

C8785E - Stephenson Road, Peterlee - Validation of Placed Cover Soils

Plots 21 to 28 Inclusive

Introduction

Following our visit to the above site on 18th March 2024, we can confirm the following with respect to cover soils placed in Plots 21 to 28 inclusive.

Sirius Geotechnical Ltd (Sirius), has previously recommended the placement of cover soils across the development where made ground soils are present at shallow depth. The reference for the document containing those recommendations is:

Remediation Strategy and Gas Protection Verification Plan for Stephenson Road,
 Peterlee, referenced C8785, dated June 2022.

Subsequent to the issue of the above document a review of the remedial options was undertaken, following confirmation of site earthwork proposals, taking into account the constraints of the proposed development and the environmental, social and economic impacts of proposed remedial actions broadly in accordance with the guidelines provided by the SuRF UK (CL:AIRE 2020 Supplementary Reports 1 & 2). It was concluded that the provision of a 400mm thickness, including 150mm topsoil, clean cover soil capping layer was appropriate for the development in order to form a physical separation between residual made ground at the site and future site users, taking into consideration a reduction in vehicle movements, plant operation and resulting environmental and health and safety benefits and reduction in

unnecessary waste disposal. The reference for the document containing this recommendation is:

 Stephenson Road, Peterlee - Review of Remediation Options, ref. C8785C/Remediation Options Review/DCB, dated 29th April 2022.

This letter pertains to the validation, by Sirius, of the thickness and chemical suitability of cover soils placed in Plots 21 to 28 inclusive.

Site Inspection

A site visit was undertaken by a Sirius Engineer, at the request of Partner Construction, on 18th March 2024. Prior to the visit, inspection pits were excavated by Parter Construction's groundworks team, in selected rear gardens as outlined in Table 1 below in order to confirm the thickness of, and inspect the composition of, the placed cover soils.

A summary of the cover soil thickness proven is presented in Table 1 below. A selection of photographs showing the soils exposed in the inspection pits, and the general condition of the gardens, is attached.

Table 1: Summary of Cover Soil Thickness.

Plot	Required Topsoil Thickness (mm)	Required Subsoil Thickness (mm)	Required Total Thickness (mm)	Proven Topsoil Thickness (mm)	Proven Subsoil Thickness (mm)	Proven Total Thickness (mm)
21	150	250	400	200	220	420
24	150	250	400	200	200	400
28	150	250	400	220	180	400

NP: Not proven; full required thickness comprised topsoil only.

The placed topsoil was described as dark greyish brown sandy slightly gravelly organic clay with rootlets. The gravel fraction included sandstone and mudstone and occasional brick and dolomite fragments. The placed subsoil was described as a stiff locally firm reddish brown slightly sandy slightly gravelly clay. The gravel fraction included sandstone, mudstone, limestone, coal and occasional brick fragments.

These works confirm that a sufficient total thickness of texturally suitable cover soils, have been placed, as necessary, across the garden areas of Plots 21 to 28 inclusive.

Source and Chemical Suitability of Cover Soils

Topsoil

The source of the topsoil is understood to be a greenfield residential development site located at Castlefields, Esh Winning, Durham, DH7 9NQ.

A programme of testing, in accordance with YALPAG requirements, of stockpiled topsoil at Castlefields has been previously undertaken by Sirius prior to transfer of the soils to Stephenson Road. The testing confirms the topsoil is suitable for use within a clean cover system. The laboratory testing results are appended to this letter as DETS Certificate 22-05734.

A selection of transfer notes confirming the movement of the topsoil from Esh Winning to Stephenson Road are appended. Copies of the remainder of the transfer notes are held on file.

Subsoil

The source of the subsoil is understood to be a greenfield residential development site located at Lowfields, Ingleby Barwick, Stockton-on-Tees, TS15 9JT.

The subsoil was imported and placed as part of enabling earthworks during the construction phase. Validation of those works has been undertaken as part of the MMP validation process, reported under separate cover.

A programme of chemical suitability testing of the subsoil at Lowfields has been previously carried out by Ergo Ltd. That testing confirms the subsoil is suitable for reuse within a residential development. The results of this testing are presented in Ergo report reference 22-1284-SS, dated 27th June 2022, appended to this report.

A selection of transfer notes confirming the movement of the topsoil from Lowfields to Stephenson Road are appended. Copies of the remainder of the transfer notes are held on file.

Conclusion

Plots 21 to 28 inclusive are considered to have a sufficient thickness of placed cover soils, equal to the required minimum total thickness, which appears visually suitable for use in gardens. The chemical suitability of the placed soils for use in a residential garden setting has been confirmed by previous laboratory testing.

It is hoped that the above is adequate for your present needs; however, should you require any further information please do not hesitate to contact the undersigned.

Yours sincerely,



Shell Gibson
Principal Engineer

For and on behalf of Sirius Geotechnical Ltd.

Encs: Photographs

DETS certificate 22-05734 Castlefields Topsoil Testing

Ergo ref. 22-1284-SS dated 27th June 2022, Lowfields Subsoil Testing

Selected topsoil transfer notes. Selected subsoil transfer notes.

Sirius Stage 1 Threshold Concentrations for Clean Cover Material for Use in

Gardens of Private Residential Properties



01 C8785E 18.03.24 Plot 21 Overview of back garden



02 C8785E 18.03.24 Plot 21 Inspection pit



03 C8785E 18.03.24 Plot 22 Overview of back garden



04 C8785E 18.03.24 Plot 23 Overview of back garden



05 C8785E 18.03.24 Plot 24 Overview of back garden



06 C8785E 18.03.24 Plot 24 Inspection Pit



07 C8785E 18.03.24 Plot 25 Overview of back garden



08 C8785E 18.03.24 Plot 26 Overview of back garden



09 C8785E 18.03.24 Plot 27 Overview of back garden



10 C8785E 18.03.24 Plot 28 Overview of back garden



11 C8785E 18.03.24 Plot 28 Inspection Pit



Issued:

Certificate Number 22-05734

Client Sirius Geotechnical & Environmental

Russel House

Suite 2 Mill Road Langley Moor DH78HJ

Our Reference 22-05734

Client Reference C8785B

Order No 22288/C8785B/AS

Contract Title Esh Winning Topsoil Sampling

Description 9 Soil samples.

Date Received 24-Mar-22

Date Started 24-Mar-22

Date Completed 30-Mar-22

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be

reproduced except in full, without the prior written approval of the laboratory.

Approved By



Kirk Bridgewood General Manager





30-Mar-22

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Summary of Chemical Analysis Soil Samples

Our Ref 22-05734 Client Ref C8785B

Contract Title Esh Winning Topsoil Sampling

Contract fitte Esti Willining	ropson sampi	9	1 . I. NI .							
		_	Lab No		1986863	1986864	1986865	1986866	1986867	1986868
		.Sa	mple ID	TS01	TS02	TS03	TS04	TS05	TS06	TS07
			Depth							
			Other ID							
		•	ole Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			•		23/03/2022	23/03/2022	23/03/2022	23/03/2022	23/03/2022	23/03/2022
			ng Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	Method	LOD	Units							
Metals										
Arsenic	DETSC 2301#	0.2	mg/kg	8.7	7.6	9.7	7.9	8.5	8.2	8.1
Cadmium	DETSC 2301#	0.1	mg/kg	0.2	0.2	0.2	0.2	0.3	0.2	0.2
Chromium	DETSC 2301#	0.15	mg/kg	16	15	17	16	14	16	19
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	22	20	32	25	28	29	23
Lead	DETSC 2301#	0.3	mg/kg	61	51	64	53	74	64	57
Mercury	DETSC 2325#	0.05	mg/kg	0.07	0.08	0.09	0.09	0.12	0.11	0.11
Nickel	DETSC 2301#	1	mg/kg	8.0	8.7	11	10	11	11	12
Selenium	DETSC 2301#	0.5	mg/kg	1.2	1.1	0.9	0.8	0.7	0.8	1.0
Zinc	DETSC 2301#	1	mg/kg	72	53	57	53	79	67	65
Inorganics			0 0			I.	<u>I</u>			
pH	DETSC 2008#		рН	6.5	6.7	5.9	5.7	6.7	6.9	5.8
Total Organic Carbon	DETSC 2002	0.1	- %	3.5	3.1	3.7	4.6	3.7	3.8	4.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	27	34	25	32	22	40	39
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.08	0.08	0.09	0.10	0.07	0.08	0.12
PAHs	1									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	< 0.03	0.04	< 0.03
Pyrene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg		< 0.03	< 0.03	< 0.03	< 0.03	0.04	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg			< 0.03	< 0.03			
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03			< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	< 0.03		< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	< 0.03		< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303#	0.03	mg/kg		< 0.10	< 0.10	< 0.10	< 0.10		
Phenols	DE130 3303	0.1	mg/ kg	\ 0.10	\ 0.10	\ 0.10	\ 0.10	\ 0.10	· 0.10	\ U. IC
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.9	0.3	< 0.3	0.5	< 0.3	< 0.3	0.7
i nenoi - iviononyunc	DE130 2130#	0.3	my/ky	0.9	0.3	< 0.3	0.3	< 0.3	< 0.3	0.7



Summary of Chemical Analysis Soil Samples

Our Ref 22-05734 Client Ref C8785B

Contract Title Esh Winning Topsoil Sampling

9			
Lab N	Ю	1986869	1986870
.Sample	ID	TS08	TS09
Dep	th		
Other	ID		
Sample Typ	эе	SOIL	SOIL
Sampling Da	te	23/03/2022	23/03/2022
Sampling Tin	ne	n/s	n/s

Test	Method	LOD	Units		
Metals					
Arsenic	DETSC 2301#	0.2	mg/kg	7.9	7.8
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.2
Chromium	DETSC 2301#	0.15	mg/kg	16	15
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	26	20
Lead	DETSC 2301#	0.3	mg/kg	77	52
Mercury	DETSC 2325#	0.05	mg/kg	0.09	0.07
Nickel	DETSC 2301#	1	mg/kg	8.8	9.1
Selenium	DETSC 2301#	0.5	mg/kg	0.9	0.8
Zinc	DETSC 2301#	1	mg/kg	110	58
Inorganics			-	·	
рН	DETSC 2008#		рН	6.6	6.4
Total Organic Carbon	DETSC 2002	0.1	%	3.6	3.2
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	35	43
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.09	0.08
PAHs				·	
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10	< 0.10
Phenols	•		<u> </u>	<u></u>	
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.5	0.3



Summary of Asbestos Analysis Soil Samples

Our Ref 22-05734 Client Ref C8785B

Contract Title Esh Winning Topsoil Sampling

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1986862	TS01	SOIL	NAD	none	Lee Kerridge
1986863	TS02	SOIL	NAD	none	Lee Kerridge
1986864	TS03	SOIL	NAD	none	Lee Kerridge
1986865	TS04	SOIL	NAD	none	Lee Kerridge
1986866	TS05	SOIL	NAD	none	Lee Kerridge
1986867	TS06	SOIL	NAD	none	Lee Kerridge
1986868	TS07	SOIL	NAD	none	Lee Kerridge
1986869	TS08	SOIL	NAD	none	Lee Kerridge
1986870	TS09	SOIL	NAD	none	Lee Kerridge

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * not included in laboratory scope of accreditation.



Information in Support of the Analytical Results

Our Ref 22-05734 Client Ref C8785B

Contract Esh Winning Topsoil Sampling

Containers Received & Deviating Samples

		Date		Holding time exceeded for	Inappropriate container for
Lab No	Sample ID	Sampled	Containers Received	tests	tests
1986862	TS01 SOIL	23/03/22	GJ 250ml, GJ 60ml, PT 1L		
1986863	TS02 SOIL	23/03/22	GJ 250ml, GJ 60ml, PT 1L		
1986864	TS03 SOIL	23/03/22	GJ 250ml, GJ 60ml, PT 1L		
1986865	TS04 SOIL	23/03/22	GJ 250ml, GJ 60ml, PT 1L		
1986866	TS05 SOIL	23/03/22	GJ 250ml, GJ 60ml, PT 1L		
1986867	TS06 SOIL	23/03/22	GJ 250ml, GJ 60ml, PT 1L		
1986868	TS07 SOIL	23/03/22	GJ 250ml, GJ 60ml, PT 1L		
1986869	TS08 SOIL	23/03/22	GJ 250ml, GJ 60ml, PT 1L		
1986870	TS09 SOIL	23/03/22	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report



Ergo Ltd Hoults Yard Walker Road Newcastle upon Tyne NE6 2HL

0191 389 6200

info@ergoenvironmental.com http://www.ergoenvironmental.com

Ref: 22-1284-SS
Date: 27th June 2022
Nick Leat
N&T Civils Ltd
Office 25 The Old Brewery,
Castle Eden, Hartlepool,
England, TS27 4SU

BY Email

Dear Nick,

Soils Assessment – Yarm Subsoils Assessment for Export/ Reuse on Additional Residential Sites Introduction

It is understood that subsoil materials are available on the Tolent Yarm development site and that current proposals involve the potential movement of this material to other developments for use in residential gardens.

ERGO have been instructed by N&T Civils Ltd to attend the site and take samples of the stockpiled material for subsequent analysis.

The samples have been analysed to provide an assessment as to the subsequent chemical suitability of the materials for reuse in residential gardens, in line with relevant threshold values for reuse of materials within residential gardens with plant uptake.

Sampling Works

ERGO attended site on 15th June 2022 to obtain 9no. samples of subsoil which were stockpiled on the site, from locations indicated by the site manager. ERGO drawing 22-1284-001 records the approximate locations of the stockpiles and samples taken on site. Stockpiled materials comprised firm to stiff brown slightly gravelly CLAY.

Chemical testing certificates are enclosed for reference.

The suitability of the subsoil from the stockpiles for reuse has been assessed by comparing the results of the testing against the concentrations of organic and inorganic compounds with reference values published in LQM / CIEH S4UL (S4UL3747).

The results of this comparison have been summarised within Table 1.1, overleaf.

Table 1.1 Summary of Inorganic and Hydrocarbon Toxicity Assessment for a Residential End Use

DETERMINANT	UNIT	GAC	N	MC	LOC. OF EX	PATHWAY	ASSESSMENT
Asbestos Identification	-	Present	9	NFD	N/A	4	No Further Action
Arsenic	mg/kg	37	9	9.7	N/A	1	No Further Action
Cadmium	mg/kg	11	9	0.4	N/A	1	No Further Action
Chromium (VI)	mg/kg	6.1	9	<1.2	N/A	1	No Further Action
Lead	mg/kg	200	9	28	N/A	1	No Further Action
Mercury	mg/kg	11	9	<0.3	N/A	2	No Further Action
Nickel	mg/kg	180	9	53	N/A	1	No Further Action
Selenium	mg/kg	250	9	<1.0	N/A	1	No Further Action
Copper	mg/kg	2400	9	21	N/A	1	No Further Action
Zinc	mg/kg	3700	9	74	N/A	1	No Further Action
Naphthalene	mg/kg	2.3	9	<0.05	N/A	2	No Further Action
Acenaphthylene	mg/kg	170	9	<0.05	N/A	3	No Further Action
Acenaphthene	mg/kg	210	9	<0.05	N/A	1	No Further Action
Fluorene	mg/kg	170	9	<0.05	N/A	1	No Further Action
Phenanthrene	mg/kg	95	9	0.45	N/A	3	No Further Action
Anthracene	mg/kg	2400	9	<0.05	N/A	3	No Further Action
Fluoranthene	mg/kg	280	9	0.92	N/A	3	No Further Action
Pyrene	mg/kg	620	9	0.93	N/A	3	No Further Action
Benzo(a)Anthracene	mg/kg	7.2	9	0.57	N/A	3	No Further Action
Chrysene	mg/kg	15	9	0.51	N/A	3	No Further Action
Benzo(b)Fluoranthene	mg/kg	2.6	9	0.59	N/A	3	No Further Action
Benzo(k)Fluoranthene	mg/kg	77	9	0.19	N/A	3	No Further Action
Benzo(a)Pyrene	mg/kg	2.2	9	0.42	N/A	3	No Further Action
Indeno(123-cd)Pyrene	mg/kg	27	9	0.29	N/A	3	No Further Action
Dibenzo(a,h)Anthracene	mg/kg	0.24	9	<0.05	N/A	3	No Further Action
Benzo(ghi)Perylene	mg/kg	320	9	0.27	N/A	3	No Further Action
TPH C5-C6 (aliphatic)	mg/kg	42	9	<0.001	N/A	2	No Further Action
TPH C6-C8 (aliphatic)	mg/kg	100	9	<0.001	N/A	2	No Further Action
TPH C8-C10 (aliphatic)	mg/kg	27	9	<0.001	N/A	2	No Further Action
TPH C10-C12 (aromatic)	mg/kg	74	9	<1.0	N/A	2	No Further Action
TPH C12-C16 (aromatic)	mg/kg	140	9	<2.0	N/A	2	No Further Action
TPH C16-C21 (aromatic)	mg/kg	260	9	<10	N/A	1	No Further Action
TPH C21-C35 (aromatic)	mg/kg	1100	9	<10	N/A	1	No Further Action

Notes

Main Exposure Pathways: 1 = Soil Ingestion, 2 = Vapour Inhalation (indoor), 3 = Dermal Contact & Ingestion, 4 = Dust Inhalation.

Abbreviations: GAC = General Assessment Criteria, n = number of samples, MC = Maximum Concentration; Loc of Ex = Location of Exceedance; NFD = No Fibres Detected

Based on the results above, no elevated concentrations of potential contaminants of concerns have been identified within the stockpiles sampled when compared with Tier I GACs for a residential end use.

Conclusion

Chemical analysis has confirmed the material will be suitable for re-use within a residential development.



^{*} The Tier 1 GAC for the hydrocarbon fraction is derived from the CIEH assessment for petroleum hydrocarbons Criteria Working Group (CWG) for both aliphatic and aromatic compounds. ERGO has utilised the Tier 1 values for aliphatic compounds for the volatile and semi volatile fractions (C_5 - C_{12}) and the Tier 1 values for aromatic compound for the non-volatile fractions (C_{12} - C_{35}). The comparison of a total (aliphatic/aromatic) compounds to an individual fraction is considered to be a conservative approach and satisfactory for the protection of human health.

It should be noted that this report does not facilitate the importation/movement of soils between sites and any permitting/exemption etc is outside the scope of these works.

I trust this information is satisfactory to your requirements, and should I be able to be of any further assistance, please do not hesitate to contact me.

Yours sincerely,

For and on behalf of ERGO Ltd

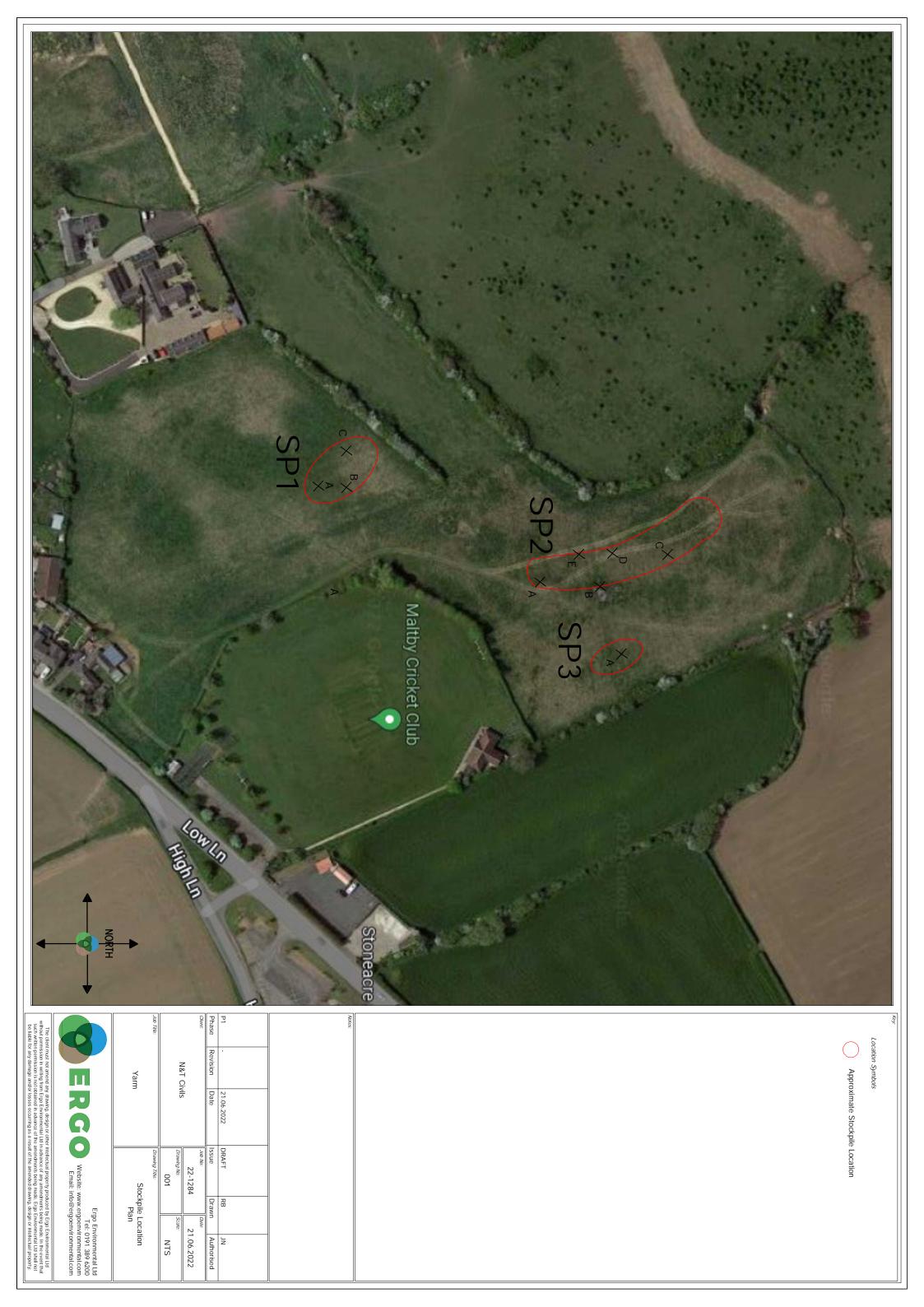


Jonathan Malley Principal Consultant



Enclosed:
Chemical Testing
ERGO Drawing 22-1284-001 Sampling Location Plan





Chemical Analysis







Alicia Becker Ergo Environmental Ltd Maling Exchange Hoults Yard Walker Rd Newcastle upon Tyne

NE6 2HL

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

t: 01923 225404 f: 01923 237404

e: reception@i2analytical.com

e: Ergo Group

Analytical Report Number: 22-65438

Project / Site name: Yarm Stockpiles Samples received on: 16/06/2022

Your job number: 22-1284 Samples instructed on/ 16/06/2022

Analysis started on:

Your order number: 1482-JC-22-1284 Analysis completed by: 23/06/2022

Report Issue Number: Report issued on: 23/06/2022

Samples Analysed: 9 soil samples

Signed:

Anna Goc

Junior Reporting Specialist

For & on behalf of i2 Analytical Ltd.

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are : soils - 4 weeks from reporting

> leachates - 2 weeks from reporting waters - 2 weeks from reporting asbestos - 6 months from reporting

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





Zinc (aqua regia extractable)

Lab Sample Number				2316776	2316777	2316778	2316779	2316780
Sample Reference Sample Number				SP1 A	SP1 B	SP1 C	SP2 A	SP2 B
*								
Depth (m)				None Supplied				
Date Sampled				15/06/2022	16/06/2022	17/06/2022	18/06/2022	19/06/2022
Time Taken			1	None Supplied				
		1	1					
Analytical Parameter	-	:						
(Soil Analysis)								
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	7.4	14	17	15
Total mass of sample received	kg	0.001	NONE	0.5	0.5	0.5	0.5	0.5
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSA	DSA	DSA	DSA	DSA
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8	8	8.1	7.5	7.8
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	180	160	850	86	100
Water Soluble SO4 16hr extraction (2:1) Water Soluble SO4 16hr extraction (2:1 Leachate	mg/kg	2.3	WICERIS					
Equivalent)	g/I	0.00125	MCERTS	0.089	0.08	0.42	0.043	0.052
Water Soluble SO4 16hr extraction (2:1 Leachate				88.5	80	424	43	52
Equivalent)	mg/l %	1.25 0.1	MCERTS MCERTS					
Organic Matter (automated)	%	0.1	MCERIS	1.1	1.1	2.1	1.5	1.6
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.45	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.92	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.93	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.57	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.51	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.59	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.19	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.42	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.29	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg mg/kg	0.05	MCERTS MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.03	WICEKTS	< 0.05	< 0.05	0.27	< 0.05	< 0.05
Total PAH	ma/ke	0.0	MCEDTS				T	1
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	5.14	< 0.80	< 0.80
Heavy Metals / Metalloids			•					
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.9	9.7	9	8.5	9.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.4	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	37	43	33	38	36
Copper (aqua regia extractable)	mg/kg	1	MCERTS	20	20	21	14	17
Lead (aqua regia extractable)	mg/kg	1	MCERTS	21	16	28	20	23
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	44	53	33	32	35
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

MCERTS





Lab Sample Number				2316776	2316777	2316778	2316779	2316780
Sample Reference				SP1	SP1	SP1	SP2	SP2
Sample Number				Α	В	С	Α	В
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				15/06/2022	16/06/2022	17/06/2022	18/06/2022	19/06/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	:							
Monoaromatics & Oxygenates	-		_	_			_	
Benzene	μg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	μg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	μg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	μg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	μg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	μg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL} TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL} TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL} TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL} TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL} TPH-CWG - Aliphatic >EC12 - EC35 _{EH_CU_1D_AL} TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL} TPH-CWG - Aliphatic >EC25 - EC44 _{EH_CU_1D_AL} TPH-CWG - Aliphatic >EC35 - EC44 _{EH_CU_1D_AL} TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU_1B_AL}	mg/kg	0.001 0.001 1 2 8 8 8.4 10	MCERTS NONE MCERTS NONE	< 0.001 < 0.001 < 0.001 < 1.0 < 2.0 < 8.0 < 8.0 < 8.4 < 10	< 0.001 < 0.001 < 0.001 < 1.0 < 2.0 < 8.0 < 8.0 < 8.4 < 10	< 0.001 < 0.001 < 0.001 < 1.0 < 2.0 < 8.0 < 8.0 < 8.4 < 10	< 0.001 < 0.001 < 0.001 < 1.0 < 2.0 < 8.0 < 8.0 < 8.4 < 10 < 10	< 0.001 < 0.001 < 0.001 < 1.0 < 2.0 < 8.0 < 8.0 < 8.4 < 10 < 10
TPH-CWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44 _{EH_CU_1D_AR}	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC44) EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

 $\label{eq:U/S} \text{U/S} = \text{Unsuitable Sample} \qquad \text{I/S} = \ \text{Insufficient Sample}$





Lab Cample Number			1	221/701	221/702	221/702	221/704
Lab Sample Number				2316781	2316782	2316783	2316784
Sample Reference				SP2	SP2	SP2	SP3
Sample Number				C	D	E	Α
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				20/06/2022	21/06/2022	22/06/2022	23/06/2022
Time Taken			1	None Supplied	None Supplied	None Supplied	None Supplied
		1	:				
Analytical Parameter	-		1.1				
(Soil Analysis)							
3.7							
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	16	17	17	13
Total mass of sample received	kg	0.001	NONE	0.5	0.5	0.5	0.5
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSA	DSA	DSA	DSA
General Inorganics							
pH - Automated	pH Units	N/A	MCERTS	8.1	8	8.1	8.4
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	26	310	55	47
Water Soluble SO4 16hr extraction (2:1 Leachate	g/kg	2.0	MOLITIO	0.040	0.17	0.000	0.004
Equivalent) Water Soluble SO4 16hr extraction (2:1 Leachate	g/I	0.00125	MCERTS	0.013	0.16	0.028	0.024
Equivalent)	mg/l	1.25	MCERTS	13	155	27.5	23.5
Organic Matter (automated)	%	0.1	MCERTS	1.2	2	1	1.1
,							
Speciated PAHs							
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.35	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.32	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
	-	-	•				
Total PAH							
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	< 0.80
	-	-	•				
Heavy Metals / Metalloids							
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.5	9.4	7.9	8.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	40	39	28	33
Copper (aqua regia extractable)	mg/kg	1	MCERTS	20	19	12	16
Lead (aqua regia extractable)	mg/kg	1	MCERTS	21	23	17	20
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	41	34	24	35
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	60	67	54	66
	_						





Lab Sample Number				2316781	2316782	2316783	2316784
Sample Reference				SP2	SP2	SP2	SP3
Sample Number				С	D	Е	Α
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				20/06/2022	21/06/2022	22/06/2022	23/06/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
		- 1					
		:					
Analytical Parameter							
(Soil Analysis)							
Monoaromatics & Oxygenates							
Benzene	μg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	μg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	μg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	μg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	μg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	μg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons TPH-CWG - Aliphatic >EC5 - EC6 HS 1D AL	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
	mg/kg	0.001	MCERTS		< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 HS_1D_AL TPH-CWG - Aliphatic >EC8 - EC10 HS 1D AL	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 HS_1D_AL TPH-CWG - Aliphatic >EC10 - EC12 EH CU 1D AL	mg/kg	1	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001 < 1.0
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL} TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aliphatic >EC12 - EC10 EH_CU_1D_AL TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 2.0 < 8.0	< 2.0 < 8.0	< 2.0 < 8.0	< 2.0 < 8.0
TPH-CWG - Aliphatic >EC10 - EC21 EH_CU_1D_AL TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44 _{EH CU 1D AL}	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35) EH CU+HS 1D AL	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (ECS - EC33) EH_CU+HS_1D_AL TPH-CWG - Aliphatic (EC5 - EC44) EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	< 10	< 10	< 10
THE STORY AMPRICATION (200 2017) EH_CU+HS_ID_AL	3 3			< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 HS 1D AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 HS 1D AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 HS 1D AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 EH CU 1D AR	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44 EH_CU_1D_AR	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC44) EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	< 10	< 10	< 10

 $\label{eq:U/S} \text{U/S} = \text{Unsuitable Sample} \qquad \text{I/S} = \ \text{Insufficient Sample}$





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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2316776	SP1	Α	None Supplied	Brown clay and loam with gravel.
2316777	SP1	В	None Supplied	Brown clay with gravel.
2316778	SP1	С	None Supplied	Brown clay and loam with gravel and vegetation.
2316779	SP2	Α	None Supplied	Brown clay.
2316780	SP2	В	None Supplied	Brown clay.
2316781	SP2	С	None Supplied	Brown clay.
2316782	SP2	D	None Supplied	Brown clay and loam with gravel and vegetation.
2316783	SP2	E	None Supplied	Brown clay and loam with gravel and vegetation.
2316784	SP3	Α	None Supplied	Brown clay and loam with gravel and vegetation.





Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES. In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.		L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

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

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

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





Water matrix abbreviations:

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

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

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



This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
SP1	Α	S	2316776	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
SP1	Α	S	2316776	b	TPHCWG (Soil)	L088/76-PL	b
SP1	В	S	2316777	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
SP1	В	S	2316777	b	TPHCWG (Soil)	L088/76-PL	b
SP1	С	S	2316778	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
SP1	С	S	2316778	b	TPHCWG (Soil)	L088/76-PL	b
SP2	Α	S	2316779	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
SP2	Α	S	2316779	b	TPHCWG (Soil)	L088/76-PL	b
SP2	В	S	2316780	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
SP2	В	S	2316780	b	TPHCWG (Soil)	L088/76-PL	b
SP2	С	S	2316781	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
SP2	С	S	2316781	b	TPHCWG (Soil)	L088/76-PL	b
SP2	D	S	2316782	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
SP2	D	S	2316782	b	TPHCWG (Soil)	L088/76-PL	b
SP2	E	S	2316783	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
SP2	E	S	2316783	b	TPHCWG (Soil)	L088/76-PL	b
SP3	Α	S	2316784	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
SP3	Α	S	2316784	b	TPHCWG (Soil)	L088/76-PL	b

buty of Care - Controlled waste / Conv 16774 NaT CIVILS Grab Wagons / Aggregates / Civils / Landscaping / Plant Hire Coronation Drive, Hartlepool, TS25 1XN Date: Tel: 01429 839 295 Registered Carrier of Waste • Reg. No. CBDU350698 We operate under 41201 / 41202 / 42110 / 42220 & 42210 Quantity Container Loose Skip Bags Packing: **General Waste** (20 02 03) **Mixed C&D** 17 09 04 Concrete 17 01 01 Brick/Hardcore 17 01 07 Non-Ferrous 16 01 18 Ferrous 16 01 17 Green Waste 20 02 01 Waste Stones & Soil/Spoil 17 05 04 Plasterboard 17 01 07 (17 08 02) Mixed Metal/Scrap 17 04 07 Timber 17 02 01 Tarmac/Planing 17 03 02 Clay 17 05 04 B, D & E Topsoil 17 05 04 By signing in section E below I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Reg 12 of the Waste (England & Wales) Regs 2011. emolition Company Name onstruction of roads nd motorways Collection Addre onstruction of residential d non-residential buildings Permit No: **Permit Holder Waste Producer Permit Exempt** Exemption No: Waste Importer Carrier Broker, Dealer **Carriage of Waste** Registered Carrier: N&T Civils Ltd. Office 30 The Old Brewery, Reg. No. Castle Eden, Durham, TS27 4SU CBDU350698 **Transferee** Recipien Compan T. Soil Address Destination Producer / Recipient Hai Print Signa Re

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Dri

All damage to property due to a request from you "the client" to leave the highway will become your responsibility. All discrepancies with material Type / Quantity or Quality should be brought to the drivers attention at the time of delivery

buty of Care - Controlled waste / Conv 16774 NaT CIV Grab Wagons / Aggregates / Civils / Landscaping / Plant Hire Coronation Drive, Hartlepool, TS25 1XN Date: Tel: 01429 839 295 Registered Carrier of Waste • Reg. No. CBDU350698 We operate under 41201 / 41202 / 42110 / 42220 & 42210 Quantity Container Loose Skip Bags Packing: **General Waste** (20 02 03) **Mixed C&D** 17 09 04 Concrete 17 01 01 Brick/Hardcore 17 01 07 Non-Ferrous 16 01 18 Ferrous 16 01 17 Green Waste 20 02 01 Waste Stones & Soil/Spoil 17 05 04 Plasterboard 17 01 07 (17 08 02) Mixed Metal/Scrap 17 04 07 Timber 17 02 01 Tarmac/Planing 17 03 02 Clay 17 05 04 B, D & E Topsoil 17 05 04 By signing in section E below I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Reg 12 of the Waste (England & Wales) Regs 2011. SIC Code or: 43.11 Demolition Company Nam 42.11 Construction of roads and motorways Collection Add 41.20 Construction of residential and non-residential buildings Permit No: **Permit Holder Waste Producer Permit Exempt** Exemption No: Waste Importer Carrier Broker, Dealer **Carriage of Waste** Registered Carrier: N&T Civils Ltd. Office 30 The Old Brewery, Reg. No. Castle Eden, Durham, TS27 4SU CBDU350698 **Transferee** Recipien Company T.Soil Address Destination Permit No Producer / Recipient Hauli Print Vehic Signa Reg

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Drive

All damage to property due to a request from you "the client" to leave the highway will become your responsibility. All discrepancies with material Type / Quantity or Quality should be brought to the drivers attention at the time of delivery

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Grab Wagons / Aggregates / Civils / Landscaping / Plant Hire

Coronation	Drive, Hartlepool, TS25 1)	(N			
Tel: 01429 Registered	839 295 Carrier of Waste • Reg. No e under 41201 / 41202 / 42	CBDU350698	210	15 03 2	_3
	Packing: Skip	Bags Coose	Container	Quantity	
A Waste	Brick/Hardcore 17 01 07 Green Waste 20 02 01	Concrete 17 0		General Waste (20 02 0 Mixed C&D 17 09 04 Non-Ferrous 16 01 18	3)
Complete	Mixed Metal/Scrap 17 04 07		17 01 07 (17 08 02)	Stones & Soll/Spoil 17	05 04
Sections B. D & E	Clay 17 05 04	Tarmac/Planin		Timber 17 02 01	
10,000	Topsoil 17 05 04	Other	••••••		
9	By signing in section E below I con 12 of the Waste (England & Wales	firm that I have fulfilled	d my duty to apply the		
	Company Name		***************************************	SIC Code	or:
	Collection Address		***************************************	42.11 Construction of roads and motorways	
東海	Y		**************	41.20 Construction of residential and non-residential building	ngs
17: or		Postcode	TS 15 - 91)	7	
	Waste Producer	Permit Holder	Permit No:		
	Waste Importer	Permit Exempt	Exemption No	o:	
	Carrier	Broker, Dealer	Broker No:		
C Transfered	Carriage of Waste Registered Carrier: N&T Civ Castle E	ils Ltd. Office 3 den, Durham, T	0 The Old Brev S27 4SU	very, Reg. No. CBDU3500	398
	Recipient		Lead		
D	Company		Lead		
Transfer/	Address:	•••••	Acorto		
Destination	Permit No				
	Producer / Recipient		Haul		
- 5	Print Nar		Vehic		
Sign	Signature		Reg		

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Grab Wagons / Aggregates / Civils / Landscaping / Plant Hire

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Coronation Drive, Hartlepool, TS25 1XN Tel: 01429 839 295 Registered Carrier of Waste • Reg. No. CBDU350698 We operate under 41201 / 41202 / 42110 / 42220 & 42210

Date	: 1	(i
15	03	23

	Packing: Skip	Bags toose	Container	Quantity
A	Brick/Hardcore 17 01 07	Concrete 17 01 01		Seneral Waste (20 02 03) Fixed C&D 17 09 04
Waste	Green Waste 20 02 01	Ferrous 16 01 17	h	Ion-Ferrous 16 01 18
Complete	Mixed Metal/Scrap 17 04 07	Plasterboard 17 0	l 07 (17 08 02)	itones & Soil/Spoil 17 05 04
Sections B. D.s.E	Clay 17 05 04	Tarmac/Planing 17	' 03 02 T	imber 17 02 01
5.552	Topsoil 17 05 04	Other		
	By signing in section E below I con 12 of the Waste (England & Wales Company Name) Regs 2011.	SIC 43.1	e hierarchy as required by Reg Code
10	Collection Address			and motorways
b)			41.2	Construction of residential and non-residential buildings
Transfer		Postcode	315-9JT	
	Waste Producer	Permit Holder		
	Waste Importer	Permit Exempt	Exemption No:	
	Carrier	Broker, Dealer	Broker No:	
C Transferee	Carriage of Waste Registered Carrier: N&T Civ Castle E	rils Ltd. Office 30 1 Eden, Durham, TS2		g, Reg. No. CBDU350698
5,231,11	Recipient			
	Compa	4	-000 ALLAN	
Transferi	Addres		^	
Destination			ALJACI	
436	Permit I	••••		`
W-1 22				
	Producer	H	laulie	
F	Print Name	\(\frac{1}{2}\)	ehicl	<u></u>
Sign	Signature	B	teg	
M.A	Date 1)river	
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Grab Wagons / Aggregates / Civils / Landscaping / Plant Hire

Tel: 01429 839 295 Registered Carrier of Waste • Reg. No. CBDU350698 We operate under 41201 / 41202 / 42110 / 42220 & 42210	03/23
Tuoming.	ntity Waste (20 02 03) &D 17 09 04
Non-Ferr	&D 17 09 04 rous 16 01 18
Mixed Metal/Scrap 17 04 07 Plasterboard 17 01 07 (17 08 02) Stones 8	& Soil/Spoil 17 05 04
Complete Sections Clay 17 05 04 Tarmac/Planing 17 03 02 Timber 1	17 02 01
B; D & E	
Company Name	or:
Waste Producer Permit Holder Permit No:	
Waste Importer Permit Exempt Exemption No:	
Carrier Broker, Dealer Broker No:	
Carriage of Waste Registered Carrier: N&T Civils Ltd. Office 30 The Old Brewery, Castle Eden, Durham, TS27 4SU	Reg. No. CBDU350698
Recipien Company Address	
Transfer/ Destination	
Permit No.	
Producer / Recipient Haulier	
Print Name Vehicle	
Signature Reg	
Date Driver .	

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12954

Grab Wagons / Aggregates / Civils / Landscaping / Plant Hire

Coronation Drive, Hartlepool, TS25 1XN

Tel: 01429 Registered	Drive, Hartiepool, 152: 339 295 Carrier of Waste • Reg under 41201 / 41202 /	. No. CBDU350698	210	Date: 15 33 23
	Packing: Skip	Bags Ltoose	Container	Quantity
A	Brick/Hardcore 17 01 0	7 Concrete 17 0	I 01 G	eneral Waste (20 02 03) lixed C&D 17 09 04
Waste	Green Waste 20 02 01	Ferrous 16 01	17 🔲 N	on-Ferrous 16 01 18
Complete	Mixed Metal/Scrap 17 0			tones & Soil/Spoil 17 05 04
Sections 8, D & E	Clay 17 05 04	Tarmac/Planin		imber 17 02 01
	Topsoil 17 05 04	Other		
B	By signing in section E below 12 of the Waste (England & V Company Name Collection Address		SIC 43.11	c hierarchy as required by Reg Code
and non-residential buildin Trainsferor Postcode TS 15—9T				
	Waste Producer	Permit Holder	Permit No:	
	Waste Importer	Permit Exempt	Exemption No:	
	Carrier	Broker, Dealer	Broker No:	
C	Carriage of Waste Registered Carrier: N&T Cas	Civils Ltd. Office 3		Reg. No. CBDU350698
D	Recipient Company		LOAD	
Transferl	Address	••••	ALIA	
Destination	Permit No s		1 10014-1	
	Producer / Recipient		Haulier	
	Print Name			<u> </u>
Signature	Signature		Vehicle	
Signatures	Date		Reg	
The second second			Driver .	

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NaT CIVILS Ltd.

12953

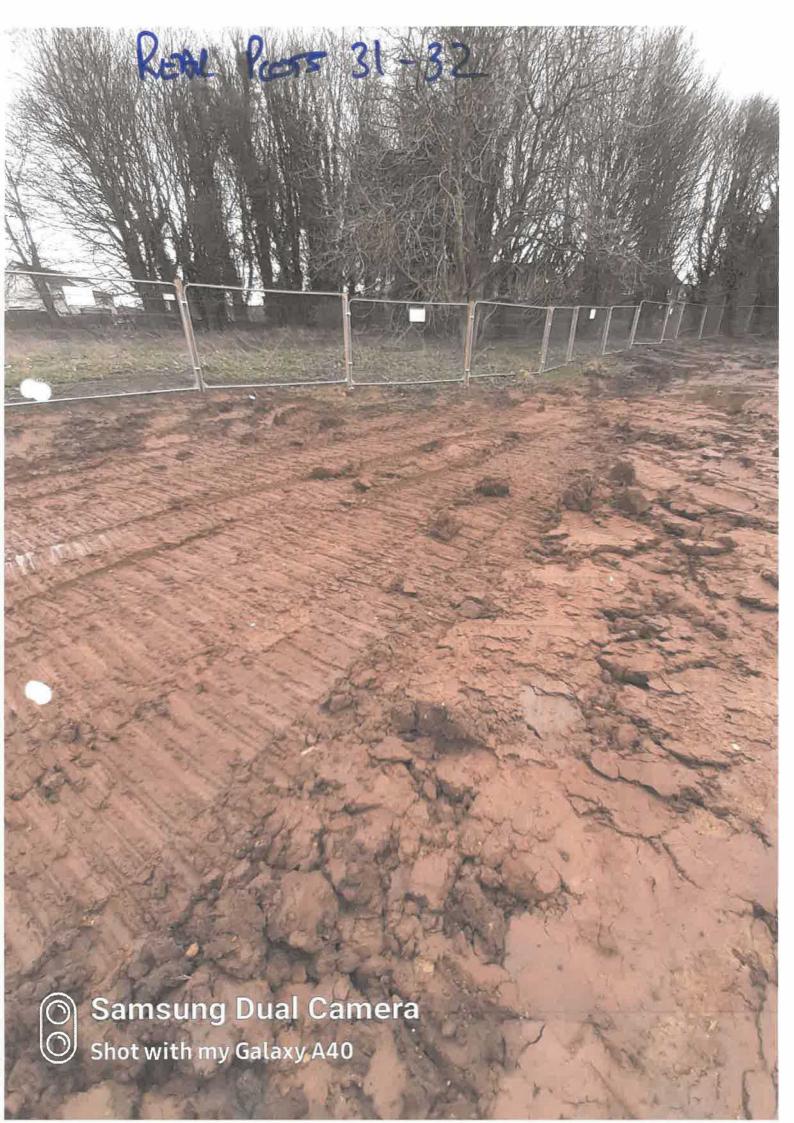
Grab Wagons / Aggregates / Civils / Landscaping / Plant Hire

Tel: 01429 8 Registered	Drive, Hartlepool, TS25 1XN 339 295 Carrier of Waste • Reg. No. CBDU350698 under 41201 / 41202 / 42110 / 42220 & 422	ī	S 03 23
	Packing: Skip Bags Coose	Container C	luantity
Waste Camplete Sections B, D & E	Tarmac/Planing	7 01 07 (17 08 02) Ston	eral Waste (20 02 03) d C&D 17 09 04 Ferrous 16 01 18 les & Soil/Spoil 17 05 04 per 17 02 01
B	By signing in section E below I confirm that I have fulfilled 12 of the Waste (England & Wales) Regs 2011. Company Name . Collection Addres ———————————————————————————————————	SIC Con 43.11 De 42.11 Co ar 41.20 Co ar TS 15 — 9 J	de
C	Carriage of Waste Registered Carrier: N&T Civils Ltd. Office 3 Castle Eden, Durham, 1	er, verrenar, gur men het eine herrieten	Reg. No. CBDU350698
D Transfer/ Destination	Recipient Company Address	LEAD	
E	Producer / Positiont Print Name Signature .	Hauli Vehic Reg . Drive	

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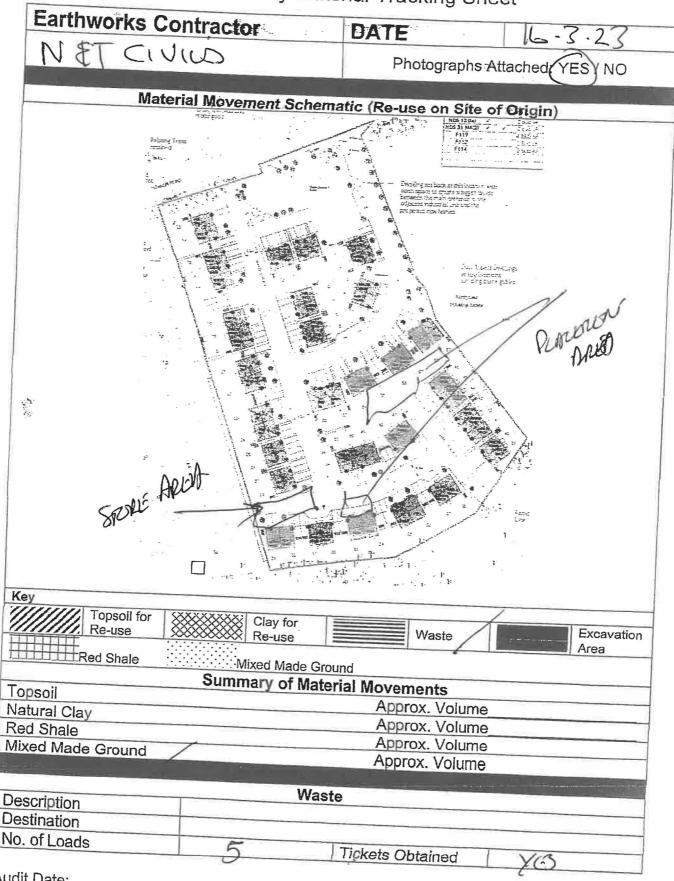
White Copy: Site - Green Copy: Invoice - Pink Copy: Retain on File



Client: Partner Construction Site: Stephenson Road, Peterlee Sirius Contract No.: C8785



MMP Daily Material Tracking Sheet



Audit Date: Comment:

Audit Undertaken by:



The Sirius Group Stage 1 Threshold Concentrations for Clean Cover Material for Use in Gardens of Private Residential Properties

Parameter	Threshold Concentration (mg/kg, unless otherwise stated)		Comment	
	1% SOM*	1% SOM 2.5% SOM 5% SOM		
Metals/Metalloids		•		
Arsenic (inorganic)		37		
Cadmium		11		Soil pH 6-9
Chromium (III)		910		
Copper		200		Based on phytotoxic effect
Lead		200		
Mercury (inorganic)		40		
Nickel		130		
Selenium		250		
Zinc		450		Based on phytotoxic effect
Other Inorganics				
pH		<5 or >9		Must be in range 5-9
Water-Soluble Sulphate		0.5 g/l		
Organics				
PAHs**				
Total 16 PAHs	100	100	100	Professional judgement
Benzo(a)pyrene	2.1	2.1	2.2	Genotoxic surrogate
Naphthalene	1.0	2.3	4.6	
TPH [†]		•		
Sum of TPH fractions EC5-35	500	500	500	Professional judgement
Aliphatic EC 5-6	24	41	68	
Aliphatic EC >6-8	53	110	210	
Aliphatic EC >8-10	13	31	61	
Aliphatic EC >10-12	62	150	300	
Aliphatic EC >12-16	510	1200	2300	
Aliphatic EC >16-35	41000	70000	90000	
Aromatic EC >5-7	53	110	200	
Aromatic EC >7-8	100	240	460	
Aromatic EC >8-10	20	48	94	
Aromatic EC >10-12	63	150	290	
Aromatic EC >12-16	140	320	570	
Aromatic EC >16-21	260	540	840	
Aromatic EC >21-35	1100	1500	1700	
TPH Hazard Index (no units)	<1	<1	<1	
BTEX [‡]				
Benzene	0.063	0.13	0.24	
Miscellaneous Organics				
Phenol	110	190	330	
Other Parameters				
Asbestos	Unsuita	able if any fibres	present	

Based on sandy soil at a range of soil organic matter contents and assuming a standard residential with gardens land use. Alternative criteria may be specified for other soil types and SOM contents, for soils placed at depth, or for other land uses.

Notes

Soils must have no visual or olfactory evidence of contamination.

^{*} Soil organic matter; %SOM = 1.724 * %TOC.

^{**} Soils must meet the specified criteria for each component AND the sum of 16 PAHs. The total is specified to prevent unsuitable materials being placed as cover. Where an individual PAH is not shown, then its criterion is greater than that for the sum or it is a genotoxic PAH assessed by using benzo(a)pyrene as a surrogate marker.

[†] Soils must meet the specified criteria for each component and the Hazard Index for TPH must be <1.0. The sum of TPH fractions must also be met to prevent unsuitable materials being placed as cover. Where an individual TPH fraction has a criterion greater than that for the sum of TPH fractions, the value is solely provided for the calculation of the Hazard Index.

[‡] Components other than benzene are not genotoxic carcinogens and therefore assessed as part of the TPH mixture.