GEOENVIRONMENTAL SUMMARY

FORMER SSI STEELWORKS, REDCAR – INITIAL GROUND INVESTIGATION WORKS

Prepared for

South Tees Site Company Ltd.

May 2018

Dunedin House Riverside
Teesdale Business Park
Stockton-on-Tees,
TS17 6BJ
GB
+44 1642 632 800

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Acronyms and Abbreviations

AOD	Above Ordnance Datum
BGS	British Geological Survey
BRE	British Research Establishment
C4SL	Category Four Screening Levels
CIRIA	Construction Industry Research and Information Association
CL:AIRE	Contaminated Land: Applications in Real Environments
EA	Environment Agency
LOD	Limit of Detection
LQM	Land Quality Management
mbgl	metres below ground level
PAH	Polyaromatic Hydrocarbons
SSI	Sahaviriya Steel Industries
STSC	South Tees Site Company Ltd
SVOC	Semi-Volatile Organic Compounds
S4UL	Suitable for Use Levels
TPH	Total Petroleum Hydrocarbons
UKAC	The United Kingdom Accreditation Service
VOC	Volatile Organic Compounds
WFD	Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015
WSR	Water Supply (Water Quality) Regulations 2016

SECTION 1

Executive Summary

A preliminary ground investigation has been carried out at various locations across the former Sahaviriya Steel Industries (SSI) steelworks, Redcar, in the knowledge that further, more detailed, ground investigations would be undertaken in due course. This report provides a summary of the findings of that investigation and a preliminary assessment of the likely constraints for future development.

The investigation comprised 292 no. trial pits between November 2016 and April 2017, covering an area designated as SSI1 (areas A to I), supplemented by 7no. cable percussion boreholes in July 2017 (areas C and D), with subsequent chemical and geotechnical testing.

Findings

Granular Made Ground deposits predominantly comprise sand and gravel-sized fragments of slag; with varying proportions of cobbles and boulder-sized fragments of slag. Locally, deposits of sand and/or gravel comprising variable proportions of coke, clinker, sinter, slag coal and breeze (coal-coke mix) have also been encountered, particularly within areas C and D. The base of the Made Ground has not been proven within areas A, B, F, H and I, but was found up to 7.8m thick in Area C. Desk study information indicates that it could be up to 10m thick in the area. Extensive evidence of solidified coal tar and other waste materials has been noted in Area C, with the trial pit logs indicating that deposits of “landfill” type material have been deposited in linear sections. Noxious odours on the southwestern boundary have also been recorded.

The **superficial deposits** underlying the Made Ground in Area C and D comprise silty to clayey sand to gravelly sand between 2.6m and 9.8m thick, extending to depths of around 8m to 12mbgl. In places, this is underlain by soft silt to sandy clay around 2m thick. These materials most likely represent the Tidal Flat Deposits. The underlying material comprises firm to stiff, locally soft to firm, sometimes laminated slightly sandy slightly gravelly clay which overlies bedrock. This material represents the glacial till of the area. Bedrock is described as mudstone, recovered as angular gravel.

Hydrocarbon impacted ground has been found within areas C and D, however, the majority of determinands do not exceed the adopted screening criteria. The US95 mean value test however, exceeds the Assessment Criteria for naphthalene and TPH Aromatic Hydrocarbons C10 to C12 and C12 to C16, with the highest concentrations in Area C. BTEX compounds have also been recorded in the trial pits where the significant TPH impact has been identified.

Leachate analysis on Made Ground in Areas C and D indicate zinc to be the primary leachate of concern, at around two orders of magnitude above the screening criteria. Whilst exceedances of Selenium, Arsenic and Manganese have also been recorded, these are generally not significantly higher than the screening criteria values. **Groundwater testing** indicates exceedances of Cyanide, Phenols including Phenol-monohydric and Zinc. Whilst Cyanide, Phenol and Zinc are three orders of magnitude above their screening criteria; Phenol-monohydric is four orders of magnitude above its screening criteria. Exceedances of Boron, Chromium, PAHs and Vinyl Chloride have also been noted, but are typically only a single order of magnitude greater than the screening criteria. When compared with the results of leachate analysis, it would appear the Zinc, and to a lesser extent Boron and PAH’s are leaching from the Made Ground in concentrations sufficient to impact groundwater.

Excluding Areas C and D, geoenvironmental testing of Made Ground indicates that the site is unlikely to be a significant source of leachate from heavy metals and other inorganics. Whilst the site does appear to contain contaminants capable of leaching at concentrations above the screening criteria, they are generally only minor exceedances, generally ranging from just above the screening criteria, in the case of zinc, or one to two orders of magnitude greater than the screening criteria, in the case of chromium.

Asbestos fibres should be anticipated throughout the **Made Ground** within the site, but that they are likely to be sporadic although it was more prevalent in Area C.

Slag examination and testing has found that most comprised blast furnace slag, however other types were also recorded. Whilst the blast furnace slag samples recorded only modest expansions, greater expansion was recorded within samples where basic steel slag was the more predominant type. Overall the results were variable, and, consequently, it cannot be discounted that materials with a higher potential for expansion may be present within the site. Due to the extent of slag, the variability of it, and the findings of specialist testing, consideration will need to be given to the re-use of slag-bearing materials and the potential impact of expansive slag. It is likely that specialist foundations will need to be considered for all buried foundations, structures and infrastructure, to mitigate expansive risks. The slag testing has reported over 2% expansion, which could lead to ground heave or damage to foundations. The larger expansion results appear to be associated with Areas E and H, where large to very large proportions of basic steel slag were identified in the sample. It is anticipated that the variability of the slag noted in the testing to date, precludes the site from being zoned for expansivity and precautions will be required throughout.

Material containing slag may be 'conditioned', by its excavation, crushing to a suitable grading and subsequent processing by long-term programme of hydrating and turning the material. This would homogenise the material, and promote the occurrence of expansive behaviours within the materials. The subsequent material could potentially be used as engineering fill, being placed and compacted in layers. It is likely that specialist foundations will be required for any large structures comprising piles designed to mitigate the effects of expansion and potentially suspended floors. Lightly loaded commercial structures may be more tolerant to movement and could be founded on rafts on re-engineered layers as described above.

Due to the **high sulphate concentrations**, specialist concrete is required for all buried concrete to prevent sulphate attack and degradation of structures. It may be more economical to dig out and replace shallow deposits with clean fill, particularly along infrastructure corridors, negating the need for sulphate-resistant concrete within these areas.

The results of **gas monitoring** within areas C and D suggest that gas protection measures are required for any future buildings. Additional monitoring is recommended before future development. Once gas monitoring has been undertaken within the other parts of the site; it is recommended that this data be reviewed with data from across the SSI1 site. Assuming a single high result is considered anomalous, the site would currently be classed as CS2, which would require passive mitigation measures such as a reinforced concrete cast in situ floor slab with a 1200g Damp Proof Membrane and underfloor venting. Further detail protection measures for industrial and commercial buildings is given in British Standard BS8485:2015.

SECTION 2

Introduction

A preliminary ground investigation has been carried out at various locations across the former Sahaviriya Steel Industries (SSI) steelworks, Redcar (reference Figure 1 and Figure 2), by South Tees Site Company Ltd (STSC), comprising machine excavated trial pits. The Exploratory Hole Location Plan, drawing reference 678079_600_003, is provided in Section 9, and covers the area referenced as SSI1. The investigation was carried out in the knowledge that further, more detailed, ground investigations would be undertaken in due course.

The trial pits were excavated by STSC and their appointed contractor, and logged and sampled by CH2M in accordance with current best practice, between November 2016 and April 2017. Samples taken were subsequently scheduled and tested at a UKAS accredited laboratory. This was supplemented in July 2017, within areas C and D only, with a combination of cable percussive and rotary cored boreholes, at the locations shown on the Exploratory Hole Location Plan. The boreholes; BH21 and BH23 to BH28 were drilled, logged and sampled by Allied Exploration and Geotechnics Limited (AEG), with CH2M supervising the investigation.

This document provides a summary of the findings from the investigations undertaken, and the numbers of exploratory holes are summarized in the table below.

Table 2-1 – Summary of ground investigation undertaken within SSI1 in 2017

SSI1 Area Reference	Trial Pits (No.)	Boreholes (No.)
A	42	0
B	12	0
C	37	4
D	44	3
E	72	0
F	14	0
H	34	0
I	37	0
Totals	**292**	**7**

The trial pit and borehole logs are provided as part of this report, and show that typically the trial pit excavations were less than 5m deep. Boreholes were extended to depths of between 15.5m and 40.3mbgl. Trial pit excavations were ceased upon water ingress or hard digging, whilst boreholes were mainly terminated once rockhead had been established. Groundwater was encountered at the shallowest depth below ground level in Area D, which is lower-lying than the remainder of the site.

Desk Studies undertaken have shown that Areas C and D were reclaimed from the estuary, and have been used as coal/coke stockpiling areas, for general bulk storage, and are therefore, assessed separately from the remainder of SSI1, which comprises areas A, B, E, F, H and I.

Copies of the trial pit logs and the 2017 ground investigation factual report are included as Appendix B.

2.1 Screening Criteria

The adopted screening criteria for the human health assessment are the Suitable for Use Levels (S4ULs), published by LQM (Doc. No.S4UL3168). The most appropriate land use scenario is considered to be “Commercial/ Industrial”, which limits exposure frequencies and receptors. Where

these are unavailable, reference has been made to the Category Four Screening levels (C4SLs) for the Commercial land use.

Leachate and groundwater values have been compared to acceptance criteria for transitional/ brackish coastal waters, outlined in the Water Framework Directive 2015 where available. Where these are unavailable, reference has been made to the Water Supply (Water Quality) Regulations 2016.

SECTION 3

Areas A, B, E, F, H and I

The area termed SSI1 is outlined in Drawing 678079_600_003. Due to the size of the site it was subdivided into eight areas; A to F, H and I; made possible by the grid-like alignment of the roads and railway tracks, and the previous land-uses.

3.1 Area A

42no. trial pits were excavated in this area, broadly on a 40m grid, to establish the uniformity of the ground conditions and inform further exploratory works. From these, 25no. samples were tested for a wide range of contaminants, along with additional contaminants associated with the known land use.

Ground conditions at the site comprise predominantly sand and gravel sized fragments of slag, although cobble and boulder sized fragments were also encountered. Groundwater was encountered in many of the excavations, which were terminated upon water ingress. The thickness of the layers of Made Ground varies throughout Area A, and in each case the base of the Made Ground has not been proven.

3.1.1 Asbestos

Of the 25no. samples tested in Area A, 3no. were found to contain asbestos. Where asbestos has been found, it has, where possible been identified and quantified. The results are presented in the following table.

Table 2.1 - Area A; Asbestos identification and quantification

Trial pit	Type	Description	Concentration
TP06 4 3.70	Chrysotile	Bundle of Chrysotile	0.047%
TP22 at 2.30	Amosite	Small bundle of Amosite	< 0.001%
TP42 at 3.90	Crocidolite	Small bundle of Crocidolite	< 0.001%

The results indicate that there is the potential for trace asbestos fibres within Area A, measurable concentrations were only found in TPA06, located in the northern side of Area A.

3.2 Area B

12no. trial pits were excavated in this area, broadly on a 30m grid, to establish the uniformity of the ground conditions and inform further exploratory works. From these 12 trial pits, 12no. samples were tested for a wide range of contaminants, along with additional contaminants associated with the known land use.

Ground conditions at the site comprise predominantly sand and gravel sized fragments of slag, clinker, brick and occasionally ash or tufa[1], although cobble and boulder sized fragments of slag and clinker were also encountered. Groundwater was encountered in many of the excavations, which were ceased upon water ingress. The thickness of the layers of Made Ground varies throughout Area B, and in each case the base of the Made Ground has not been proven.

3.2.1 Asbestos

Of the 12 no. samples of Made Ground tested from Area B, none were found to contain asbestos.

[1] white, powdery precipitates formed by the chemical reaction of atmospheric carbon dioxide and free lime (CaO) in the slag

3.3 Area E

72no. trial pits were excavated in this area, broadly on a 30m by 50m grid, to establish the uniformity of the ground conditions and inform further exploratory works. From these, 73no. samples were tested for a wide range of contaminants, along with additional contaminants associated with the known land use.

Ground conditions at the site comprise predominantly sand and gravel sized fragments of ash, slag, clinker and brick, although cobble and boulder sized fragments of slag and clinker were also encountered. Occasional the material is described as clayey, or containing pockets of clay. In a limited number of excavations, obstructions were encountered, preventing the pit from achieving its full depth. Groundwater was encountered in many of the excavations, which were terminated upon water ingress. The thickness of the layers varies throughout Area E, and in many cases the base of the Made Ground has not been proven. A concrete obstruction was encountered within one of the pits and services within two others, resulting in the pits being terminated at shallow depth.

3.3.1 Asbestos

Of the 67no. samples tested in Area E, 6no. were found to contain asbestos. Where asbestos has been found, it has, where possible been identified and quantified. The results are presented in the following table.

Table 2.2 - Area E; Asbestos identification and quantification

Trial pit	Type	Description	Concentration
TPE05 at 1.7	Amosite	Amosite present as fibre bundles	<0.001%
TPE27 at 0.2	Chrysotile	Small bundle of Chrysotile	<0.001%
TPE36 at 2.7	Chrysotile	Bundle of Chrysotile	0.006%
TPE54 at 2.8	Chrysotile	Small bundle of Chrysotile	<0.001%
TPE55 at 3.8	Chrysotile	Bundle of Chrysotile	0.005%
TPE66 at 1.5	Chrysotile	Small bundle of Chrysotile	<0.001%

3.4 Area F

14 no. trial pits were excavated in this area, broadly on a 50m grid, to establish the uniformity of the ground conditions and inform further exploratory works. From these, 16no. samples were tested for a wide range of contaminants, along with additional contaminants associated with the known land use.

Ground conditions at the site comprise predominantly sand and gravel sized fragments of slag with occasional cobble and boulder sized fragments, overlying slightly gravelly sand which included shells and beach pebbles. This material is believed to have been hydraulically placed, which means it was mechanically placed by a flowing stream of water. It therefore, constitutes Made Ground.

Groundwater was general not encountered within the excavations, which typically achieved depths of between 4m and 5mbgl. Many of the excavations were terminated due to instability of the pit sides when excavating through the hydraulically placed sand. The hydraulically placed fill is believed to be similar to the underlying natural strata and therefore it is difficult to determine whether the base of the Made Ground. Consequently, it has been assumed that the base was not encountered. The thickness of the layers is broadly consistent throughout Area 4, with deposits containing gravel and cobbles of slag around 1m to 2m thick, locally up to 4m thick, overlying the hydraulically placed fill.

3.4.1 Asbestos

Of the 12no. samples tested in Area F, none were found to contain asbestos.

3.5 Area H

34no. trial pits were excavated in this area, broadly on a 45m grid, to establish the uniformity of the ground conditions and inform further exploratory works. From these, 28no. samples were tested for a wide range of contaminants, along with additional contaminants associated with the known land use.

Ground conditions at the site comprise predominantly sand and gravel sized fragments of slag with occasional cobble and boulder sized fragments. This is often underlain by slightly sandy to sandy, slightly gravelly to gravelly clay with low cobble content, with gravel and cobbles comprising slag and suspected refractory brick. Groundwater was encountered in each of the excavations, which were terminated upon water ingress. Consequently, the pits were generally terminated between 2m and 3mbgl. Two of the pits were terminated at shallow depth due to encountering buried services.

3.5.1 Asbestos

Of the 23 no. samples tested in Area H, two were found to contain asbestos. Where asbestos has been found, it has, where possible been identified and quantified. The results are presented in the following table.

Table 2.3 - Area H; Asbestos identification and quantification

Trial pit	Type	Description	Concentration
TPH07 at 2.0	Amosite	Amosite present as fibre bundles	<0.001%
TPH11 at 1.7	Amosite	Amosite present as fibre bundles	<0.001%

3.6 Area I

37no. trial pits were excavated in this area, broadly on a 45m by 55m grid, to establish the uniformity of the ground conditions and inform further exploratory works. From these, 39no. samples were tested for a wide range of contaminants, along with additional contaminants associated with the known land use.

Ground conditions at the site comprise thin (0.5m thick typically) deposits of slightly sandy to sandy or sandy, gravelly clay overlying predominantly gravelly sand with low cobble and boulder content. Occasional deposits of sandy gravel with cobbles and boulders are also recorded. The gravel, cobbles and boulders generally comprise slag, suspected refractory brick and clinker, as well as occasional concrete, timber and metal fragments. Groundwater was encountered in a number of excavations, which were terminated upon water ingress. Consequently, the pits were generally terminated between 3.5m and 4.5mbgl. Concrete obstructions and services were encountered within some of the pits, resulting in them being terminated at shallow depth.

3.6.1 Asbestos

Of the 32no. samples tested in Area I, six were found to contain asbestos. Where asbestos has been found, it has, where possible been identified and quantified. The results are presented in the following table.

Table 2.4 - Area I; Asbestos identification and quantification

Trial pit	Type	Description	Concentration
TPI03 at 4.0	Amosite	Bundle of Amosite fibres	0.011%
TPI07 at 1.3	Chrysotile	Small bundled of Chrysotile	<0.001%
TPI09 at 3.0	Amosite Chrysotile	Amosite and Chrysotile present in microscopic fibrous asbestos debris	0.019%
TPI11 at 1.0	Amosite Chrysotile	Small bundles of Chrysotile and Amosite	0.002%

Trial pit	Type	Description	Concentration
TPI16 at 4.0	Chrysotile	Bundle of Chrysotile fibres	0.023%
TPI22 at 1.0	Amosite	Small bundle of Amosite	<0.001%

3.7 Soils

The soil concentrations have been assessed with respect to the risk to human health, for a commercial/ industrial land use. Following the CL:AIRE "Guidance on Comparing Soil Contamination Data with a Critical Concentration", 2008, the data has been assessed statistically and this is presented in the following table.

Table 2.5 - Soils Analysis

Determinand	Assessed Data Distribution	Grubbs Test (Outliers)1	No. of Samples	Range of Results	US95 (Mean Value Test) 1	GAC	US95 > GAC
Antimony	Non-Normal		104	<1.0 - 16	5.76		
Arsenic	Non-Normal	TPI29 @ 0.60 Value = 350	164	0.3 - 350	41.96	640	-
Barium	Non-Normal		104	17 - 2100	451.76		
Beryllium	Non-Normal		104	<0.2 - 7.4	3.32		
Water Soluble Boron	Non-Normal		164	0.5 - 21	5.1	240000	-
Cadmium	Non-Normal	TPE14 @ 0.30 Value = 18	164	<0.1 - 18	1.57	190	-
Chromium	Non-Normal		164	1.1 - 1300	309.56	8600	-
Chromium VI	Single Value		107	<1.0 - <1.0	0.5		
Copper	Non-Normal	TPH07 @ 2.00 Value = 670	164	0.5 - 670	60.95	68000	-
Lead	Non-Normal		164	<0.3 - 1000	120.78		
Mercury	Non-Normal	TPI07 @ 1.30 Value = 0.98 TPE28 @ 0.80 Value = 0.67	164	<0.05 - 0.98	0.1	58	-
	Non-Normal		104	<0.4 - 36	5.98		
Nickel	Non-Normal	TPH07 @ 2.00 Value = 220	164	<1.0 - 220	25.78	980	-
Vanadium	Non-Normal		104	16 - 3300	887.99	9000	-
Zinc	Non-Normal	TP01 @ 0.60 Value = 7200	164	1.6 - 7200	567.32	730000	-
Naphthalene	Non-Normal	TPE22 @ 0.50 Value = 1.6 TPF01 @ 0.70 Value = 0.89 TPF08 @ 0.20 Value = 0.57 TPE51 @ 2.00 Value = 0.54 TPI16 @ 0.70 Value = 0.48	164	<0.03 - 1.6	0.12	76.4	-
Acenaphthylene	Non-Normal	TPH24 @ 2.30 Value = 3 TP06 @ 3.70 Value = 0.53 TPB08 @ 0.30 Value = 0.31 TPH23 @ 3.40 Value = 0.3 TPE55 @ 3.80 Value = 0.25 TPF01 @ 0.70 Value = 0.19 TPF10 @ 0.20-0.60 Value = 0.18 TPF08 @ 0.20 Value = 0.17	164	<0.03 - 3	0.13	86.1	-

Determinand	Assessed Data Distribution	Grubbs Test (Outliers)1	No. of Samples	Range of Results	US95 (Mean Value Test) 1	GAC	US95 > GAC
Acenaphthene	Non-Normal	TPH23 @ 3.40 Value = 12 TPH24 @ 2.30 Value = 11 TPH07 @ 2.00 Value = 7.7 TPE22 @ 0.50 Value = 1.6 TPI12 @ 3.80 Value = 1.1 TPF01 @ 0.70 Value = 0.63 TPI09 @ 3.00 Value = 0.62 TPI13 @ 0.70 Value = 0.36 TPI22 @ 1.00 Value = 0.28	164	<0.03 - 12	0.72	57	-
Fluorene	Non-Normal	TPH23 @ 3.40 Value = 18 TPH24 @ 2.30 Value = 2.8 TP06 @ 3.70 Value = 1.5 TPI12 @ 3.80 Value = 1.4	164	<0.03 - 18	0.69	30.9	-
Phenanthrene	Non-Normal	TPH23 @ 3.40 Value = 71	164	<0.03 - 71	2.88	22000	-
Anthracene	Non-Normal	TPH23 @ 3.40 Value = 20 TP06 @ 3.70 Value = 4.7 TPH24 @ 2.30 Value = 3.8	164	<0.03 - 20	0.83	520000	-
Fluoranthene	Non-Normal	TPH23 @ 3.40 Value = 67	164	<0.03 - 67	2.89	23000	-
Pyrene	Non-Normal	TPH23 @ 3.40 Value = 50	164	<0.03 - 50	2.29	54000	-
Benzo(a)anthracene	Non-Normal	TPH23 @ 3.40 Value = 21	164	<0.03 - 21	1.05	170	-
Chrysene #M	Non-Normal	TPH23 @ 3.40 Value = 18	164	<0.03 - 18	0.91	350	-
Benzo(b)fluoranthene	Non-Normal		164	<0.03 - 13	0.83	44	-
Benzo(k)fluoranthene	Non-Normal	TPH23 @ 3.40 Value = 8.2	164	<0.03 - 8.2	0.43	1200	-
Benzo(a)pyrene	Non-Normal	TPH23 @ 3.40 Value = 17	164	<0.03 - 17	0.81	35	-
Indeno(123cd)pyrene	Non-Normal	TPH23 @ 3.40 Value = 10	164	<0.03 - 10	0.48	500	-
Dibenzo(ah)anthracene	Non-Normal	TPH23 @ 3.40 Value = 1.9 TPH11 @ 1.70 Value = 0.9 TPH21 @ 1.60 Value = 0.9 TPH33 @ 2.00 Value = 0.7 TPH27 @ 1.20 Value = 0.6 TPI09 @ 3.00 Value = 0.4 TPI22 @ 1.00 Value = 0.39 TPH05 @ 1.10-1.80 Value = 0.38	164	<0.03 - 1.9	0.13	3.5	-
Benzo(ghi)perylene	Non-Normal	TPH23 @ 3.40 Value = 7.6	164	<0.03 - 7.6	0.43	3900	-
PAH 17 Total	Non-Normal		146	<0.10 - 38	5.61		
Aliphatic >C5-C6	Non-Normal	TPI 37 @ 1.00 Value = 0.04	164	<0.01 - 0.04	0.01	304	-
Aliphatic>C6-C8	Non-Normal	TPI 37 @ 1.00 Value = 0.04 TPI 19 @ 1.00 Value = 0.03 TPI 25 @ 3.70 Value = 0.03 TPI 26 @ 2.60 Value = 0.03 TPI 33 @ 2.80 Value = 0.03 TPI 23 @ 2.20 Value = 0.02 TPI 24 @ 1.50 Value = 0.02 TPI 27 @ 1.30 Value = 0.02	164	<0.01 - 0.04	0.01	144	-

Determinand	Assessed Data Distribution	Grubbs Test (Outliers)1	No. of Samples	Range of Results	US95 (Mean Value Test) 1	GAC	US95 > GAC
Aliphatic >C8-C10	Non-Normal	TPI 24 @ 1.50 Value = 0.1 TPH24 @ 2.30 Value = 0.07 TPI 27 @ 1.30 Value = 0.06 TPI 19 @ 1.00 Value = 0.04 TPI 23 @ 2.20 Value = 0.04 TPE69 @ 3.80 Value = 0.03	164	<0.01 - 0.1	0.01	78	-
Aliphatic >C10-C12	Non-Normal	TPE69 @ 3.80 Value = 7.3 TPH07 @ 2.00 Value = 7.2 TP39 @ 0.30 Value = 3.8 TP39 @ 2.00 Value = 2 TP22 @ 0.30 Value = 1.9 TP22 @ 2.30 Value = 1.8 TP31 @ 0.60 Value = 1.8 TPI02 @ 4.00 Value = 1.7	164	<1.5 - 7.3	1.14	48	-
Aliphatic >C12-C16	Non-Normal	TPH24 @ 2.30 Value = 210 TPE69 @ 3.80 Value = 100 TPH07 @ 2.00 Value = 87 TPI16 @ 0.70 Value = 22 TPI02 @ 4.00 Value = 6.1 TPI16 @ 4.00 Value = 6	164	<1.2 - 210	10.02	24	-
Aliphatic >C16-C21	Non-Normal	TPH24 @ 2.30 Value = 1100 TPH07 @ 2.00 Value = 520 TPE69 @ 3.80 Value = 130 TPI16 @ 0.70 Value = 61 TPH33 @ 2.00 Value = 41	164	<1.5 - 1100	46.11	1600000	-
Aliphatic >C21-C35	Non-Normal	TPH07 @ 2.00 Value = 3000 TPH24 @ 2.30 Value = 740	164	<3.4 - 3000	121.62		
Aromatic >C5-EC7	Non-Normal		164	<0.01 - <0.01	0	1220	-
Aromatic >EC7-EC8	Non-Normal		164	<0.01 - <0.01	0	869	-
Aromatic >EC8-EC10	Non-Normal	TPH24 @ 2.30 Value = 0.07	164	<0.01 - 0.07	0.01	613	-
>EC10-EC12	Non-Normal	TPH23 @ 3.40 Value = 2.4	164	<0.9 - 2.4	0.51	364	-
>EC12-EC16	Non-Normal	TPH24 @ 2.30 Value = 56 TPE69 @ 3.80 Value = 28 TPF10 @ 0.20-0.60 Value = 14	164	<0.5 - 56	2.89	169	-
>EC16-EC21	Non-Normal	TPH24 @ 2.30 Value = 280	164	<0.6 - 280	13.33	28000	-
>EC21-EC35	Non-Normal		164	<1.4 - 220	23.38	28000	-

1 Based on Assessed Data Distribution

It should be noted that where slight concentrations above the laboratory detection limit have been statistically identified as outliers; whilst they have been assessed in accordance with the CL:AIRE guidance, these outliers are generally not presented in the table.

3.8 Leachate

Leachate analysis was undertaken on a number of samples of Made Ground within Area A, B, E, F, H and I, and the results have been compared to screening criteria for transitionary/brackish coastal waters, outlined in the Water Framework Directive 2015. Where screening criteria was not available reference has been made to the Water Supply (Water Quality) Regulations 2016.

Table 2.6 – Combined Area A, B, E, F, H and I; Leachate Analysis

Determinand	No. of results	units	Minimum	Maximum	Screening criteria	Exceedances
Arsenic, Dissolved	86	ug/l	<0.16	55	25 (WFD)	Yes
Barium, Dissolved	79	ug/l	1.1	200	n/a	
Beryllium, Dissolved	79	ug/l	<0.1	0.2	n/a	
Boron	77	ug/l	<12	220	1000(WSR)	No
Boron, Dissolved	24	ug/l	<12	63	1000(WSR)	No
Cadmium, Dissolved	86	ug/l	<0.03	0.56	0.2(WFD)	Yes
Chromium, Dissolved	86	ug/l	<0.25	36	0.6 (WFD)	Yes
Copper, Dissolved	86	ug/l	<0.4	16	5(WFD)	Yes
Iron, Dissolved	73	ug/l	<5.5#	600	1000	
Lead, Dissolved	86	ug/l	<0.09	2.4	14(WFD)	No
Manganese, Dissolved	79	ug/l	<0.22	35	123(bio) (WFD)	No
Mercury, Dissolved	86	ug/l	<0.01	0.17	0.07(WFD)	Yes
Nickel, Dissolved	86	ug/l	<0.5	4.4	34(WFD)	No
Selenium, Dissolved	86	ug/l	<0.25	14	10 (WSR)	Yes
Vanadium, Dissolved	79	ug/l	0.6	37	n/a	
Zinc, Dissolved	86	ug/l	<1.3	31	6.8(bio) (WFD)	Yes
pH	89	-	6.7	12.2	-	-
Cyanide Total	9	ug/l	<40#	<40	1 (WFD)	Yes
Ammoniacal Nitrogen as N	78	mg/l	<0.015	37	21	Yes
Chloride	56	mg/l	0.46	14	n/a	

- Laboratory Limits of Detection exceed current screening criteria

WFD – Water Framework Directive 2015

WSR – Water Supply (Water Quality) Regulations 2016

The results indicate that the site is unlikely to be a significant source of leachate from heavy metals and other inorganics.

Leachate analysis has not been undertaken on organic contaminants as this is inappropriate. Whilst the site does appear to contain contaminants capable of leaching at concentrations above the screening criteria, they are generally only minor exceedances. Of the samples of Made Ground tested, approximately 11% reported exceedances of Zinc. Most are just above the screening criteria, with the highest value only one order of magnitude greater than the screening criteria. Approximately 41% of the samples tested reported exceedances of Chromium. The majority are one order of magnitude greater than the screening criteria of 0.6ug/l, with the highest results, two orders of magnitude greater. With regards to Cyanide the laboratory limits of detection exceed current screening criteria, as such it is not possible to establish what the exact concentrations may be. No leachate testing has been undertaken on the natural superficial deposits, potentially encountered during the trial pitting.

SECTION 4

Areas C and D

4.1 Area C

37no. trial pits were excavated in Area C, broadly on a 50m grid and these were supplemented by 4no. cable percussive boreholes. Except for BH24; each of the boreholes was sunk through a previously excavated trial pit to minimise the risk of encountering obstructions. 31no. samples from the trial pits and 9no. samples from the boreholes were tested for a wide range of contaminants, along with additional contaminants associated with the current land use. Ground conditions at the site comprise predominantly sand and gravel sized fragments of slag, although cobble and boulder sized fragments were also encountered with extensive evidence of solidified coal tar and some waste material. The base of the Made Ground was proven within each of the boreholes, with the deposits found to be between 0.8m (BH24) and 7.8m (BH23) thick. The topography of Area C is however variable, with the thicker deposits generally associated with areas of higher ground.

Groundwater was encountered in many excavations, which were ceased upon the ingress of water. In addition, noxious gases were encountered in the southwestern part of Area C and this lead to excavations being terminated earlier. Groundwater strikes were also encountered within each of the boreholes; occurring within Made Ground and underlying superficial deposits. The superficial deposits underlying the Made Ground in Area C comprise silty to clayey sand to gravelly sand between 2.6m and 9.8m thick, extending to depths of around 8m to 12mbgl. In places, this is underlain by soft silt to sandy clay around 2m thick. These materials most likely represent the Tidal Flat Deposits. The underlying material comprises firm to stiff, locally soft to firm, sometimes laminated slightly sandy slightly gravelly clay which overlies bedrock. This material represents the glacial till of the area. Bedrock is described as mudstone, recovered as angular gravel.

4.2 Area D

44no. trial pits were excavated in Area D, broadly on a 50m grid and these were supplemented by a 2no. cable percussive boreholes, and 1no. cable percussive borehole with rotary cored follow on. Each of the boreholes was sunk through a previously excavated trial pit to minimise the risk of encountering obstructions. 39no. samples from the trial pits and 5no. samples from the boreholes, were tested for a wide range of contaminants, along with additional contaminants associated with the current land use. Ground conditions at the site comprise predominantly sand and gravel sized fragments of slag, although cobble and boulder sized fragments were also encountered with extensive evidence of solidified coal tar. The base of the Made Ground was proven within each of the boreholes, with the deposits found to be between 4m (BH26) and 6.3m (BH21) thick.

Groundwater was encountered in many excavations, which were ceased upon the ingress of water. Groundwater strikes were also encountered within each of the boreholes; occurring within both Made Ground and underlying superficial deposits. The superficial deposits beneath Area D are similar to those encountered within Area C; predominantly granular Tidal Flat Deposits, underlain by glacial till, overlying bedrock. Much more of the glacial till was noted to be laminated, including fine silt and sand partings. Within two of the three boreholes (BH21 and BH26) soft and firm to firm laminated clay to slightly sandy clay was recorded. The material is of significant thickness (2.2m to 4.2m) and occasionally contains gravel of sandstone and mudstone. Where encountered it overlies bedrock described as weakly laminated mudstone. Consequently, this is believed to represent completely weathered bedrock, rather than a recent superficial deposit.

BH26 was progressed to a depth of 40.3mbgl, 25.1m below rockhead and was found to comprise predominantly mudstone. It is described as extremely weak to very weak, laminated, dark grey, distinctly to partially weathered to residual. Some sections are described as fossiliferous and

ericaceous, interbedded with light grey siltstone. Below 34mbgl it is generally described as being un-weathered.

The thickness of the layers of Made Ground varies throughout Area C and D, and in most cases the base of the Made Ground has not been proven. Overall the depth to bedrock appears to decrease from northwest to southeast across these two areas.

4.3 Asbestos

Of the 85no. samples tested between Area C and Area D, 17no. were found to contain asbestos. Where asbestos has been found, it has, where possible been identified and quantified. The results are presented in the following table.

Table 3.1 Areas C & D; Asbestos identification and quantification

Trial Pit	Type	Description	Concentration
TPC05 at 0.30	Amosite	Small bundle of Amosite	0.003%
TPC24 at 2.60	Amosite	Small bundle of Amosite	0.003%
TPD25 at 1.70	Amosite	Small bundle of Amosite fibres	< 0.001%
TPD31 at 1.00	Amosite	Small bundle of Amosite fibres	< 0.001%
TPD41 at 1.40	Amosite	Small bundle of Amosite fibres	< 0.001%
TPC03 at 0.00-0.40	Amosite Chrysotile	Bundle of Amosite + Chrysotile fibres	0.010%
TPC06 at 1.00	Amosite Chrysotile	Microscopic loose fibrous asbestos debris & Bundles of Chrysotile and Amosite	0.086%
TPC10 at 0.10	Amosite Chrysotile	Bundle of Amosite & bundle of Chrysotile	0.004%
TPC19 at 0.30	Chrysotile	Chrysotile present as small fibre bundle	0.001%
TPC20 at 0.40	Chrysotile	Bundles of Chrysotile	0.001%
TPC30 at 2.10-2.30	Chrysotile	Chrysotile present as fibre bundles	0.001%
TPC41 at 0.80-1.10	Chrysotile	Chrysotile present as fibre bundle	0.001%
BH23 (Area C) at 3.4	Amosite Chrysotile	Bundles of Amosite and Chrysotile fibres	TBC
BH23 (Area C) 6.8	Amosite	Bundle of Amosite fibres	TBC
TPD03 at 0.30	Chrysotile	Small bundle of Chrysotile fibres	0.004%
TPD21 at 1.50	Chrysotile	Small bundles of Chrysotile fibres	0.006%
TPD43 at 1.10	Chrysotile Amosite	Bundle of Amosite + Chrysotile fibres	0.688%

The results indicated that asbestos fibres should be anticipated throughout the site but are sporadic, no single area can be identified as the source of fibres. It should be noted that the highest concentration of fibres was recoded in TPD43 at 1.1m below ground level on the southwestern boundary of Area D. The highest concentration of fibres recorded in Area C was in TPC06 at 1.0m below ground level. This area was reported to contain waste materials.

4.4 Soils

The soil concentrations for the Made Ground in Area C and D which are adjacent to each other, have been assessed with respect to the risk to human health, for a commercial/industrial land use.

Following the CL:AIRE methodology, the data has been assessed statistically and this is presented in the following table.

Table 3.2 Areas C & D soils Analysis – Made Ground

Determinand	Assessed Data Distribution	Grubbs Test (Outliers) Based On Assessed Data Distribution	No. of Samples	Range of Results	US95 (Mean Value Test) Based On Assessed Data Distribution	GAC	US95 > GAC
Antimony	Non-Normal		49	< 1.0 - 13	4.06		
Arsenic	Non-Normal		70	2.3 - 370	67.4	640	-
Barium	Non-Normal		49	20 - 960	443.6		
Beryllium	Normal		49	< 0.2 - 5.6	2.4		
Water Soluble Boron	Non-Normal		70	< 0.2 - 65	11.67	240000	-
Cadmium	Non-Normal		70	< 0.1 - 12	2.16	190	-
Chromium	Non-Normal		70	3.3 - 650	100.6	8600	-
Chromium Hexavalent	Non-Normal	TPC06 @ 1.00 Value = 4.7 TPC30 @ 1.50-2.00 Value = 1.6	48	< 1.0 - 4.7	1		
Copper	Non-Normal		70	4 - 770	146.42	68000	-
Lead	Non-Normal		70	6.5 - 280	98		
Mercury	Non-Normal		70	< 0.05 - 3.9	0.63	58	-
Molybdenum	Non-Normal		49	< 0.4 - 15	4.68	980	-
Nickel	Normal	TPC06 @ 1.00 Value = 94	70	2.3 - 94	32.42		
Vanadium	Normal		49	11 - 320	138.78	9000	-
Zinc	Non-Normal	TPC05 @ 0.30 Value = 6600	70	19 - 6600	730.82	730000	-
Naphthalene	Non-Normal	TPC20 @ 0.40 Value = 2200 TPC14 @ 0.50 Value = 580 TPC10 @ 4.50 Value = 290	70	< 0.03 - 2200	186.45	76.4	Yes
Acenaphthylene	Non-Normal	TPC20 @ 0.40 Value = 62 TPC14 @ 0.50 Value = 49 TPC10 @ 4.50 Value = 19	70	< 0.03 - 62	7.09	86.1	-
Acenaphthene	Non-Normal	TPC20 @ 0.40 Value = 75 TPC14 @ 0.50 Value = 26 TPC10 @ 4.50 Value = 9.6 TPC05 @ 0.30 Value = 5.8	70	< 0.03 - 75	6.71	57	-
Fluorene	Non-Normal	TPC20 @ 0.40 Value = 83	70	< 0.03 - 83	8.14	30.9	-
Phenanthrene	Non-Normal		70	< 0.03 - 280	25.12	22000	-
Anthracene	Non-Normal		70	< 0.03 - 32	3.82	520000	-
Fluoranthene	Non-Normal		70	< 0.03 - 50	7.59	23000	-
Pyrene	Non-Normal		70	< 0.03 - 75	10.36	54000	-
Benzo(a)anthracene	Non-Normal		70	< 0.03 - 56	5.18	170	-
Chrysene	Non-Normal	TPC20 @ 0.40 Value = 110	70	< 0.03 - 110	9.6	350	-
Benzo(b)fluoranthene	Non-Normal		70	< 0.03 - 63	5.78	44	-
Benzo(k)fluoranthene	Non-Normal		70	< 0.03 - 7.9	1.16	1200	-
Benzo(a)pyrene (when related to coal tar)	Non-Normal		70	< 0.03 - 9.6	1.37	15	-

Determinand	Assessed Data Distribution	Grubbs Test (Outliers) Based On Assessed Data Distribution	No. of Samples	Range of Results	US95 (Mean Value Test) Based On Assessed Data Distribution	GAC	US95 > GAC
Indeno(123cd)pyrene	Non-Normal		70	< 0.03 - 7.2	1.17	500	-
Dibenzo(ah)anthracene	Non-Normal	TPD14 @ 0.30-0.90 Value = 18	70	< 0.03 - 18	1.78	3.5	-
Benzo(ghi)perylene	Non-Normal		70	< 0.03 - 27	3.33	3900	-
PAH 16 Total	Non-Normal		65	< 0.10 - 3000	281.82		
>C5-C6 Aliphatic	Non-Normal	TPC10 @ 4.50 Value = 11 TPC14 @ 0.50 Value = 11	70	< 0.01 - 11	1.28	304	-
>C6-C8 Aliphatic	Non-Normal	TPC14 @ 0.50 Value = 16 TPC10 @ 4.50 Value = 7.5 TPC20 @ 0.40 Value = 2.6	70	< 0.01 - 16	1.48	144	-
>C8-C10Aliphatic	Non-Normal	TPC14 @ 0.50 Value = 23 TPC10 @ 4.50 Value = 12	70	< 0.01 - 23	2.19	78	-
>C10-C12 Aliphatic	Non-Normal	TPC10 @ 0.10 Value = 110 TPC20 @ 0.40 Value = 80 TPC05 @ 0.30 Value = 36 TPC14 @ 0.50 Value = 14 TPD07 @ 0.10 Value = 6.3	70	< 1.5 - 110	12.94	48	-
>C12-C16 Aliphatic	Non-Normal	TPC10 @ 0.10 Value = 68 TPC20 @ 0.40 Value = 62 TPC14 @ 0.50 Value = 57 TPC05 @ 0.30 Value = 29 TPD44 @ 0.70-0.90 Value = 15 TPC10 @ 4.50 Value = 14 TPD07 @ 0.10 Value = 12 TPD16 @ 0.15-0.40 Value = 7.9	70	< 1.2 - 68	11.2	24	-
>C16-C21 Aliphatic	Non-Normal	TPC05 @ 0.30 Value = 180 TPC20 @ 0.40 Value = 170 TPC10 @ 0.10 Value = 120 TPC14 @ 0.50 Value = 88 TPD44 @ 0.70-0.90 Value = 60 TPC10 @ 4.50 Value = 23 TPC06 @ 1.00 Value = 17 TPD07 @ 0.10 Value = 15 TPD16 @ 0.15-0.40 Value = 14 TPD39 @ 0.70-0.85 Value = 12	70	< 1.5 - 180	28.52	1600000	-

Determinand	Assessed Data Distribution	Grubbs Test (Outliers) Based On Assessed Data Distribution	No. of Samples	Range of Results	US95 (Mean Value Test) Based On Assessed Data Distribution	GAC	US95 > GAC
>C21-C35Aliphatic	Non-Normal	TPC05 @ 0.30 Value = 1100 TPC20 @ 0.40 Value = 410 TPC10 @ 0.10 Value = 220 TPC14 @ 0.50 Value = 190 TPC06 @ 1.00 Value = 170 TPC10 @ 4.50 Value = 57 TPD16 @ 0.15-0.40 Value = 50 TPD07 @ 0.10 Value = 44 TPD31 @ 1.00 Value = 32 TPD39 @ 0.70-0.85 Value = 27 TPD23 @ 0.90-1.40 Value = 18	70	< 3.4 - 1100	109.59		
>C5-EC7 Aromatic	Non-Normal	TPC20 @ 0.40 Value = 11 TPC10 @ 4.50 Value = 7.5	70	< 0.01 - 11	1.1	1220	-
>EC7-EC8 Aromatic	Non-Normal	TPC10 @ 4.50 Value = 23 TPC20 @ 0.40 Value = 18 TPC14 @ 0.50 Value = 8.3	70	< 0.01 - 23	2.58	869	-
>EC8-EC10 M Aromatic	Non-Normal	TPC14 @ 0.50 Value = 100 TPC10 @ 4.50 Value = 87 TPC20 @ 0.40 Value = 29	70	< 0.01 - 100	11.48	613	-
>EC10-EC12 Aromatic	Non-Normal	TPC10 @ 0.10 Value = 3900 TPC20 @ 0.40 Value = 2200 TPC14 @ 0.50 Value = 1400 TPC10 @ 4.50 Value = 330 TPC15 @ 1.00 Value = 29 TPC05 @ 0.30 Value = 4.9 TPD07 @ 0.10 Value = 2.6 TPD35 @ 0.00-0.20 Value = 1.7 TPD16 @ 0.15-0.40 Value = 1.6	70	< 0.9 - 3900	401.88	364	Yes
>EC12-EC16 Aromatic	Non-Normal	TPC10 @ 0.10 Value = 2100 TPC14 @ 0.50 Value = 1600 TPC20 @ 0.40 Value = 1200 TPC10 @ 4.50 Value = 270 TPC15 @ 1.00 Value = 25	70	< 0.5 - 2100	253.68	169	Yes

Determinand	Assessed Data Distribution	Grubbs Test (Outliers) Based On Assessed Data Distribution	No. of Samples	Range of Results	US95 (Mean Value Test) Based On Assessed Data Distribution	GAC	US95 > GAC
>EC16-EC21 Aromatic	Non-Normal	TPC10 @ 0.10 Value = 2500 TPC20 @ 0.40 Value = 1300 TPC14 @ 0.50 Value = 1100 TPC10 @ 4.50 Value = 160	70	< 0.6 - 2500	261.93	28000	-
>EC21-EC35 Aromatic	Non-Normal	TPC10 @ 0.10 Value = 5600 TPC20 @ 0.40 Value = 4300 TPC14 @ 0.50 Value = 2000	70	< 1.4 - 5600	633.38	28000	-
Phenol	Non-Normal	TPC05 @ 0.30 Value = 200 TPC16 @ 3.10 Value = 87 TPC06 @ 1.00 Value = 51	70	< 0.3 - 200	19.86	440	-

It should be noted that where slight concentrations above the laboratory detection limit have been statistically identified as outliers; whilst they have been assessed in accordance with the CL;AIRE guidance, these outliers are generally not presented in the table.

Whilst hydrocarbon impacted ground has been found within Area C and D, the majority of determinands do not exceed the adopted screening criteria with respect to human health. The US95 mean value test however, exceeds the Assessment Criteria for naphthalene and TPH Aromatic Hydrocarbons C10 to C12 and C12 to C16, with the highest concentrations, potentially outliers, recorded in TPC10, TPC14 and TCP20. The hydrocarbon impacted ground in Area C is considered to be significant. Volatile and semi- volatile organic compounds were included in the testing suite for the site and these are available on request. BTEX compounds have been recorded in the trial pits where the significant TPH impact has been recorded.

In addition to the results of the chemical testing, particular attention should be given the trial pit logs for Area C which identify “landfill” type material, solidified coal tar material and noxious odours on the southwestern boundary. The ‘landfill’ type material appears to have been deposited in linear sections. It should be noted that VOC testing in TPC38 recorded chloroform.

4.5 Leachate

Leachate analysis was undertaken on samples of Made Ground and the results are summarized in the following table.

Table 3.3 Areas C & D Leachate Analysis

Determinand	units	No. of results	Minimum	Maximum	Screening criteria	Exceedances
Heavy Metals						
Antimony, Dissolved	ug/l	3	0.49	3.7	5.0(WSR)	No
Arsenic, Dissolved	ug/l	38	0.28	52	25 (WFD)	Yes
Barium, Dissolved	ug/l	32	2	81	n/a	
Beryllium, Dissolved	ug/l	32	<0.1	<0.1	n/a	
Boron	ug/l	38	<100	5400	1000(WFD)	Yes
Cadmium, Dissolved	ug/l	38	<0.03	0.56	0.2(WFD)	Yes

Determinand	units	No. of results	Minimum	Maximum	Screening criteria	Exceedances
Chromium, Dissolved	ug/l	38	<0.25	9	32(WFD)	No
Chromium, Hexavalent	ug/l	3	<7.0	<7.0	0.6 (WFD)	No
Copper, Dissolved	ug/l	38	<0.4	15	5(WFD)	Yes
Iron, Dissolved	ug/l	35	6.1	2400	1000	
Lead, Dissolved	ug/l	38	<0.09	1.6	14(WFD)	No
Manganese, Dissolved	ug/l	35	0.55	230	123(bio) (WFD)	Yes
Mercury, Dissolved	ug/l	38	<0.01	0.08	0.07(WFD)	No
Molybdenum, Dissolved	ug/l	2	14	210	n/a	
Nickel, Dissolved	ug/l	38	<0.5	9.3	34(WFD)	No
Selenium, Dissolved	ug/l	38	<0.25	38	10(WSR)	Yes
Vanadium, Dissolved	ug/l	38	0.6	85	n/a	
Zinc, Dissolved	ug/l	38	<0.13	4800	6.8(bio) (WFD)	Yes
Inorganics						
pH	-	38	6.7	10.2	-	-
Cyanide, Total	ug/l	3	<40	<40	1	Yes
Cyanide, Free	ug/l	3	<20	<20	1	Yes
Cyanide, Complex	ug/l	3	<40	<40	1	Yes
Phenol - Monohydric	ug/l	3	<0.5	3.6	7.7(WFD)	No
Thiocyanate	ug/l	3	<40	<40	n/a	
Ammoniacal Nitrogen as N	mg/l	38	<0.015	5	21	No
Sulphate as SO_4	mg/l	3	14	40	n/a	-
Chloride	mg/l	35	1.4	25	n/a	-
- Laboratory Limits of Detection exceed the current guideline values						

The results indicate that the primary leachate concern is zinc, which appears to be two orders of magnitude above the screening criteria. Of the samples of Made Ground tested, approximately 32% reported exceedances of Zinc. Whilst exceedances of selenium, arsenic and manganese were recorded in approximately 16%, 14% and 10% of the samples tested, respectively; the exceedances are generally not significantly higher than the screening criteria values. With regards to cyanide and hexavalent chromium, the laboratory limits of detection exceed current screening criteria, as such it is not possible to establish what the exact concentrations may be. It should always be noted that the leachate preparation is typically more aggressive than the effect of infiltration. Water samples are required to establish the actual effect the leachable contaminants are having on the groundwater. It should be noted that no leachate analysis has been undertaken with respect to organic contaminants as this is inappropriate. It is anticipated that dissolved organic contaminants are likely to be present in shallow groundwater.

A single leachate test was undertaken on a sample of natural ground recovered from BH23 in Area C to give an indication of potential background levels. The results are summarised in Table 3.4 overleaf.

Table 3.4 Areas C Leachate Analysis on natural ground

Determinand	units	No. of results	Result	Screening criteria	Exceedances
Heavy Metals					
Arsenic, Dissolved	ug/l	1	7.3	25 (WFD)	No
Boron	ug/l	1	220	1000(WFD)	No
Cadmium, Dissolved	ug/l	1	0.06	0.2(WFD)	No
Chromium, Dissolved	ug/l	1	<0.25	32(WFD)	No
Copper, Dissolved	ug/l	1	<0.4	5(WFD)	No
Lead, Dissolved	ug/l	1	0.24	14(WFD)	No
Mercury, Dissolved	ug/l	1	0.04	0.07(WFD)	No
Nickel, Dissolved	ug/l	1	<0.5	34(WFD)	No
Selenium, Dissolved	ug/l	1	1.8	10(WSR)	No
Zinc, Dissolved	ug/l	1	<1.3	6.8(bio) (WFD)	Yes
Inorganics					
pH	-	1	7.8	-	-

4.6 Groundwater

Groundwater and gas monitoring standpipes were installed within each of the boreholes sunk in areas C and D as part of the July 2017 ground investigation. At the time of reporting groundwater samples have been taken from 6no. of the installations, on two separate occasions. The first round of sampling was completed between the 17th and 18th August, and the second on the 15th September 2017. The samples were tested for heavy metals, inorganics, TPH and PAH, VOCs, SVOCs and phenols. The results are summarised in the following table. Due to the number of determinants, only those results which exceed the laboratory Limits of Detection (LOD) have been listed.

Table 3.5 Areas C and D Groundwater Analysis

Determinand	No. of results	units	Minimum	Maximum	Screening criteria	Exceedances
Heavy Metals						
Arsenic, Dissolved 0	12	ug/l	2.7	44	25 (WFD)	BH24 & BH28
Boron	12	ug/l	690	21000	1000 (WSR)	BH21, BH24, BH25 & BH28
Cadmium, Dissolved	12	ug/l	<0.03	0.23	0.2(WFD)	BH23
Chromium, Dissolved	12	ug/l	0.4	15	0.6(WFD)	BH21, BH23, BH24, BH25, BH27 & BH28
Copper, Dissolved	12	ug/l	<0.4	7.8	5(WFD)	BH21
Lead, Dissolved	12	ug/l	<0.09	5.7	14(WFD)	No
Mercury, Dissolved	12	ug/l	0.02	0.08	0.07(WFD)	BH23
Nickel, Dissolved	12	ug/l	1.3	29	34(WFD)	BH28

Determinand	No. of results	units	Minimum	Maximum	Screening criteria	Exceedances
Selenium, Dissolved	12	ug/l	1.4	68	10(WSR)	BH25 & BH28
Zinc, Dissolved	12	ug/l	<1.3	7900	6.8(bio) (WFD)	BH21, BH25, BH27 & BH28
Inorganics						
pH	12	-	6.3	9.5	-	-
Cyanide, Total	12	ug/l	<40	1100	1(WFD)	BH28
Sulphate as SO_4	12	mg/l	190	1600	n/a	
Petroleum Hydrocarbons						
Aliphatic C5-C6	12	ug/l	<0.1	270	10	BH27 & BH28
Aliphatic C6-C8	12	ug/l	<0.1	900	10	BH23, BH25 & BH28
Aliphatic C8-C10	12	ug/l	<0.1	6800	10	BH23, BH27 & BH28
Aliphatic C10-C12	12	ug/l	<1	40	10	BH23
Aliphatic C12-C16	12	ug/l	<1	1.4	10	No
Aliphatic C16-C21	12	ug/l	<1	16	10	BH25
Aliphatic C21-C35	12	ug/l	<1	2.4	10	No
Aliphatic C5-C35	12	ug/l	<10	8000	10	BH23, BH25 BH27 & BH28
Aromatic C5-C7	12	ug/l	<0.1	110	10	BH23, BH25, BH28
Aromatic C7-C8	12	ug/l	<0.1	560	10	BH25 & BH28
Aromatic C8-C10	12	ug/l	<0.1	0.1	10	No
Aromatic C10-C12	12	ug/l	<1	7.5	10	No
Aromatic C12-C16	12	ug/l	<1	37	10	BH28
Aromatic C16-C21	12	ug/l	<1	1.6	10	No
Aromatic C21-C35	12	ug/l	<1	<1	10	No
Aromatic C5-C35	12	ug/l	<10	720	10	BH23, BH25 & BH28
TPH Ali/Aro Total	12	ug/l	<10	8700	10	BH23, BH25, BH27 & BH28
PAHs						
Naphthalene	12	ug/l	<0.01	20	2(WFD)	No
Acenaphthylene	12	ug/l	<0.01	1.3	0.1(WSR)	BH28
Acenaphthene	12	ug/l	<0.01	1.2	0.1(WSR)	BH23 & BH28

Determinand	No. of results	units	Minimum	Maximum	Screening criteria	Exceedances
Fluorene	12	ug/l	<0.01	1.4	0.1(WSR)	BH23, BH25 & BH28
Phenanthrene	12	ug/l	<0.01	1.9	0.1(WSR)	BH21, BH23, BH25 & BH28
Anthracene	12	ug/l	<0.01	0.29	0.1(WFD)	BH21 & BH25
Fluoranthene	12	ug/l	<0.01	0.92	0.00063(WFD)	BH21, BH23, BH25, BH27 & BH28
Pyrene	12	ug/l	<0.01	1	0.1(WSR)	BH21, BH23 & BH28
Benzo(a)anthracene	12	ug/l	<0.01	0.34	0.1(WSR)	BH21 & BH28
Chrysene	12	ug/l	<0.01	0.21	0.1(WSR)	BH21, BH23 & BH28
Benzo(b)fluoranthene	12	ug/l	<0.01	0.38	0.00017(WFD)	BH21, BH23, BH25, BH27 & BH28
Benzo(k)fluoranthene	12	ug/l	<0.01	0.17	0.00017(WFD)	BH21, BH23, BH25 & BH28
Benzo(a)pyrene	12	ug/l	<0.01	0.34	0.00017(WFD)	BH21, BH23, BH25, BH27 & BH28
Indeno(1,2,3-c,d)pyrene	12	ug/l	<0.01	0.2	n/a	No
Dibenzo(a,h)anthracene	12	ug/l	<0.01	0.02	0.1(WSR)	No
Benzo(g,h,i)perylene	12	ug/l	<0.01	0.21	0.00017(WFD)	BH21, BH23, BH25, BH27 & BH28
PAH Total	12	ug/l	<0.04	21	-	-
Phenols						
Phenol – Monohydric	12 4	ug/l	<100	17000	7.7 (WFD)	BH28
VOCs						
Vinyl Chloride	12	ug/l	<1	2	0.5 (WSR)	BH25
1,1-dichloroethane	12	ug/l	<1	2	-	
Benzene	12	ug/l	<1	22	8(WFD)	BH25, BH27 & BH28
1,2-dichloroethane	12	ug/l	<1	2	10(WFD)	No
1,2-dichloropropane	12	ug/l	<1	9	-	
Toluene	12	ug/l	<1	10	74 (WFD)	No
Ethylbenzene	12	ug/l	<1	2	-	
Isopropylbenzene	12	ug/l	<1	17	-	

Determinand	No. of results	units	Minimum	Maximum	Screening criteria	Exceedances
MTBE	12	ug/l	<1	3	-	
SVOCs						
Phenol	12	ug/l	<1	1000	7.7(WFD)	BH28
2-Methylphenol	12	ug/l	<1	24	-	
3&4-Methylphenol	12	ug/l	<1	300	-	
2,4-Dimethylphenol	12	ug/l	<1	23	-	
Diethylphthalate	12	ug/l	<1	1.4	-	
Bis(2-ethylhexyl)phthalate	12	ug/l	<1	3.8	-	

Notes

WFD – Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015

WSR – Water Supply (Water Quality) Regulations 2016

LOD - Limits of Detection exceed current guideline values

The results indicate that the primary contaminants of concern are cyanide, fluoranthene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene, phenols including monohydric phenol, and zinc. Whilst cyanide, fluoranthene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene, phenol and zinc are three orders of magnitude above their screening criteria; phenol-monohydric is four orders of magnitude above its screening criteria.

Exceedances of boron, benzene, chromium, PAHs, TPHs and vinyl chloride are also noted, and are typically 1 to 2 orders of magnitude above their screening criteria. Although the exceedances are not limited to BH28, the highest concentrations are typically noted in that borehole. Exceedances of arsenic, cadmium copper, mercury, nickel, selenium, anthracene, benzo(a)anthracene, chrysene and some TPHs are also noted, but are generally only slightly above their screening criteria. These exceedances are often only associated with a single result, and are not limited to a single borehole.

Leachate testing reported exceedances of zinc, whilst the results for cyanide and monohydric phenol were below current screening criteria. Exceedances and Boron and some PAHs were also recorded. The results of the water sampling would suggest that zinc, and to a lesser extent boron and PAHs are leaching from the Made Ground in concentrations sufficient to impact groundwater.

SECTION 5

Slag Testing

5.1 Petrography

Analysis of 31no. samples of Made Ground, which were visually identified as containing slag, has been undertaken in SSI1, to give a preliminary indication of the types of slag present, and its potential for volumetric instability. The testing was undertaken by Thomas Research Services (TRS), a specialist slag testing laboratory. 26no. of samples were found to contain “large” or “very large” amounts of blast furnace slag, with 5no. samples containing “medium” amounts of blast furnace slag, and 6no. of samples contained “small” to “very small” amounts of blast furnace slag.

21no. of the samples were recorded to contain basic steel slag, fourteen of which contained “small” to “very small” amounts, 2no. samples recorded “medium” amounts to be present (TRS references: BG8B19 and BG7F0114), and 5no. samples recorded “Very Large” to “large” amounts (TRS references: BG7F13, BG8B07, BG8B15, BG8B17 and BG8B18).

Of the samples that recorded no basic steel slag, the majority of the samples recorded large or very large quantities of blast furnace slag, with the exception of BG8B13 which contained a “medium” amount of blast furnace slag.

Refractory materials, which can give rise to significant volumetric changes (expansion) were seen in “small” to “very small” quantities in four of the samples; TPD44 at 0.5mbgl, TPI36 at 2.0mbgl, TPE59 at 3.5mbgl and TPH12 at 1.0mbgl (TRS sample references BG7F08, BG7F14, BG815 and BG818, respectively).

The petrology tests are summarised in Table 4.1, with full details given in Appendix A.

Table 5-1 – summary of petrology testing of slag

TRS reference	Sample location	Depth	Amount Present																Further testing?
			Blast Furnace Slag	Basic Steel Slag	Basic Refractories	Quantity of other constituents' present													
						ASB	Q	AS	CS	SC	MRS	F	LD	IIS	SCA	C	CC	CMC	UPC
BG7F01	TP22	1.5m	L	-	-		S	-			VS	-		-	-	S	VS	S	VS	Yes
BG7F02	TP26	2.0m	L	-	-		VS	-			VS	-		-	-	VS	-	S	-	
BG7F03	TP41	0.2m	L	S	-		VS	-			VS	-		-	-	VS	-	S	-	
BG7F04	TPC23	0.3m	I	S	-		VS	-			VS	M		-	-	S	-	S	-	
BG7F05	TPD10	0.5m	L	-	-		-	-			VS	VS		-	VS	VS	-	S	-	
BG7F06	TPD32	1.3m	L	-	-		VS	-			-	-		VS	VS	VS	-	S	-	Yes
BG7F07	TPD33	1.0m	I	-	-		S	S			VS	-		-	S	S	VS	S	VS	
BG7F08	TPD44	0.5m	L	-	VS		VS	-			VS	-		VS	VS	VS	VS	S	-	
BG7F09	TPE09	1.0m	L	-	-		-	-			VS	-		-	-	VS	-	S	-	
BG7F10	TPE11	1.7m	L	-	-		S	-			VS	-		S	S	S	VS	S	-	Yes
BG7F11	TPE31	3.6m	L	-	-		M	-			VS	-		VS	S	VS	-	S	-	Yes
BG7F12	TPE46	0.3m	L	-	-		VS	-			VS	-		-	-	VS	-	S	-	Yes
BG7F13	TPE76	2.1m	S	L	-		S	-			VS	S		VS	-	S	VS	S	-	Yes
BG7F14	TPI36	2.0m	I	M	VS		-	M			S	-		VS	-	VS	VS	S	-	Yes
BG8B08	TP13	2.4m	I	S	-	-	S	VS	-	S	S	VS	-	S	S	S	VS	M	-	Yes
BG8B09	TPB02	0.3m	I	S	-	-	M	-	-	-	S	VS	-	M	S	VS	-	M	-	Yes
BG8B010	TPB03	2.8m	I	S	-	-	S	VS	-	S	S	VS	-	M	S	S	-	M	-	
BG8B11	TPB08	1.7m	I	VS	-	-	S	VS	-	S	S	VS	-	S	S	S	-	M	-	Yes

TRS reference	Sample location	Depth	Amount Present																Further testing?
			Blast Furnace Slag	Basic Steel Slag	Basic Refractories	Quantity of other constituents' present													
						ASB	Q	AS	CS	SC	MRS	F	LD	IIS	SCA	C	CC	CMC	UPC	
BG8B12	TPD34	0.2m	L	-	-	-	VS	-	-	VS	VS	-	-	VS	VS	VS	-	S	-	Yes
BG8B13	TPE05	0.5m	M	-	-	S	M	-	-	S	-	VS	M	I	S	S	-	S	-	Yes
BG8B14	TPE20	0.5m	M	S	-	-	M	-	-	S	-	VS	S	S	S	S	S	S	-	
BG8B15	TPE59	3.5m	M	I	VS	-	M	S	-	S	-	-	-	S	-	S	-	M	-	Yes
BG8B16	TPF04	0.7m	S	VS	-	-	M	-	-	-	-	-	S	M	S	I	S	M	-	
BG8B17	TPH08	1.2m	M	I	-	-	M	-	-	-	-	-	-	S	S	S	S	S	-	Yes
BG8B18	TPH12	1.0m	S	I	S	-	M	-	-	-	-	M	VS	S	M	S	-	M	-	Yes
BG8B19	TPH27	1.8m	S	M	-	S	M	-	-	-	-	VS	-	S	S	S	-	M	-	Yes
BG8B20	TPH30	1.8m	VS	S	-	-	L	-	-	-	-	-	-	VS	VS	VS	VS	S	-	
BG8B21	TPI03	3.4m	V	S	-	S	I	-	-	-	-	VS	-	VS	I	VS	VS	S	-	
BG8B22	TPI19	3.4m	M	S	-	S	M	-	-	-	-	VS	-	S	M	S	S	M	-	Yes
BG8B23	TPI25	2.7m	I	VS	-	-	S	-	-	-S	-	-	-	S	M	S	VS	S	-	Yes
BG8B24	TPI33	3.3m	L	S	-	S	M	-	VS	-	-	-	-	S	-	S	-	S	-	Yes

Key

L	Very large amount	ASB	Alumino-silicate brick	MRS	Metal, rust and scale	C	Coke
I	Large amount	Q	Quartz, sandstone, etc	F	Fume	CC	Coal and Charcoal
M	Medium amount	AS	Acid steel slag	LD	Limestone & dolomite	CMC	Cementitious Material Clay
S	Small amount	CS	Cindery slag	IIS	Iron ore, Ironstone, Sinter etc	UPC	Used Portland Cement
VS	Very small amount	SC	Siliceous clinker	SCA	Shale, clay and ash		Not reported

5.2 Expansion testing

Accelerated Expansion Testing was undertaken on 19no. samples. Samples which were predominantly Blast Furnace slag were tested for 14 days, those which contained a significant proportion of Basic Steel slag were tested for 28 days.

Most of the blast furnace slag samples recorded only modest expansions, the exceptions being TP22 at 1.5mbgl and TPB02 at 0.3mbgl (TRS sample references BG7F01 and BG8B09, respectively), which recorded 0.34% and 0.3%, respectively at 14 days.

The sample taken from TPE76 at 2.1mbgl (TRS sample references BG7F13), which was found to be predominantly basic steel slag, recorded 1.55 % at 28 days. Similarly, high values were also recorded within samples where the proportion of basic steel slag was greater than blast furnace slag. These include TPE59 (1.01%), TPH08 (1.13%), TPH12 (2.5%) and TPH27 (0.8%) (TRS sample references; BG8B15 and BG8B17 to 19).

The sample from TPI36 at 2.0mbgl (TRS sample reference BG7F14), which was found to be mixed slag, reached 0.36 % at 28 days. The results of the expansion tests are listed in Table 4.2 below.

Table 4.2 Sitewide slag testing results (Accelerated Expansion Test)

TRS reference	Sample location	Depth	Test progress			
			7 day (%)	14 day (%)	21 day (%)	28 day (%)
BG7F01	TP22	1.5m	0.22	0.34	-	-
BG7F06	TPD32	1.3m	0.01	0.03	-	-
BG7F10	TPE11	1.7m	0	0	-	-
BG7F11	TPE31	3.6m	0	0	-	-
BG7F12	TPE46	0.3m	0.01	0.02	-	-
BG7F13	TPE76	2.1m	0.72	1.05	1.39	1.55
BG7F14	TPI36	2.0m	0.22	0.31	0.34	0.36
BG8B08	TP13	2.4m	0.1	0.13	-	-
BG8B09	TPB02	0.3m	0.17	0.3	-	-
BG8B11	TPB08	1.7m	0.08	0.11	-	-
BG8B12	TPD34	0.2m	0.00	0.01	-	-
BG8B13	TPE05	0.5m	0.05	0.07	-	-
BG8B15	TPE59	3.5m	0.56	0.75	0.90	1.01
BG8B17	TPH08	1.2m	0.49	0.84	1.03	1.13
BG8B18	TPH12	1.0m	0.96	1.46	1.84	2.05
BG8B19	TPH27	1.8m	0.22	0.41	0.61	0.80
BG8B22	TPI09	3.4m	0.15	0.18	-	-
BG8B23	TPI25	2.7m	0.08	0.11	-	-
BG8B24	TPI33	3.3m	0.04	0.04	-	-

The results of the slag testing have shown that the results were variable. Whilst, thermal analysis has indicated some evidence of past expansion of the blast furnace slag, further expansion and the presence of materials with a higher potential for expansion may be present.

Due consideration should be given to the re-use of slag-bearing material, to mitigate the risk of expansive reactions causing disruption to foundations and to structures and services buried in the ground, and to the formation tufa deposits in water courses.

SECTION 6

Gas

6.1 Monitoring

Gas monitoring was undertaken in standpipes which were installed in boreholes BH21, and BH23 to BH28. Single installations had been fitted to boreholes BH21, 24, 26 and 27, and dual installations fitted to boreholes BH23, 25 and 28, Monitoring was undertaken on four occasions, between 17th/18th August 2017 and 30th January 2018.

6.1.1 Methane

Methane was reported at below the detection limit (<0.1%) for the first three rounds of monitoring undertaken for boreholes BH21 and 23, and for all four rounds of monitoring in BH24. On the fourth round, both peak (P) and steady (S) concentrations of 0.2% were recorded in BH21, whilst a peak concentration of 0.4% was recorded within both installations in BH23. In both situations in BH23, (i.e. where methane was recorded above and below detection limit) the flow rate was recorded to be <0.1%.

Boreholes BH26, BH27, BH28 (shallow installation) and BH25 (deeper installation) generally reported methane concentrations slightly above the detection limit (up to 0.7%). However, during the fourth round of monitoring significantly greater concentrations were reported in BH26 and the shallow installation of BH28. In BH26 a peak concentration of 17.9% and a steady concentration of 17.1% were reported in January 2018, with a peak of 65.2% and steady concentration of 64.9% recorded in the shallow installation of BH28. Whilst the preceding measurements are significantly lower, no appreciable flow is associated with these values.

Significant concentrations of methane were consistently reported from the deeper installation in BH28, where peak and steady concentrations varied between 16.4 and 19% over all four monitoring events, with a maximum peak concentration of 25.7% recorded on 30th January 2018. The highest steady concentration of 19% was recorded on 31st August 2017. An apparently anomalous reading was reported from the shallower installation at BH25, where a concentration (steady and peak) of 36% was reported on 15th September 2017. This is inconsistent with the two previous and the subsequent, monitoring results which reported low concentrations, between 0.1 and 0.9%.

Table 5.1 summarises where concentrations were recorded which exceed the limits of detection for methane.

Table 6.1 – Summary of methane results

Borehole	Depth of installation	Date	Methane % v/v	
			Peak concentration	Steady concentration
BH21	9.8m – 11.8m	30/01/18	0.2	0.2
BH23	5m - 7m	30/01/18	0.4	0.1
	9m - 12m	30/01/18	0.4	<0.1
BH25	4m - 5m	18/08/17	0.4	0.4
		31/08/17	0.9	0.9
		15/09/17	36	36
		30/01/18	0.1	0.1
	7m - 9m	18/08/17	0.1	0.1
		31/08/17	0.1	0.1
		15/09/17	0.1	0.1
		30/01/18	0.2	0.1
BH26	6.5m - 8.5m	18/08/17	0.4	0.4
		31/08/17	0.7	0.7
		15/09/17	0.3	0.3
		30/01/18	17.9	17.1
BH27	5m - 11m	18/08/17	0.2	0.2
		31/08/17	0.1	0.1
		15/09/17	0.4	0.4
		30/01/18	0.2	<0.1
BH28	8m - 7m	18/08/17	0.1	0.1
		15/09/17	0.2	0.2
		30/01/18	65.2	64.9
	9.5m - 11.5m	18/08/17	17.1	17.7
		31/08/17	19	19
		15/09/17	16.4	16.4
		30/01/18	25.7	17.8

6.1.2 Carbon dioxide

Carbon dioxide was reported at or below detection limits for the first three rounds of monitoring in boreholes BH21, BH27 and the deeper installation within BH25, with slightly higher peak concentrations recorded during the fourth round of between 0.2 and 0.3%. In BH24 carbon dioxide was reported to be below the detection limits for the first two rounds of monitoring, with the subsequent rounds recording values of up to 0.6%.

Carbon dioxide was also encountered in the remaining installations, with the highest concentrations reported in the deeper installation at BH28 with steady concentrations between 5.8 to 9.9%, with the highest peak concentration of 16.8% recorded on 30th January 2018.

Notably, concentrations within the shallower installation in BH28 were recorded below the detection limit; except on the fourth round of monitoring, where peak of 22.4% and a steady concentration of 22% were recorded. Concentrations of up to 2.1% were reported in the shallow installation in borehole BH23, and of up to 0.8% within the deeper installation; with concentrations of up to 5.2% recorded within the shallow installation in BH25. Within BH26, concentrations of up to 4.5% have been recorded.

Table 5.2 summarises where concentrations were recorded to exceed the limits of detection for carbon dioxide.

Table 6.2 – Summary of carbon dioxide results

Borehole	Depth of installation	Date	Carbon dioxide % v/v	
			Peak concentration	Steady concentration
BH21	9.8m – 11.8m	30/01/18	0.2	0.1
BH23	5m - 7m	30/01/18	0.1	0.1
		15/09/17	0.2	0.2
		30/01/18	21.	2
	9m - 12m	18/08/17	0.6	0.6
		31/08/17	0.4	0.4
		15/09/17	0.6	0.6
		30/01/18	0.8	0.4
BH24	1m - 2m	15/09/17	0.6	0.6
		30/01/18	0.4	0.2
BH25	4m - 5m	18/08/17	0.3	0.3
		31/08/17	3.1	3.1
		15/09/17	5.2	5.2
		30/01/18	0.2	0.2
	7m - 9m	30/01/18	0.3	0.2
BH26	6.5m - 8.5m	18/08/17	0.8	0.8
		31/08/17	0.8	0.8
		15/09/17	1.2	1.2
		30/01/18	4.5	4.2
BH27	5m - 11m	18/08/17	0.2	0.2
		31/08/17	0.1	0.1
		15/09/17	0.4	0.4
		30/01/18	0.2	<0.1
BH28	8m - 7m	30/01/18	22.4	22
	9.5m - 11.5m	18/08/17	7.8	7.8
		31/08/17	6.6	6.6
		15/09/17	5.8	5.8
		30/01/18	16.8	9.9

6.1.3 Hydrogen sulphide and carbon monoxide

Generally, hydrogen sulphide concentrations have been reported below the limits of detection, except for on two occasions. On 30th January 2018 BH26 recorded 21ppm, with a concentration of 203ppm and a sulphurous odour noted in the shallower installation in BH28.

Carbon monoxide concentrations are recorded to be below the limits of detection for all four rounds of monitoring for boreholes BH21 and BH23, and the deeper installation of BH25. Elsewhere concentrations of up to 10ppm are recorded.

6.1.4 Flow rates

Negligible flow rates were reported from installations BH21, 23, 24, 26, 27, 28 and the deeper installation within BH25. However, a significant flow of 26l/hr was reported from the shallow installation fitted to borehole BH25 on 15 September 2017. As with the methane monitoring from the same location, this is inconsistent with the other results and is considered to be anomalous.

The gas monitoring results have been assessed following guidance in BS8485:2015 and are summarised in Table 5.3. Gas screening values (GSV) have been derived for methane and carbon dioxide.

Table 5.3: Summary gas monitoring data

Borehole	Flow rate (l/hr)	Methane		Carbon Dioxide		Max Hydrogen Sulphide (ppm)	Max Carbon monoxide (ppm)
		Max Concentration (%)	GSV (l/hr)	Max Concentration (%)	GSV (l/h)		
BH21	-0.2	0.2	0.0004~	0.1	0.0004~	<0.1	<0.1
BH23 (S)	0.2	0.4	0.0008	2	0.004	<0.1	<0.1
BH23 (D)	0	0.4	0	0.8	0	<0.1	<0.1
BH24	0.1	<0.1	0.0001	0.6	0.0006	<0.1	9
BH25 (S)	26* [-0.9]	36* [0.9]	9.36^ [0.0081]	5.2	1.352^ (0.0468~)	<0.1	3
BH25 (D)	-0.1	0.2	0.0002~	0.2	0.0003~	<0.1	<0.1
BH26	0.2	17.1 (17.9)	0.0342	4.2 (4.5)	0.0084	21	3
BH27	0.4	0.4	0.0016	0.1 (0.3)	0.0004	<0.1	10
BH28 (S)	0.2	64.9 (65.2)	0.1304 (0.1298)	22 (22.4)	0.044	203	10
BH28 (D)	0	19 (25.7)	0	9.9 (16.8)	0	<0.1	8
Minimum value		<0.1	0	0.1	0	<0.1	<0.1
Maximum value		64.9	0.1298#	22	0.0468	203	10

* Result considered likely to be erroneous (based on previous monitoring results)
~ - Assumes that an equivalent positive flow may be generated
^ Based on 15 September results # Disregarding 15 September results
[0.9] Highest value, if disregarding the erroneous result
(17.9) Where highest peak flow concentration exceeds steady flow concentration

The results have been assessed against Table 2 in BS8485:2015; the results generally show that, once the results for BH25 from 15th September and BH28 from 30th January are disregarded due to the data appearing to be anomalous, the site is classified as Characteristic Situation 1 (CS1). This is mainly driven by the absence of significant flow rates, which if included give a maximum Characteristic Situation 4 (CS4). The high methane concentrations detected in BH28 are considered valid in contrast to BH25 and BH28. Furthermore, the monitoring was undertaken during periods of high atmospheric pressure (>1000mb); and given that methane concentrations in excess of 1% (BH26 and BH28 (both installation)) and carbon dioxide concentrations in excess of 5% (BH25

(shallow installation) and BH28 (both installations)) were also observed, it is recommended that the site's classifications should be advanced to CS2. Further monitoring should be undertaken, including during times of low barometric pressure (<1000mb), and during periods of falling barometric pressure, particularly in BH28.

6.2 Protection measures

Assuming the single high result is anomalous, BS8485:2015 classifies the site as CS2 and advocates, the following protection measures:

- Reinforced concrete cast in situ floor slab (suspended, non-suspended or raft) with at least 1200g DPM and passive underfloor venting.
- Beam and block or pre-cast concrete and 2000 g DPM/reinforced gas membrane and passive underfloor venting.
- Possibly underfloor venting or pressurisation in combination with a) and b) depending on use

Further detail on levels of protection required for industrial and for commercial buildings is given in Table 3 of British Standard BS8485:2015.

Geotechnical Assessment

7.1 Made Ground

Cohesive and granular Made Ground deposits have been encountered, both which can be divided into two predominant types. Granular Made Ground comprises sand to boulder sized fragments of slag, and deposits of gravelly sand comprising a varied mix of coke, ash, slag, coal and clinker; underlain in areas by yellow sand representing hydraulically placed fill. Cohesive Made Ground largely comprises sandy, gravelly clay with cobbles of slag and brick; although deposits of gravelly sandy silt have been encountered, particularly within Area C. As only limited testing was undertaken on the gravelly sand of variable composition, these results have been included with the granular Made Ground deposits comprising predominantly slag.

7.1.1 Granular Made Ground – slag

7.1.1.1 Field observations and density index

The density index is the difference between the void ratio and the minimum and maximum densities as measured in the laboratory and represents the relative compactness of the material. The density index (I_D) can be expressed as a percentage of the void ratio using the following equation:

$$I_D = (e_{max} – e) / (e_{max} - e_{min})$$

Where:

I_D = density index

e_{max} = maximum void ratio

e_{min} = minimum void ratio

e = soil's void ratio

Descriptions of the granular Made Ground comprising slag range from loose to very dense, but are predominantly loose to medium dense. Deposits are described as yellow-brown to brown to grey brown predominantly of gravelly cobbly sand, sandy cobbly gravel, slightly gravelly to gravelly sand and slightly sandy to very sandy gravel; with variable cobble and boulder contents. Deposits of sandy gravelly cobbles and boulders have also been recorded. Gravel is described as fine to coarse and angular to subangular of predominantly slag, with clinker and refractory brick, and locally of wood, burnt lime, coal and coke. Cobbles and bounders are of slag.

The granular Made Ground is of variable composition and is described as loose, slightly gravelly to gravelly sand to sandy gravel. Gravel is fine to coarse, angular to subangular of clinker, slag, coke, coal, with sand of ash, clinker and coal. The fine gravel/coarse sand proportion of coal and coke likely represents 'breeze'. Occasional cobbles of slag and brick are noted, with rare boulders and clay lenses.

The term 'medium dense' correlates with a Density Index (ID) of between 35-65, in accordance with BS EN ISO 14688-2:2004, whilst 'loose' is 15-35. Based on the Uniformity Coefficient and Coefficient of Curvature values the deposits of slag are generally gap-graded or multi-graded, but predominantly multi-graded as is the granular Made Ground of variable composition.

7.1.1.2 Standard Penetration Tests

Only a limited number of Standard Penetration Tests (SPT) have been carried out through the granular Made Ground; due to the nature of the material and cobble and boulder content, boreholes were commenced through backfilled trial pits to avoid encountering obstructions. 7no. SPT's have been undertaken at depths of between 2m and 6mbgl. 4no. reported refusals of 0mm to 115mm penetration for 50 blows, and are associated with the presence of cobbles and boulders. SPTs which refused have been corrected for a penetration of 300mm. Consequently, the corrected N_{60} values

range from 15 to 800, if excluding the SPT refusal with 0mm penetration; correlating with a mean of 255. $N1_{(60)}$ values therefore range from 17 to 1127, with a mean of 335.

7.1.1.3 Classification tests

Particle Size Distribution (PSD) tests were performed on 43no. samples (reference Figures B1A to B1C, Appendix B) of the granular Made Ground of slag. The results show the material to be predominantly well graded slightly silty to silty slightly sandy to sandy gravel; occasionally uniformly graded slightly silty to silty/clayey gravelly sand. Sample TPE25 @2.7mbgl, appears to have predominantly comprised coarse cobbles, which will have been removed ahead of testing, whilst TPI17 @0.6mbgl comprises mainly coarse gravel. The results are consistent with the field descriptions.

A single PSD test on the granular Made Ground of variable composition (TPC16 @4.2mbgl) classifies it as a slightly clayey slightly gravelly sandy silt. On review of the borehole log, the deposit is described as slightly gravelly sand with pockets of soft, slightly gravelly clay and sandy silt, consistent with the lab result.

Moisture content tests were performed on 18no. samples of the granular Made Ground of slag and ranged between 5% and 26%, with a mean value of 12%. Tests on 8no. samples recorded bulk density values of 1.47Mg/m³ to 1.8Mg/m³, with a mean of 1.71Mg/m³. Particle density tests undertaken on 10no. samples ranged from 2.51Mg/m³ to 3.17Mg/m³, with a mean of 2.75Mg/m³, demonstrating the varied composition of the slag.

Moisture content tests performed on 3no. samples of the granular Made Ground of variable composition ranged between 50.5% and 127%, with a mean value of 73%. The result of 127% is associated with a pocket of silt within the gravelly sand, with Atterberg Limits testing identifying it to as high to extremely high plasticity silt. The other samples are from horizons containing rootlets, suggesting these high moisture content values are due to the presence of organic material. Density tests on a single sample recorded a bulk density values of 1.66Mg/m³, broadly comparable with those derived from the moisture content values.

Based on a characteristic bulk density value of 1.7Mg/m³, a weight density of 16.7kN/m³ is considered appropriate for the granular Made Ground, as a whole.

7.1.1.4 Effective shear strength

5No. single stage consolidated shear box tests undertaken on the granular Made Ground of slag reported ϕ'_{pk} values of 0°, with c'_{pk} reported to be 0kN/m². Given the granular nature of the Made Ground it is believed these values are incorrect and are not representative of the material. Consequently, they have been discarded. A single multi-stage consolidated shear box test from 2.5mbgl (TPB07) however reported a ϕ'_{pk} of 28°, with c'_{pk} of 0kN/m².

With reference to BS8002:2015, Section 4.3.1.3 an estimate of critical (ϕ'_{cv}) and the peak (ϕ'_{pk}) effective angle of shearing resistance may be made based on angularity of the particles (ϕ'_{ang}) and grading (ϕ'_{PSD}); and in the case of ϕ'_{pk} SPT $N(1)_{60}$ values. The field descriptions and PSD tests indicate the presence of gravel within the samples, described generally as being angular to subrounded (ϕ'_{ang} = 2°). With reference to section 6.1.1.3 the material is predominantly multi-graded (ϕ'_{PSD} = 4°), as such the critical effective angle of shearing resistance is also considered to be:

Critical effective angle of shearing resistance ϕ'_{cv} = 36°

Based on the calculated SPT $N(1)_{60}$ values the peak effective angle of shearing resistance is also considered to be:

Peak effective angle of shearing resistance ϕ'_{pk} = 45°

Effective shear strength can be determined using Peck et al. (1974) using SPT N values up to 70, which would correlate to an angle of 44°. Whilst this is not within the range (30-34°) suggested by Carter and Bentley (1991) for dense silty sand, a value of 50° is suggested for a dense sandy gravel.

Given the potential for inaccuracy with extrapolation, and the broad range of values a characteristic value for effective peak angle of friction (ϕ'_{pk}) of 40° is considered appropriate.

One single stage consolidated shear box test was undertaken on the granular Made Ground of variable composition, reporting values of ϕ' = 35° and c' = 1kN/m². Conservative critical values may therefore be considered to be ϕ'_{crit} = 32° and c'_{crit} = 0kN/m² (BS 8002:2015).

7.1.1.5 Optimum moisture content

13No. 4.5kg rammer and 1no. vibro-hammer compaction tests were carried out on 1No. bulk disturbed samples of the granular Made Ground comprising slag to determine the maximum dry density and optimum moisture content for reuse. The maximum dry density ranged from of 1.86Mg/m³ to 2.35Mg/m³, with a mean of 2.07Mg/m³. The optimum moisture content ranged from 4.9% to 14%, with a mean of 11%.

Two tests undertaken on the granular Made Ground of variable composition recorded maximum dry density values of 1.03Mg/m³ and 1.61Mg/m³; with a mean of 1.32Mg/m³, and optimum moisture content values of 15% and 38%, with a mean of 27%.

7.1.1.6 Permeability

Based on the Hazen's Relationship, the PSD results suggest the granular Made Ground as a whole has variable permeability of between 10^{-2} to 10^{-7} m/s, corresponding to very low to high permeability (Carter and Bentley, 1991). This reflects the variable composition of the material. Typically, values of 10^{-4}m/s are calculated (medium permeability). A single in-situ permeability test undertaken the within Made Ground at 5mbgl (BH21) and reported a value of 4.45^{-6}m/s.

7.1.2 Granular Made Ground - hydraulically placed fill

7.1.2.1 Field observations and density index

Descriptions of the hydraulic fill range from loose to medium dense, but are predominantly loose. The Made Ground is described as yellow to brownish grey slightly gravelly sand to sand and gravel. The gravel is described as angular to rounded of various lithologies including slag and shell fragments.
The term 'medium dense' correlates with a Density Index (I_D) of between 35-65, in accordance with BS EN ISO 14688-2:2004, whilst 'loose' is 15-35.

7.1.2.2 Standard Penetration Tests

No SPTs have been undertaken in this material.

7.1.2.3 Classification tests

PSD tests were performed on 7no. samples of the hydraulic fill, (Figure B2, Appendix B) and show the material to be even-graded slightly silty to silty, slightly gravelly sand. The results are consistent with the field descriptions.

Moisture content tests were performed on 12no. samples and ranged between 7.4% and 26%, with a mean of 17%. Density tests performed on the same samples recorded bulk density values ranging from 1.47Mg/m³ to 1.75Mg/m³, with a mean of 1.62Mg/m³. Based on a characteristic value of 1.6Mg/m³, a weight density of 15.7kN/m³ is considered appropriate for the hydraulic fill. Particle density tests were undertaken on 2no. samples and recorded values of 2.58Mg/m³ and 2.69Mg/m³, giving a mean of 2.64Mg/m³.

7.1.2.4 Effective shear strength

4no. multi-stage consolidated shear box tests report ϕ'_{pk} values of 27° to 29°, with a mean of 28° and c'_{pk} reported to be 0kN/m².

With reference to BS8002:2015, Section 4.3.1.3 an estimate of critical (ϕ'_{cv}) and the peak (ϕ'_{pk}) effective angle of shearing resistance has been made. Due to the variable proportion of gravel within

the samples a conservative estimate of the critical effective angle of shearing resistance has been made, which is considered to be:

Effective angle of shearing resistance $\phi'_{cv} = 30°$

SPT's were not undertaken within the hydraulic fill, with field descriptions predominantly correlating with a I_D of between 15-35. As such the peak effective angle of shearing resistance is also considered to be:

Effective angle of shearing resistance $\phi'_{pk} = 31°$

Given the potential for inaccuracy with extrapolation, characteristic values of $\phi'_{cv} = 27°$ and $\phi'_{pk} = 28°$ are considered appropriate.

7.1.2.5 Optimum moisture content

4.5kg compaction tests were carried out on 2no. bulk disturbed samples of the hydraulic fill to determine the maximum dry density and optimum moisture content for reuse. The maximum dry density values were 1.68Mg/m³ and 1.97Mg/m³, with a mean of 1.83Mg/m³. The optimum moisture content could only be determined for one sample (with a maximum dry density of 1.68Mg/m³); 15%.

7.1.2.6 Permeability

Based on the Hazen's Relationship, the PSD results suggest the hydraulic fill is of variable permeability, of between 10^{-3} to 10^{-5} m/s, corresponding to medium to low permeability (Carter and Bentley, 1991).

7.1.3 Cohesive Made Ground

7.1.3.1 Field observations and consistency index

Thinly laminated sandy slightly gravelly silt with pockets of silty sand and occasional cobbles of slag has been encountered from the ground surface within Area C, the ground surface being notably higher within Area C than the surrounding area.

Elsewhere clayey deposits of Made Ground have been found underlying the granular Made Ground deposits of slag. Deposits are predominantly described as firm to stiff, (although very soft to soft deposits have been recorded); grey, brown to brown mottled orange, slightly gravelly to gravelly clay and slightly sandy to sandy gravelly clay. The material contains varying proportions of cobbles, usually of slag or brick; and on occasional boulders of slag. Gravel is fine to coarse, rounded to angular of various lithologies including slag, sandstone, brick, coal, pottery coke and possible flint.

Locally deposits of soft, dark grey to brown silty clay have also been encountered, usually around 0.5m thick and underlain by granular Made Ground, usually of slag.

Based on the field descriptions the term 'very soft' is consistent with a consistency index (I_c) of 0 to 0.25, 'soft' 0.25 to 0.5, 'firm' 0.5 to 0.75 and 'stiff' 0.75 to 1.0. Based on BS EN ISO 14688-2:2004, it is possible to make an initial assessment of the consistency index of a cohesive material based on the exploratory hole descriptions. The consistency index (I_C) is the numerical representation of the difference between liquid limit and the natural moisture content expressed as a ratio of the plasticity index using the following:
Where:
I_C = consistency index
W_L = liquid limit
W = moisture content
I_P = plasticity

A value of $I_C = 0$ indicates that natural moisture content is at the liquid limit whilst a value of 1 equates to it being at the plastic limit. The field assessment of the I_C allows the overall plasticity of the material to be compared with that determined by later laboratory testing. Under some

circumstances, such as when sample disturbance, storage and testing delays occur, the field assessment may be more representative of the material than laboratory testing.

Based on the laboratory results from 7no. samples, the I_c ranges from between 0.08 and 1.28, with a mean of 0.84, indicating the material is very soft to very stiff; broadly consistent with the field descriptions.

7.1.3.2 Classification tests

PSD tests were performed on 4no. samples (Figure B3, Appendix B) and show the material to predominantly be slightly gravelly slightly sandy silty clay to clay silt, with the fourth sample (TPH14 @ 2.1mbgl) predominantly gravel. As this material was sampled following a groundwater strike, it is possible that the fines were washed out, and consequently this sample is not representative. The remaining sample descriptions are broadly consistent with the field descriptions.

An Atterberg limit testing on 6no. samples recorded liquid limits of 33% to 55%, with a mean of 44%; plastic limits of 17% to 33%, with a mean of 24%, and Plasticity Index values of 14% to 26%, with a mean of 20%. Most samples plot above the 'A' line on a plasticity chart indicating the material to be clay of low to intermediate/high plasticity. One sample (TPD28 @1.2mbgl) plots below the 'A' line as silt of high plasticity (Figure B4, Appendix B).

The natural moisture content of the samples was recorded to range between 14% and 43%, with a mean of 27%.

No tests were undertaken to determine bulk density. The moisture content result however correlates with a bulk density range of between 1.77Mg/m³ and 2.2Mg/m³, with a mean of 1.97Mg/m³. Based on a characteristic value of 1.95Mg/m³, a weight density of 19.1kN/m^3 is considered appropriate for the cohesive Made Ground.

7.1.3.3 Undrained shear strength

No undrained shear strength tests were undertaken on the cohesive Made Ground.

Based on the SPT N values and mean Plasticity Index of 20%, undrained shear strength (cu) was derived, ranging from 198kN/m² to 678kN/m² (Stroud, 1975). Based on the field descriptions these values appear to be too high for this material. Using the Consistency Index values, based on the work of Woods et al. (1995), values of 1kN/m² to 437kN/m² were calculated, with a mean of 50kN/m². Based on the limited available data, a derived cu value of 50kN/m^2 is considered to represent a characteristic value for this material.

7.1.3.4 Effective shear strength

No effective shear strength tests have been undertaken on the cohesive Made Ground. Estimates have been made based on the mean Plasticity Index; 20%, using correlations published by Gibson (1953), giving a φ'_p value of 27° and a residual value (φ'_r) of 21°.

Owing to the lack of site specific data it is considered appropriate to conservatively assume that the cohesion (c') is zero (refer CIRIA Report C504). Based on the available data, and assuming that the soil mass acts more in a cohesive manner rather than a granular manner, it is considered that a derived value of effective shear strength for use in design may be taken as:

Effective cohesion intercept $c' = 0kN/m^2$

Peak effective angle of shearing resistance $\phi'_p = 27°$

Conservative critical values of ϕcrit' = 24° and c' = 0kN/m² are considered appropriate.

7.1.3.5 Optimum moisture content

4.5kg compaction tests were carried out on 5no. remoulded samples to determine the maximum dry density and optimum moisture content for reuse of cohesive Made Ground. The maximum dry

density ranged from of 1.97Mg/m³ to 2.22Mg/m³, with a mean of 2.08Mg/m³. The optimum moisture content ranged from 6.5% to 13%, with a mean of 11%.

7.1.3.6

7.1.3.7 Permeability

Based on the Hazen's Relationship, the PSD results suggest the cohesive Made Ground has a permeability of between 10^{-7} to 10^{-8} m/s, corresponding to very low permeability to practically impermeable (Carter and Bentley, 1991).

7.2 Natural superficial deposits

7.2.1 Sand

As discussed soft silt to sandy clay underlying Made Ground deposits most likely represent the Tidal Flat Deposits. The underlying firm to stiff, locally soft to firm, sometimes laminated slightly sandy slightly gravelly clay which overlies bedrock, represented the glacial till of the area.

7.2.1.1 Field observations and density index

Descriptions of the natural sand range from very loose to dense, but are predominantly very loose to medium dense. The deposit is described as brown-grey to dark grey-black slightly clayey, slightly gravelly to gravelly SAND to slightly gravelly, silty/clayey SAND. The gravel is described as fine to medium, subrounded to rounded and includes sandstone, quartz, mudstone, coal and shell fragments. Occasionally pockets of sandy clay are noted. The term 'medium dense' correlates with a I_D of between 35-65, in accordance with BS EN ISO 14688-2:2004, whilst 'very loose' is 0-15.

7.2.1.2 Standard Penetration Tests

SPTs N values range from 1 to 39, with a mean of 17. These have been corrected taking into account the effect of Energy Ratio, with N60 values ranging from 1 to 42, with a mean of 19; and overburden pressure, with N1(60) values ranging from 0 to 33, with a mean of 14. These values indicate the material is very loose to dense, consistent with the field observations.

7.2.1.3 Classification tests

PSD tests were performed on 8no. samples, (Figure B4, Appendix B) and show the material to be predominantly even-graded slightly silty to silty/clayey, slightly gravelly to gravelly SAND. The results are consistent with the field descriptions. Three of the samples were reported to be slightly clayey, sandy SILT, with some gravel <2%. On review of the logs these samples were taken from horizons described as being borderline silty sand/sandy silt. These have been included, and are discussed in Section 6.2.2.

Moisture content tests performed on 18no. samples ranged between 6% and 72%, with a mean of 38%. Density tests performed on 9No. samples recorded bulk density values ranging from 1.51Mg/m³ to 2.09Mg/m³, with a mean of 1.81Mg/m³. Based on a characteristic value of 1.8Mg/m³, a weight density of 17.7kN/m³ is considered appropriate. Particle density tests undertaken on 2No. samples recorded values of 2.47Mg/m³ and 2.68Mg/m³, giving a mean of 2.58Mg/m³.

7.2.1.4 Effective shear strength

3no. multi-stage consolidated shear box tests report ϕ'_{pk} values of 31° to 38°, with a mean of 33.5° and c'_{pk} reported to be 0kN/m².

With reference to BS8002:2015, Section 4.3.1.3 an estimate of critical (ϕ'_{cv}) and the peak (ϕ'_{pk}) effective angle of shearing resistance has been made. Due to the variable in grading and the proportion of gravel within the samples a conservative estimate of the critical effective angle of shearing resistance has been made, which is considered to be:

Effective angle of shearing resistance $\phi'_{cv} = 33°$

As such the peak effective angle of shearing resistance is also considered to be:

Effective angle of shearing resistance $\phi'_{pk} = 35°$

Given the potential for inaccuracy with extrapolation, a characteristic value of $\phi'_{pk} = 34°$ is considered appropriate.

7.2.1.5 Permeability

Based on the Hazen's Relationship, the PSD results suggest the sand is has a permeability of between 10^{-4} to 10^{-6} m/s, corresponding to medium to low permeability (Carter and Bentley, 1991). The silt is around 10^{-7} m/s; low/very low permeability.

7.2.2 Silt and clay

7.2.2.1 Field observations and consistency index

Generally, silt was recorded beneath the Made Ground in Area E, described as soft to firm sandy SILT, clayey SILT and sandy clayey SILT; sometimes described as laminated. Deposits of clay are typically described as soft to firm, silty slightly sandy CLAY to silty, sandy slightly gravelly CLAY. Based on the field descriptions the term 'soft' in consistent with a consistency index (I_c) of 0.25 to 0.5 and 'firm' 0.5 to 0.75. Based on 3no. samples I_c ranges between of 0.5 and 0.75, classifying the material to be firm, and of greater consistency that the field descriptions. It is possible that the samples may have lost moisture during handling and testing, therefore the materials should be considered soft to firm, particularly in light of some of the low SPT N values.

7.2.2.2 Standard Penetration Tests

The results of 8no. SPT tests recorded N values from 2 to 39, with a mean of 20. These have been corrected, with N_{60} values ranging from 2 to 42, with a mean of 22; and $N1_{(60)}$ values ranging from 2 to 31, with a mean of 15.

7.2.2.3 Classification tests

PSD tests were performed on 5no. samples (Figure B5, Appendix B) and show the samples to be predominantly to be medium-graded slightly clayey to clayey, slightly gravelly sandy SILT, consistent with the field descriptions. A single sample classified the material to be slightly sandy silty CLAY, again broadly, consistent with the field description of this material from this depth.

Moisture content testing on 4no. sample ranged from 17% to 45%, with a mean of 36%. Atterberg limit testing on 5no. sample recorded liquid limit values between of 38% and 65%, with a mean of 53%; plastic limit values of 19% to 29%, with a mean of 24%, and Plasticity Index values of 25% to 36%, with a mean of 32%. 4no. of the samples plot above the 'A' line on a plasticity chart indicating the samples to be clay of intermediate to high plasticity (reference Figure B6, Appendix B). The 5th samples plots below the line, indicating the sample to be silt of high plasticity.

Tests were not undertaken to determine bulk density, however correlations with moisture content values suggest bulk densities of 1.76Mg/m³ and 1.94Mg/m³, with a mean of 1.85Mg/m³. Based on a characteristic value of 1.85Mg/m³, a weight density of 18.1kN/m^3 is considered appropriate for the silt.

7.2.2.4 Undrained shear strength

Undrained shear strength tests were not undertaken on the silt.

Based on the SPT N values and mean Plasticity Index of 32%, undrained shear strength (Cu) was derived, ranging from 9kN/m² to 179kN/m², with a mean of 94kN/m³ (Stroud, 1975). Based on the field descriptions these values appear to be too high for this material. Using the Consistency Index value, based on the work of Woods et al. (1995), a values of 1kN/m² to 30kN/m² have been calculated. Based on the limited available data, a derived Cu value of 45kN/m^2 is considered to represent a characteristic value for this material.

7.2.2.5 Effective shear strength

Effective shear strength tests have not been undertaken, however estimates made based on the Plasticity Index values; 19% to 36% (BS 8002:2015), indicate a range of $\varphi'_{cv,k}$ 23° to 25°.

Owing to the lack of site specific data it is considered appropriate to conservatively assume that the cohesion (c') is zero (refer CIRIA Report C504). It is considered that a derived value of effective shear strength for use in design may be taken as:

Effective cohesion intercept	$c' = 0kN/m^2$
Peak effective angle of shearing resistance	$\phi'_p = 24°$

7.2.2.6 Permeability

Based on the Hazen's Relationship, the PSD results suggest the silt and clay have a permeability of 10^{-7} to 10^{-8}m/s, corresponding with a low/very low permeability (Carter and Bentley, 1991).

7.2.3 Glacial till

7.2.3.1 Field observations and consistency index

Silty slightly sandy slightly gravelly CLAY to silty slightly sandy CLAY was recorded beneath the natural sand deposits within some of the boreholes sunk in areas C and D. They are often described to be weakly to thinly laminated and overlie bedrock. The deposits are generally described to be firm to stiff, locally soft. The field description 'firm' is consistent with a consistency index (I_c) of 0.5 to 0.75, and 'stiff' 0.75 to 1.0.

Based on the laboratory results from 33no. samples, the I_c ranges from between 0.37 and 1.15, with a mean of 0.81. This range of values correlate with soft to very stiff consistency, with the mean consistent with field descriptions of stiff.

7.2.3.2 Standard Penetration Tests

19No. SPT's, undertaken at depths of between 9m and 21.5mbgl recorded N values of between 7 and refusal (61 blows for 245mm). SPTs which refused have been corrected for a penetration of 300mm, excluding SPT at 15.4m within BH24, which refused without penetration, most likely due to the underlying rock. Consequently, the corrected N_{60} values range from 8 to 80, with a mean of 29, and $N1_{(60)}$ values of between 5 and 44, with a mean of 15.

7.2.3.3 Classification tests

Particle Size Distribution (PSD) tests were performed on 10no. samples (Figures B7, Appendix B). The results show the material to be predominantly medium -graded slightly sandy silty CLAY with rare gravel, to slightly gravelly slightly sandy silty CLAY. The results are consistent with the field descriptions. Occasionally the sample plots as clayey SILT. As no change is noted on the log it is likely that despite plotting as a silt in terms of grading, the material behaves as a clay in-situ. Comparison with Atterberg Limits testing confirms these samples to be clay of low to high plasticity.

Moisture content tests were performed on 35no. samples and ranged between 16% and 40%, with a mean value of 26%. Atterberg limits tests on 33no. samples recorded liquid limit between 33% and 58%, with a mean of 46%; plastic limit values between 15% and 26% with a mean of 21%; and Plasticity Index values of between 16% and 34%, with a mean of 25%. The samples plot above the 'A' line on a plasticity chart indicating the material is predominantly clay of intermediate to high plasticity (Figure B8, Appendix B).

Density tests on 2No. samples recorded bulk density values of 2.05Mg/m³ to 2.08Mg/m³, with a mean of 2.65Mg/m³. Values derived from moisture content values are broadly comparable, and range from 1.81Mg/m^3 to 2.16Mg/m^3, with a mean of 2.0Mg/m^3. Based on a characteristic value of 2.0Mg/m³, a weight density of 19.6kN/m³ is considered appropriate for the Glacial Till.

7.2.3.4 Undrained shear strength

Undrained shear strength tests were not undertaken on the glacial till. Based on the SPT N values and mean Plasticity Index of 25%, undrained shear strength (Cu) was derived, ranging from 60kN/m² to 375kN/m², with a mean of 140kN/m³ (Stroud, 1975), indicating the material has a medium to extremely high undrained shear strength. Values derived from Consistency Index values, based on the work of Woods et al. (1995), range from between 5kN/m² to 226kN/m², with a mean of 80kN/m². Based on the data, a derived Cu value of 75kN/m^2 is considered to represent a characteristic value for this material.

7.2.3.5 Effective shear strength

No effective shear strength tests have been undertaken on the glacial till. Estimates made based on the mean Plasticity Index; 25% (BS 8002:2015) give a $\varphi'_{cv,}$ value of 25°. Owing to the lack of site specific data it is considered appropriate to conservatively assume that the cohesion (c') is zero (refer CIRIA Report C504). Based on the available data, and assuming that the soil mass acts more in a cohesive manner rather than a granular manner, it is considered that a derived value of effective shear strength for use in design may be taken as:

Effective cohesion intercept	c' = 0kN/m²
Critical effective angle of shearing resistance	$\phi'_{cv,}$ = 25°

7.2.3.6 Permeability

Based on the Hazen's Relationship, the PSD results suggest the glacial till has a permeability of 10^{-8} m/s, corresponding to a very low permeability (Carter and Bentley, 1991) and consistent for this type of material.

7.3 Bedrock

Rock predominantly comprises mudstone, with occasional bans of siltstone 0.5m to 1.5m thick. As only a limited number of tests have been performed on the siltstone, these have been combined with the mudstone.

7.3.1 Classification tests

Natural moisture contents have been determined from 3no. samples of mudstone, two samples recovered from rockhead and the third around 6.5m below rockhead. The results range from 4.2% to 13%, with a mean of 8.2%.

7.3.2 Point load tests

Irregular, diametrical and axial point load tests were carried out on a total of 31no. samples. Results given as Point Load Index ($Is_{(50)}$) which is a factored result to allow for variances in volume.

12no. diametrical, 11no. axial and 8no. irregular tests were carried out. The Point Load Index for diametrical testing ranges from 0.54MN/m2 to 81.38MN/m². These values however appear to be outliers, as the remaining results range between 1 and 1.8MN/m². Consequently, the mean is 7.87MN/m², however a value of 1.25MN/m² is more representative of the overall results.

Point Load Index for the axial testing ranged from 0.54MN/m² to 7.32MN/m², with a mean value of 3.43MN/m². Point Load Index for the irregular testing ranged from 0.81MN/m² to 211.6MN/m², with a mean value of 29.5MN/m². Most of the results however are less than 6.5MN/m², therefore a mean of 3.5MN/m² is considered to be representative.

7.3.3 Uniaxial compressive strength tests

A single Uniaxial Compressive Strength (UCS) tests performed at 21.6mbgl (BH26) recorded a compressive strength of 8.5MN/m². With reference to BS EN ISO 14689-1:2003 this indicates that the mudstone sample is classified as being weak.

UCS values have been derived from the Point Load Index values obtained by laboratory testing. Based on a correlation factor of 22 (ref. Rusnak. J Mark C. 2000), compressive strengths in the range of 0.025MN/m² to 7.5MN/m², have been calculated, with a mean value of 0.45MN/m². However, with two exception most of the results lie below 0.3MN/m². These values indicate the mudstone is predominantly extremely weak, slightly weaker than described by the logs (very weak to weak).

No correlation is seen with depth, based on the limited available dataset. Published values of compressive strength for Carboniferous mudstone indicate a dry UCS value in the range of 10-50MPa, with a mean value of 40MPa. The calculated UCS values are significantly below this range, which could be the result of weathered and/or the small size of the dataset.

7.4 Summary of material properties

The material characteristic properties derived above for use in engineering design are summarised in Table 6.1 and 6.2.

Table 7-1 – summary of derived material properties (superficial deposits)

Material		Bulk Density (Mg/m^3)	Unit Weight (kN/m^3)	Mean Plasticity Index (%)	Undrained Shear Strength, C_u (kPa)	Effective Shear Strength	
						Cohesion c' (kPa)	φ' (degrees)
Made Ground	Granular – slag	1.7*	16.7	n/a	n/a	0^	36 (crit)^
						0^	40 (peak)^
	Granular - variable	1.7*	16.7	n/a	n/a	0^	32 (crit)^
						0^	35 (peak)^
	Hydraulic fill	1.6*	15.7	n/a	n/a	0^	27 (crit)*
						0^	28 (peak)*
	Cohesive	1.95^	19.1	20*	50^	0^	24 (crit)^
						0^	27 (peak)^
Natural superficials	Sand	1.8*	17.7	n/a	n/a	0^	33 (crit)^
						0^	34 (peak)*
	Silt and clay	1.85^	18.1	24*	45^	0^	19 (crit)^
						0^	24 (peak)^
	Glacial till	2.0*	19.6	27*	75^	0^	19 (crit)^
						0^	25 (peak)^
^ - based on correlated values * - based on laboratory testing							

Table 7-2 – summary of material properties (solid geology)

Material		Moisture Content (%)	Point Load Index ($I_{s(50)}$) (MN/m^2)			Unconfined Compressive Strength (MPa)
			Axial	Diametrical	Irregular	
Bedrock	Mudstone	8.2*	1.25*	3.4*	3.5*	0.45^
^ - range based on correlated values * - range based on laboratory testing						

7.5 Assessment of ground aggressivity

The following number of tests were performed on samples of Made Ground and the natural superficial deposits, in order to determine organic matter content and/or aggressive ground conditions:

- 174no. samples of granular Made Ground comprising predominantly slag;
- 40no. samples of granular Made Ground of variable composition;
- 30no. samples of Made Ground comprising hydraulic fill;
- 13no. samples of cohesive Made Ground;
- 13no. samples of natural sand;
- 8no. samples of glacial till (including 1no. sample of silt).

The results are summarized in Table 6.7 below.

Table 7-3 – summary of assessment of ground aggressivity result

Determinand	No.	Range		Adopted value used based on BRE Special Digest 1	DS	ACEC
		Min	Max			
Granular Made Ground - slag						
pH	174	7.7	13	9.1	DS-5	AC-5
Sulphate Aqueous Extract as SO_4 (ug/l)	172	<10	2200	1,700		
Sulphate as SO_4, Total (%) (AS%)	53	0.16	5.3	2.5		
Sulphur as S, Total (%) (TS%S)	55	<0.01	1.7	1		
Total Potential Sulfate content (TPS % SO_4)	55	0.03	5.1	3		
Amount of oxidisable sulfides (%) (OS%SO_4)	55	-1.84	2.4	If the amount of oxidisible sulfides is greater than 0.3% SO_4 in a significant number of samples pyrite is probably present		
Number of samples with OS%SO_4 >0.3% out of a total of 53	15	Range of samples exceeding >0.3% OS%SO_4		0.3 – 1.49		
Organic matter (%)	5	0.3	3.4	Average (%)	1.2	
Loss on ignition (%)	1	-	0.6	Average (%)	0.6	

Determinand	No.	Range		Adopted value used based on BRE Special Digest 1	DS	ACEC
		Min	Max			
Redox Potential (mV)	1	-	69	Average (mV)	69	
Resistivity (ohm)	1	-	370	Average (ohm)	370	
Granular Made Ground – variable composition						
pH	40	8	11.7	9.2	DS-5	AC-5
Sulphate Aqueous Extract as SO_4(ug/l)	40	15	2300	1400		
Sulphate as SO4, Total (%) (AS%)	14	0.02	4.4	2.8		
Sulphur as S, Total (%) (TS%S)	14	0.03	3.9	1		
Total Potential Sulfate content (TPS % SO_4)	15	0.09	11.7	3		
Amount of oxidisable sulfides (%) (OS%SO_4)	14	-0.03	7.3	If the amount of oxidisible sulfides is greater than 0.3% SO_4 in a significant number of samples pyrite is probably present		
Number of samples with OS%SO_4 >0.3% out of a total of 14	2	Range of samples exceeding >0.3% OS%SO_4		3.4-7.3		
Organic matter (%)	-	-	-	Average (%)	-	
Loss on ignition (%)	-	-	-	Average (%)	-	
Redox Potential (mV)	-	-	-	Average (mV)	-	
Resistivity (ohm)	-	-	-	Average (ohm)	-	
Granular Made Ground – hydraulic fill						
pH	30	7.6	12	8.4	DS-4	AC-4
Sulphate Aqueous Extract as SO_4(ug/l)	30	25	2200	1800		
Sulphate as SO_4, Total (%) (AS%)	16	0.06	1.8	1.7		
Sulphur as S, Total (%) (TS%S)	16	<0.01	0.93	0.6		
Total Potential Sulfate content (TPS % SO4)	16	0.03	2.79	1.8		
Number of samples with OS%SO_4 >0.3% out of a total of 16	1	Range of samples exceeding >0.3% OS%SO_4		0.99		
Organic matter (%)	-	-	-	Average (%)	-	

Determinand	No.	Range		Adopted value used based on BRE Special Digest 1	DS	ACEC
		Min	Max			
Loss on ignition (%)	-	-	-	Average (%)	-	
Redox Potential (mV)	-	-	-	Average (mV)	-	
Resistivity (ohm)	-	-	-	Average (ohm)	-	
Cohesive Made Ground						
pH	27	8.2	12.6	8.5	DS-5	AC-5
Sulphate Aqueous Extract as SO_4 (ug/l)	40	31	2500	1300		
Sulphate as SO_4, Total (%) (AS%)	11	0.05	2	1.5		
Sulphur as S, Total (%) (TS%S)	12	0.03	0.94	0.8		
Total Potential Sulfate content (TPS % SO_4)	12	0.06	2.82	2.4		
Number of samples with OS%SO_4 >0.3% out of a total of 11	4	Range of samples exceeding >0.3% OS%SO_4		0.77 - 1.04		
Organic matter (%)	5	1.5	8.1	Average (%)	3	
Loss on ignition (%)	3	4.6	4.7	Average (%)	4.7	
Redox Potential (mV)	-	-	-	Average (mV)	-	
Resistivity (ohm)	-	-	-	Average (ohm)	-	
Natural sand						
pH	12	7.9	10.9	8.1	DS-4	AC-4
Sulphate Aqueous Extract as SO_4(ug/l)	13	34	1100	900		
Sulphate as SO_4, Total (%) (AS%)	5	<0.01	0.4	0.4		
Sulphur as S, Total (%) (TS%S)	5	<0.01	0.44	0.44		
Total Potential Sulfate content (TPS % SO_4)	5	0.03	1.32	1.32		
Number of samples with OS%SO_4 >0.3% out of a total of 5	1	Range of samples exceeding >0.3% OS%SO_4		0.88		
Organic matter (%)	15	0.2	6.3	Average (%)	2.3	
Loss on ignition (%)	-	-	-	Average (%)	-	
Redox Potential (mV)	3	54	110	Average (mV)	-	
Resistivity (ohm)	3			Average (ohm)	-	

Determinand	No.	Range		Adopted value used based on BRE Special Digest 1	DS	ACEC
		Min	Max			
Glacial till						
pH	8	8.3	8.6	8.3	DS-2	AC-2
Sulphate Aqueous Extract as SO_4(ug/l)	8	37	540	500		
Sulphate as SO_4, Total (%) (AS%)	7	0.07	0.19	0.2		
Sulphur as S, Total (%) (TS%S)	7	0.04	0.2	0.2		
Total Potential Sulfate content (TPS % SO_4)	7	0.12	0.6	0.6		
Number of samples with OS%SO_4 >0.3% out of a total of 7	4	Range of samples exceeding >0.3% OS%SO_4		0.3 – 0.4		
Organic matter (%)	4	1.8	3	Average (%)	2.4	
Loss on ignition (%)	-	-	-	Average (%)	-	
Redox Potential (mV)	3	76	120	Average (mV)	93	
Resistivity (ohm)	3	230	390	Average (ohm)	307	

Based on the above an appropriate classification for concrete in contact with the Made Ground within the site (assuming mobile groundwater) in accordance with BRE Special Digest 1:(2005) is considered to be:

- Design Sulphate Class DS-5; and
- Aggressive Chemical Environment for Concrete (ACEC) Class AC5.

SECTION 8

Conclusions and Recommendations

8.1 Conclusions

Granular Made Ground deposits predominantly comprise sand and gravel-sized fragments of slag; with varying proportions of cobbles and boulder-sized fragments of slag. Locally, deposits of sand and/or gravel comprising variable proportions of coke, clinker, sinter, slag coal and breeze (coal-coke mix) have also been encountered, particularly within areas C and D. These deposits reflect the former areas of stockpiling and waste disposal. The base of the Made Ground has not been proven within areas A, B, F, H and I, due to the thickness of the material or encountering buried foundations and/or services. Elsewhere, Made Ground deposits have been proven to between 0.8m (BH24) and 7.8m (BH23), however at the same time significantly thicker deposits have also been encountered within the same Areas; the base of which has not been proven (e.g. TPE11 Made Ground 2.1m thick; TPE37, Made Ground in excess of 5m thick). The desk study covering SSI1 states that, historically, deposits around 10m thick have been encountered across the site, with deposits thicker in the south and east and thinnest in the central and northern areas. Consequently, thicker deposits are likely to exist, which have not been encountered by the most recent investigations.

Deposits of cohesive Made Ground have largely been encountered within areas C, D and to a lesser extent Area E; occurring only locally within other areas of the site or as pockets within the granular Made Ground. Made Ground, comprising hydraulically-placed sand has been found to underlie slag within each of the areas investigated, except for areas A and C, however in the case of Area A, the base of the Made Ground has not been proven and therefore this material may exist at depth.

Extensive evidence of solidified coal tar and other waste materials has been noted in Area C, with the trial pit logs indicating that deposits of “landfill” type material have been deposited in linear sections. Noxious odours on the southwestern boundary have also been recorded, with VOC testing in TPC38 recording Chloroform. The topography is variable in Area C, with the thicker deposits of Made Ground generally associated with areas of higher ground. The desk study for SSI1 references Drawing R/GEN156, this indicates Area C was until redevelopment in the 1970’s, backfilled with boiler ash. Evidence of solidified coal tar has also been reported within the Made Ground beneath Area D, consistent with Drawing R/GEN156 which records tar lagoons within the eastern end of this area. The drawing reports that these lagoons were backfilled with slag and/or hydraulic fill.

Based on boreholes information with areas C and D, the base of the Made Ground decreases in elevation from east to west across this part of the site, and towards the river, from 4.45mAOD in BH24 to -1.3mOD in BH21. Similarly, the depth to bedrock elevation also decreases towards the river, reflecting erosion by the channel and deposition of superficial material. Given the history of the site this is anticipated to also be the case across the wider site.

Whilst hydrocarbon impacted ground has been found within areas C and D, the majority of determinands do not exceed the adopted screening criteria. The US95 mean value test however, exceeds the Assessment Criteria for naphthalene and TPH Aromatic Hydrocarbons C10 to C12 and C12 to C16, with the highest concentrations, potentially outliers, recorded in TPC10, TPC14 and TCP20. The hydrocarbon impacted ground in Area C is therefore considered to be significant. BTEX compounds have also been recorded in the trial pits where the significant TPH impact has been identified.

Leachate analysis on Made Ground from areas C and D indicate zinc to be the primary leachate of concern, at around two orders of magnitude above the screening criteria. Whilst exceedances of Selenium, Arsenic and Manganese have also been recorded, these are generally not significantly higher than the screening criteria values. Groundwater testing indicates exceedances of Cyanide, Phenols including Phenol-monohydric and Zinc. Whilst Cyanide, Phenol and Zinc are three orders of magnitude above their screening criteria; Phenol-monohydric is four orders of magnitude above its

screening criteria. Exceedances of Boron, Chromium, PAHs and Vinyl Chloride have also been noted, but are typically only a single order of magnitude greater than the screening criteria. When compared with the results of leachate analysis, it would appear the Zinc, and to a lesser extent Boron and PAH's are leaching from the Made Ground in concentrations sufficient to impact groundwater.

Excluding areas C and D, geoenvironmental testing of Made Ground indicates that the site is unlikely to be a significant source of leachate from heavy metals and other inorganics. Whilst the site does appear to contain contaminants capable of leaching at concentrations above the screening criteria, they are generally only minor exceedances, generally ranging from just above the screening criteria, in the case of zinc, or one to two orders of magnitude greater than the screening criteria, in the case of chromium.

The results indicated that asbestos fibres should be anticipated throughout the Made Ground within the site, but that they are likely to be sporadic. Whilst no single area can be identified as the source of the fibres areas of Area C have been reported to contain waste materials.

Of the samples selected, testing has found most comprised blast furnace slag, however other types were also recorded, and therefore their presence elsewhere cannot be dismissed. Whilst the tested blast furnace slag samples recorded only modest expansions, greater volumes of expansion were noted within samples where basic steel slag was the more predominant type. Overall the results were variable, and consequently, it cannot be discounted that materials with a higher potential for expansion may be present within the site.

8.2 Recommendations

8.2.1 Gas

The results of gas monitoring within areas C and D suggest that gas protection measures are required for any future buildings. Additional monitoring is recommended especially in the vicinity of the potential anomaly, particularly during times of low barometric pressure (<1000mb), and during periods of falling barometric pressure. Once gas monitoring has been undertaken within the other parts of the site; it is recommended that this data be reviewed with data from across the SSI1 site. Whilst the recommended level is unlikely to reduce, further monitoring may provide confidence that the single potentially anomalous result can be removed.

8.2.2 Slag

The results of the slag testing are presented in a table in Appendix A.

Due to the extent of slag, the variability of it, and the findings of specialist testing, consideration will need to be given to the re-use of slag-bearing materials and the potential impact of expansive slag. It is likely that specialist foundations will need to be considered for all buried foundations, structures and infrastructure, to mitigate against expansive risks. The slag testing has reported over 2% expansion, which could lead to ground heave or damage to foundations. The larger expansion results appear to be associated with areas E and H, where large to very large proportions of basic steel slag were identified in the sample. The locations where this was recorded vary over the full depth of samples tested. Basic slag was found in other parts of the site but the expansion recorded was lower. It is anticipated that the variability of the slag noted in the testing to date, precludes the site from being zoned for expansivity and precautions will be required throughout.

Material containing slag may be 'conditioned', by its excavation, crushing to a suitable grading and subsequent processing by long-term programme of hydrating and turning the material. This would homogenise the material, and promote the occurrence of expansive behaviours within the materials. The subsequently material could be used as engineering fill, being placed and compacted in layers

8.2.3 Foundations

It is understood that within areas of the site, some existing building foundations comprise a composite pile design. A bored, cast-in-situ pile constructed between the base of the Made Ground and the ultimate termination depth of the pile, with a steel “I-beam” embedded into the concrete, and extending through the Made Ground, with a compressible void filling material installed. The purpose of this detail would be to mitigate the effects of lateral expansion of the slag within Made Ground. Slag can also weather, forming tufa deposits which can be mobilised in surface and groundwater leading to damage to drainage infrastructure and unsightly deposits in watercourses. It is likely that a similar detail will be required for new development. Lightly loaded, more tolerant commercial structures may be founded on rafts on engineered fill, subject to detailed design.

Specialist foundations or ground treatment are also likely to be required where soft ground has been encountered to mitigate against excessive and/or differential settlement. However, the solution will ultimately depend on the type and size of any structure proposed.

8.2.4 Aggressive ground

Due to the alkaline pH and high sulphate concentrations, not only within the Made Ground specialist concrete is required for all buried concrete to prevent sulphate attack and degradation of structures. Consequently, as an alternative, it may be more economical to dig out and replace deposits with clean fill, particularly along infrastructure corridors, negating the need for sulphate-resistant concrete within these areas.

SECTION 9

References

British Research Establishment Special Digest 1 (BRE SD 1): Concrete in Aggressive Ground (2005)

BS 8485:2015 – Code of practice of the design of protective measures for methane and carbon dioxide ground gases for new buildings

BS EN ISO 14688-1:2002+A1:2013 – Geotechnical investigation and testing; identification and classification of soil and identification and description

BS EN ISO 14688-2:2004+A1:2013 – Geotechnical investigation and testing; identification and classification of soils and principals for classification

BS 8002:2015 – Code of Practice for earth retaining structures

Category 4 Screening Levels – Contaminated Land: Application in Real Environment (CL:AIRE) [online]. (Accessed February 2018). Available: https://www.claire.co.uk/information-centre/water-and-land-library-wall/44-risk-assessment/207-category-4screening-levels-c4sls

CIRIA 665 (2007) – Assessing risks posed by hazardous ground gases to buildings

Correlations of Soil Properties (1991) Carter, M. and Bentley, S.P. Pentech Press, London, 128 pp.

Guidance on Comparing Soil Contamination Data with a Critical Concentration (2008) - Contaminated Land: Application in Real Environment (CL:AIRE) [online]. (Accessed February 2018). Available: https://www.claire.co.uk/component/phocadownload/category/9-other-cl-aire-documents?download=153:guidance-on-comparing-soil-contamination-data-with-a-critical-concentration

Peck, R.B., Hanson, W.E. and Thornburn, T.H., (1974). Foundation Engineering. John Wiley, New York, 411 pp.

The LQM/CIEH S4ULs for Human Health Risk Assessment (2015); Nathanail, C.P., McCaffrey, C; Gillett, A.G.; Ogden, R.C. and Nathanail, J.F. Land Quality Press, Nottingham –

The Water Framework Directive 2015 [online]. Accessed February 2018). Available: http://www.legislation.gov.uk/uksi/2015/1623/pdfs/uksiod_20151623_en_auto.pdf

The Water Supply (Water Quality) Regulations 2016 [online]. (Accessed February 2018). Available: http://www.legislation.gov.uk/uksi/2016/614/pdfs/uksi_20160614_en.pdf

Figures and Drawings

N

COATHAM MARSHES (SSSI)

RBT

SSI 2

SSI 1

BRAN SANDS LAGOON

EX-ICI LANDFILL

NWL BRAN SANDS TREATMENT PLANT

TS 2

TS 1

PD PORTS

TEES DOCK

BOC PLANT

BRITISH STEEL

TS 4

LANDFILL ZONE

SSI SLEMS

SSI TIP

IMPETUS TIP

SSI 3

PD PORTS

SOUTH TEES FREIGHT PARK

TS 3

KEY

SSI 1 SITE AREA

Rev	By	Chkd	Apprvd	Date	Description
-	-	-	-	-	-

Client

Homes & Communities Agency

CH2M
Dunedin House, Riverside, Stockton-on-Tees
Tel +44 (0)1642 632800
www.CH2M.com

Project

SSI REDCAR

Drawing

SSI 1
LOCATION PLAN

Drawn by: GR	Date: 02/05/2017
Checked by: TL	Date: 15/06/2017
Approved by: IDK	Date: 15/06/2017

Drawing No.

FIGURE 1

Revision

-

Drawing Scale: 1:12500 @ A1; 1:25000 @A3

Drawing file path & name:
Xreference file path:
User and Plot date:

N

SSI 2

LIMITED INDFO

COKE CRUSHING PLANT

LIMITED INFO

LIMITED INFO

TMO & CAR PARK

LIMITED INFO

TUBE CITY IMS

PELLET PLANT (DEMOLISHED)

RBT

BLENDED ORE STOCKS

SINTER PLANT

TS 2

ORE BLENDING/ HANDLING

SINTER STOCKS

SINTER STOCKS (FORMERLY PELLETS)

RAW COAL STOCKS

BLENDED COAL STOCKS

LIMITED INFO

EX-ICI LANDFILL

Teesside Works, Redcar

Water

Sewage Works

KEY

SSI 2 SITE AREA

-	-	-	-	-	-
Rev	By	Chkd	Apprvd	Date	Description

Client

Homes & Communities Agency

CH2M
Dunedin House, Riverside, Stockton-on-Tees
Tel +44 (0)1642 632800
www.CH2M.com

Project

SSI REDCAR

Drawing

SSI 1
SITE SETTING

Drawn by: GR Date: 15/05/2017

Checked by: TL Date: 15/06/2017

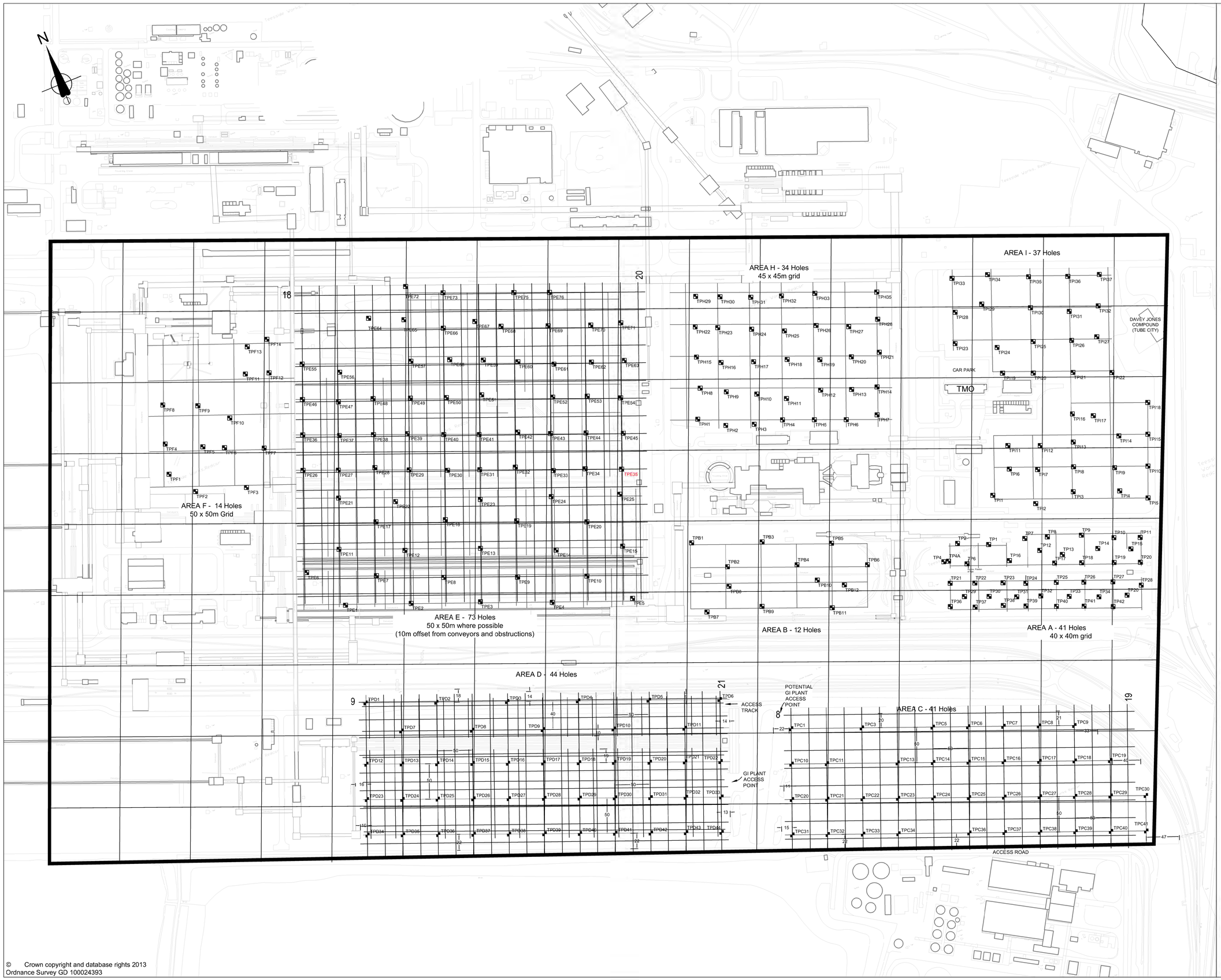
Approved by: IDK Date: 15/06/2017

Drawing No, FIGURE 2

Revision -

Drawing Scale: 1:3000 @ A1; 1:6000 @A3

Drawing file path & name - Xreference file path User and Plot Date



NOTES

1. POSITIONS SUBJECT TO CHANGE ON SITE, INDICATIVE ONLY.

KEY

- TRIAL PIT MAXIMUM 4.5M DEEP, 4M LONG, 1.5M WIDE TOTAL = 328 HOLES
- BOREHOLES
- SSI 1 BOUNDARY
- AREAS CURRENTLY EXCLUDED DUE TO PLANT, BUILDINGS AND UTILITIES
- TPE35 TRIAL PIT STILL TO BE SURVEYED IN

TESTING

GEOTECHNICAL TESTS = ?? NO.

CHEMICAL TESTS = ?? NO.

SLAG TESTING = ?? NO.

Rev	By	Chkd	Apprvd	Date	Description
01	FM	-	-	07/06/17	Updated to reflect correct as-built positions of trial pits

Client

Homes & Communities Agency

CH2M
Dunedin House, Riverside, Stockton-on-Tees
Tel +44 (0)1642 632800
www.CH2M.com

Project

SSI REDCAR

Drawing

Ground Investigation Exploratory Hole Location Plan - SSI 1

Drawn by: LC	Date: 26/07/2016
Checked by: DK	Date: 26/07/2016
Approved by: DK	Date: 26/07/2016
Drawing No. 678079_600_003	Revision 01

Drawing Scale: 1:2500 @ A1; 1:5000 @A3

Drawing file path & name - Xreference file path layer and Plot Date

Appendix A
Summary of slag testing

TRS reference	Sample location	Depth	Amount Present													Expansion?
			Blast Furnace Slag	Basic Steel Slag	Basic Refractories	Quantity of other constituents' present										
						Q	AS	MRS	F	IIS	SCA	C	CC	CMC	UPC	
BG7F01	TP22	1.5m	L	-	-	S	-	VS	-	-	-	S	VS	S	VS	0.34%
BG7F02	TP26	2.0m	L	-	-	VS	-	VS	-	-	-	VS	-	S	-	
BG7F03	TP41	0.2m	L	S	-	VS	-	VS	-	-	-	VS	-	S	-	
BG7F04	TPC23	0.3m	I	S	-	VS	-	VS	M	-	-	S	-	S	-	
BG7F05	TPD10	0.5m	L	-	-	-	-	VS	VS	-	VS	VS	-	S	-	
BG7F06	TPD32	1.3m	L	-	-	VS	-	-	-	VS	VS	VS	-	S	-	0.03%
BG7F07	TPD33	1.0m	I	-	-	S	S	VS	-	-	S	S	VS	S	VS	
BG7F08	TPD44	0.5m	L	-	VS	VS	-	VS	-	VS	VS	VS	VS	S	-	
BG7F09	TPE09	1.0m	L	-	-	-	-	VS	-	-	-	VS	-	S	-	
BG7F10	TPE11	1.7m	L	-	-	S	-	VS	-	S	S	S	VS	S	-	NO
BG7F11	TPE31	3.6m	L	-	-	M	-	VS	-	VS	S	VS	-	S	-	NO
BG7F12	TPE46	0.3m	L	-	-	VS	-	VS	-	-	-	VS	-	S	-	0.02
BG7F13	TPE76	2.1m	S	L	-	S	-	VS	S	VS	-	S	VS	S	-	1.55%
BG7F14	TPI36	2.0m	I	M	VS	-	M	S	-	VS	-	VS	VS	S	-	0.36%
BG8B01	S2TPA15	1.5m	L	-	-	VS	-	VS	-	M	-	VS	-	S	-	
BG8B02	S2TPA43	0.2m	L	VS	-	S	-	VS	VS	VS	-	S	-	S	-	
BG8B03	S2TPA51	0.9m	L	-	-	VS	-	S	-	VS	-	S	-	S	-	
BG8B04	S2TPA55	0.5m	L	-	-	VS	-	VS	-	VS	VS	VS	-	S	-	
BG8B05	S2TPA57	4.0m	L	-	-	VS	-	-	-	-	-	VS	-	S	-	
BG8B06	S2TPA74	1.0m	L	-	-	M	-	S	-	VS	S	M	M	M	-	
BG8B07	S2TPA96	3.0m	-	L	-	VS	-	VS	-	VS	-	-	-	-	-	
BG8B08	TP13	2.4m	L	S	-	S	VS	S	VS	S	S	S	VS	M	-	0.13%
BG8B09	TPB02	0.3m	L	S	-	M	-	S	VS	M	S	VS	-	M	-	0.3%
BG8B10	TPB03	2.8m	L	S	-	S	VS	S	VS	M	S	S	-	M	-	
BG8B11	TPB08	1.7m	L	VS	-	S	VS	S	VS	S	S	S	-	M	-	0.11%
BG8B12	TPD34	0.2m	L	-	-	VS	-	VS	-	VS	VS	VS	-	S	-	0.01%
BG8B13	TPE05	0.5m	M	-	-	M	-	-	VS	I	S	S	-	S	-	0.07%
BG8B14	TPE20	0.5m	M	S	-	M	-	-	VS	S	S	S	S	S	-	

TRS reference	Sample location	Depth	Amount Present														Expansion?
			Blast Furnace Slag	Basic Steel Slag	Basic Refractories	Quantity of other constituents' present											
						Q	AS	MRS	F	IIS	SCA	C	CC	CMC	UPC		
BG8B15	TPE59	3.5m	M	I	VS	M	S	-	-	S	-	S	-	M	-	1.01%	
BG8B16	TPF04	0.7m	S	VS	-	M	-	-	-	M	S	I	S	M	-		
BG8B17	TPH08	1.2m	M	I	-	M	-	-	-	S	S	S	S	S	-	1.13%	
BG8B18	TPH12	1.0m	S	I	S	M	-	-	M	S	M	S	-	M	-	2.05%	
BG8B19	TPH27	1.8m	S	M	-	M	-	-	VS	S	S	VS	-	M	-	0.8%	
BG8B20	TPH30	1.8m	VS	S	-	L	-	-	-	VS	VS	VS	VS	S	-		
BG8B21	TPI03	3.4m	S	S	-	I	-	-	VS	VS	I	S	VS	S	-		
BG8B22	TPI19	3.4m	M	S	-	M	-	-	VS	S	M	S	S	M	-	0.18%	
BG8B23	TPI25	2.7m	I	VS	-	S	-	-	-	S	M	S	VS	S	-	0.11%	
BG8B24	TPI33	3.3m	L	S	-	M	-	-	-	S	-		-	S	-	0.04%	

Key

L	Very large amount	Q	Quartz, sandstone, etc	SCA	Shale, clay and ash
I	Large amount	AS	Acid steel slag	C	Coke
M	Medium amount	MRS	Metal, rust and scale	CC	Coal and Char
S	Small amount	F	Fume	CMC	Cementitious Material Clay
VS	Very small amount	IIS	Iron ore, Ironstone, Sinter etc	UPC	Used Portland Cement

TRS REPORT

Report Ref: BG7F/AEG/RED/TRS/07/17/RP1
Date Issued: 21 July 2017
TRS Sample Refs: BG7F01-14
Order No: LA1855

EXAMINATION OF FOURTEEN BULK SAMPLES

FROM REDCAR SLS1015

FOR

ALLIED EXPLORATION & GEOTECHNICS LTD

Thomas Research Services Ltd.
Tel: +44 (0) 1469 532 929
www.slagtest.co.uk
Unit 7, Tattershall Castle Court, Morgan Way, New Holland,
North Lincolnshire, DN19 7PZ, United Kingdom
A Limited Company registered in England. Company Registration No: 251842

EXAMINATION OF FOURTEEN BULK SAMPLES FROM REDCAR SLS1015 FOR ALLIED EXPLORATION & GEOTECHNICS LTD

1. BACKGROUND

Fourteen bulk samples were received from the above site on 6th June 2017. Each sample was weighed and allocated a unique TRS reference number, the details of which are recorded below:-

TRS Ref	Site Ref	Depth/m	Mass/kg
BG7F01	TP22 LB4	1.5	14.2
BG7F02	TP26 LB3	2.0	24.7
BG7F03	TP41 LB1	0.2	30.0
BG7F04	TPC23 LB2	0.3	13.9
BG7F05	TPD10 LB1	0.5	20.0
BG7F06	TPD32 LB2	1.3	13.5
BG7F07	TPD33 LB2	1.0	15.1
BG7F08	TPD44 LB1	0.5	14.4
BG7F09	TPE09 LB1	1.0	19.9
BG7F10	TPE11 LB2	1.7	16.1
BG7F11	TPE31 LB3	3.6	16.3
BG7F12	TPE46 LB1	0.3	16.7
BG7F13	TPE76 LB2	2.1	26.5
BG7F14	TPI36 LB2	2.0	21.0

The purpose of the exercise was to identify the range and relative concentrations of any iron and steelmaking slags present in the samples, and whether there was any potential for volumetric instability from the materials.

2. SAMPLE PREPARATION & PROGRAMME OF ANALYSIS

The fourteen samples were primary crushed to reduce particle size down to <50mm, portions then being selected and dried at low temperature to constant weight. The dried material was subjected to a regime of stage crushing and quartering to further reduce particle size down to <5mm. Portions of this <5mm material were made up into resin bound blocks, one face of which was ground flat and polished using diamond pastes. Further portions of the <5mm material were milled to a fine powder. Fractions of material were extraction throughout the preparation procedure to provide the materials necessary for the tests and analyses required in the programme.

A petrological examination was made of the polished blocks using reflected light microscopy, the complete findings of which are recorded in appendix A. On the basis of these results, and after discussions with the client, the following tests were carried out on samples BG7F 01, 06, 10, 11, 12, 13 & 14:-

- Water & acid soluble sulphates (table 1)
- Total sulphur (table 1)
- Free CaO & free MgO (samples BG7F 13 & 14 only) (table 2)
- Thermal analysis (DTA & TGA) (table 3)
- TRS accelerated expansion test (table 4)

3. DISCUSSION OF RESULTS

3.1 Petrology

A petrological examination was made of the fourteen samples using reflected light microscopy. The complete findings of this examination are recorded in appendix A.

All of the samples except BG7F13 contained large or very large amounts of blast furnace slag. Basic steel slag was the dominant constituent in sample BG7F13, as was present in medium amounts in sample 14, and small amounts in samples 3 and 4. Very small amounts of basic refractory material were seen in samples 8 and 14.

Some of the samples, especially sample 4, contained loosely compacted fume/dust. Other constituents seen, generally in minor amounts, included quartz, iron ore, ooidal (local) ironstone, metallic iron, clay, coal, coke and used Portland cement.

The blast furnace slag was predominantly crystalline with a mineralogy dominated by melilite, although some glassy or ceramic material was seen. The slag was moderately altered due to weathering. Old weathered blast furnace slag may contain pockets of potentially expansive material. Potential for expansion can only be assessed with direct expansion testing (see sections 3.2 to 3.5).

The basic steel slag was fairly significantly altered due to weathering. The mineralogy of the material would suggest that there may be significant potential for expansion. Potential for expansion can only be assessed with direct expansion testing (see sections 3.2 to 3.5).

The basic refractory material, if present in greater concentrations on the site, could have significant potential for expansion.

3.2 Sulphur Species

The following range of analyses were performed on samples BG7F 01, 06, 10, 11, 12, 13 & 14. The results are recorded in table 1:-

- Water soluble sulphate
- Acid soluble sulphate
- Total sulphur

Total sulphur values were in the range 0.19 to 1.13 percent. Acid soluble sulphates were in the range 0.10 to 2.21 percent, with corresponding water soluble sulphates of 0.03 to 1.70 g/l. The lower sulphate and sulphur values were generally in samples with lower blast furnace slag contents. However,

some values were very high, and consequently, care should be taken when specifying concrete that may come into contact with the slag. Calculations show that between 4 and 78 percent of the available sulphur is present as sulphate.

3.3 Thermal Analysis

Simultaneous differential thermal analysis (DTA) and thermo-gravimetric analysis (TGA) were performed on samples BG7F 01, 06, 10, 11, 12, 13 & 14. The results are recorded in table three.

Ettringite was seen in all but two of the samples examined, at levels between 0.6 and 1.6 percent. Gypsum was seen in all but one of the samples, at between 0.3 and 3.3 percent. The presence of ettringite would suggest past expansion has occurred in the blast furnace slag.

Both calcium hydroxide and magnesium hydroxide were measured in sample BG7F13 at 0.6 and 0.5 percent. These values were used to correct the free CaO and free MgO analyses recorded in table 2.

Calcite was present in all of the samples examined at between 0.1 and 1.6 percent.

3.4 Free CaO & Free MgO

Free CaO & free MgO analyses were carried out on samples BG7F 13 & 14. The results are recorded in table 2. Both original and corrected values are recorded. The original values include both the oxide **(**CaO and MgO**)** and the hydroxide **(**($Ca(OH)_2$ and $Mg(OH)_2$)**)** contents. The corrected values report only the oxide content **(**CaO and MgO**)** after correction using the hydroxide values from the thermal analyses. These corrected values are the more significant, as it is only the oxides that are still free to hydrate, i.e. expand.

Free lime was recorded in the samples at 1.8 and 0.4 percent. Free magnesia was recorded at 0.3 and 0.3 percent. These corrected free lime and free magnesia levels record oxides that are potentially still free to hydrate (i.e. expand).

3.5 TRS Accelerated Expansion Test

The TRS accelerated expansion test was performed on samples BG7F 01, 06, 10, 11, 12, 13 & 14. The results are recorded in table four. The samples were subjected to the test for a period of 14 days, this being extended to 28 days for samples 13 & 14 due to the presence of basic steel slag. Note that the test measures potential for future expansion, and is not a measure of expansion that may have taken place in the past.

Most of the blast furnace slag samples recorded modest expansions, the exception being sample 1 that recorded 0.34% at 14 days. Sample 13, which was predominantly basic steel slag, recorded 1.55 % at 28 days. Sample 14, which was mixed slag, reached 0.36 % at 28 days.

4. CONCLUSIONS & RECOMMENDATIONS

The following conclusions can be drawn:-

- All but one of the samples contained significant amounts of blast furnace slag. The blast furnace slag was mainly crystalline and showed some alteration due to weathering. Old weathered blast furnace slag may contain pockets of potentially expansive material. Potential for expansion can only be assessed with direct expansion testing.
- Basic steel slag was the dominant constituent of one sample, and a more minor constituent of three. The basic steel slag, which was substantially altered due to weathering, could be a significant source of expansion. Potential for expansion can only be assessed with direct expansion testing.
- Minor amounts of basic refractory material were seen in two of the samples. If pockets of this material were to be present on the site, there could be significant risk of expansion.
- Other materials present, generally in minor concentrations, included quartz, iron ore, ooidal (local) ironstone, metallic iron, clay, coal, coke and used Portland cement.
- Some of the samples, especially sample 4, contained loosely compacted fume/dust.
- Further testing of the blast furnace slag indicated some high sulphate levels which should be taken into account when specifying concrete that may come into contact with the slag. There was also some evidence of past expansion with the presence of ettringite. Expansion testing recorded some potential for expansion, with one sample recording 0.34 percent

- Significant potential for expansion was recorded for the sample that was predominantly basic steel slag, with 1.55 percent recorded. Again, there was also evidence of past expansion with this material.

The following recommendations are made:-

The site from which these samples were taken is of significant size, potentially containing huge amounts of iron and steel industry slag. To date, only 14 samples have been examined, with expansion testing carried out on only 7. A much more significant site investigation, commensurate with the volume of material on site, should now be undertaken. This should aim to determine the distribution of slag types across the site, and further assess the expansive properties of the slag.

It is highly likely that material will be present on the site with far greater potential for expansion than that recorded in this small batch of samples.

<u>Note</u>
These conclusions apply only to the samples tested and may not represent the bulk of the material on the site from which they were taken.

Ian D. Thomas

Ian D Thomas BSc(Hons) **21 July 2017**

TABLE 1 **SULPHUR SPECIES ANALYSES**

TRS Ref	Site Ref	Water Sol. SO_3 (g/l)	Acid Sol. SO_3 (%)	Total S (%)
BG7F01	**TP22 - 1.5m**	0.97	2.21	1.13
BG7F06	**TPD32 - 1.3m**	1.00	0.96	0.94
BG7F10	**TPE11 - 1.7m**	1.70	1.22	1.13
BG7F11	**TPE31 - 3.6m**	1.33	1.15	0.89
BG7F12	**TPE46 - 0.3m**	0.49	0.49	0.80
BG7F13	**TPE76 - 2.1m**	0.03	0.12	0.19
BG7F14	**TPI36 - 2.0m**	0.28	0.1	0.95

TABLE 2 **ANALYSIS FOR FREE CaO AND FREE MgO**

TRS Ref	Site Ref	Free CaO Original (%)	Free CaO Corrected (%)	Free MgO Original (%)	Free MgO Corrected (%)
BG7F13	**TPE76 - 2.1m**	2.3	1.8	0.6	0.3
BG7F14	**TPI36 - 2.0m**	0.4	0.4	0.3	0.3

TABLE 3 **RESULTS FROM THERMAL ANALYSIS**

TRS Ref	Site Ref	Mass % by Thermal Analysis L.O.I.	Ettringite	Gypsum	Calcite	$Ca(OH)_2$	$Mg(OH)_2$	Others
BG7F01	**TP22 - 1.5m**	3.42	1.4	3.3	0.1	0.0	0.0	-
BG7F06	**TPD32 - 1.3m**	2.93	1.6	1.0	0.4	0.0	0.0	-
BG7F10	**TPE11 - 1.7m**	2.87	1.0	1.5	0.3	0.0	0.0	-
BG7F11	**TPE31 - 3.6m**	2.40	0.9	1.3	0.1	0.0	0.0	quartz
BG7F12	**TPE46 - 0.3m**	2.21	0.6	0.6	0.5	0.0	0.0	-
BG7F13	**TPE76 - 2.1m**	2.74	0.0	0.0	1.6	0.6	0.5	-
BG7F14	**TPI36 - 2.0m**	1.66	0.0	0.3	0.5	0.0	0.0	-

TABLE 4 **TRS ACCELERATED EXPANSION TEST**

TRS Ref	Site Ref	7 day (%)	14 day (%)	21 day (%)	28 day (%)
BG7F01	**TP22 - 1.5m**	0.22	0.34	-	-
BG7F06	**TPD32 - 1.3m**	0.01	0.03	-	-
BG7F10	**TPE11 - 1.7m**	0.00	0.00	-	-
BG7F11	**TPE31 - 3.6m**	0.00	0.00	-	-
BG7F12	**TPE46 - 0.3m**	0.01	0.02	-	-
BG7F13	**TPE76 - 2.1m**	0.72	1.05	1.39	1.55
BG7F14	**TPI36 - 2.0m**	0.22	0.31	0.34	0.36

APPENDIX A

PETROLOGICAL REPORT ON SAMPLES BG7F 01-14

A petrological examination has been carried out of fourteen samples, BG7F 01 to 14.

Polished blocks were prepared using particulate material crushed to a nominal size of –5mm. Representative material was made up into resin-bonded blocks. One face of each of these was ground flat and polished using diamond pastes. In addition, when appropriate, the surfaces were selectively etched with water, 10% $MgSO_4$ solution and 0.1%N HCl in order to help with the phase identification.

The detailed results are given in the accompanying Table.

Blast furnace slag occurs in large to very large amounts in all the samples except no. 13. Basic steel slag occurs in small amounts in samples 03 and 04 and in medium to large amounts in samples 13 and 14. A little basic refractory material (dolomet) was seen in samples 08 and 14. Several samples contain small amounts of particles consisting of loosely compacted fume/dust. Sample 04 has a medium amount of this material.

The blast furnace slag is mostly vesicular and crystalline with vesicles infilled by secondary material. It is mostly dark grey or greenish in colour.

The unaltered slag consists mainly of melilite (Ca,Mg,Al silicate) with spinel ($MgAl_2O_4$) as a second principle phase. Minor amounts of merwinite (Ca,Mg silicate) and dicalcium silicate (e.g. larnite (ß-Ca_2SiO_4) and bredigite (Ca_2SiO_4 with some Mg in solid solution)) are present and other silicates such as wollastonite (Ca silicate). These form a matrix to the melilite crystals. Some glassy slag is present, again mostly as a matrix phase. There is also some finely crystalline ceramic slag. Very small amounts of Ca, Mn and Fe sulphides are present and graphitic iron occurs as minute spherules and occasional larger prills. Secondary alteration is moderate in amount mainly infilling pores and occurring as surface rinds. Some has replaced the original phases especially the calcium-rich silicates. It consists mainly of granular material and aggregates of needle shaped crystals that are probably silicate and sulpho-aluminate hydrates such as ettringite. Calcite ($CaCO_3$) occurs in some samples and most samples have copious amounts of well-crystallised gypsum ($CaSO_4.2H_2O$).

The unaltered basic steel slag consists mainly of dicalcium silicate, RO and R_3O_4 phases (FeO and Fe_3O_4 with some Al, Mn, Mg and Ca in solid solution) and CaF phases (complex Ca alumino-ferrites). There are minor amounts of another

silicate, probably melilite (Ca,Mg,Al silicate). There are small amounts of lime phase (CaO with some Fe, Mn and Mg in solid solution) and periclase (MgO with some Fe in solid solution). The lime phase mostly forms spongy grains up to about 0.3 mm in size or is finely crystalline, well dispersed at other phase boundaries. The periclase occurs mostly as rounded grains up to about 0.1 mm in size that are often encapsulated in RO phase. The slag is extensively altered with the formation of secondary phases difficult to identify specifically under the microscope.

A little basic refractory material is present. This consists of partly hydrated dolomet (originally finely crystalline periclase and lime phase bonded by minor amounts of silicates).

The compacted fume/dust is made up of particles ranging in size from less than 1 to about 100 microns of iron oxides, glass, coke, etc. embedded in an extremely fine-grained matrix.

Other constituents include quartz (as sand, sandstone and silt), iron ore, ooidal (local) ironstone, metallic iron with associated rust, clay, coal, coke and used Portland cement. There are small to medium amounts of cementitious material binding the smaller and adherent to the larger particles. This appears to be similar to the slag alteration products but may also include clay.

TRS SAMPLES BG7F 01-14 (Sheet 1 of 2)

	1	2	3	4	5	6	7	8	9	10
BLAST FURNACE SLAG										
Amount	***L***	***L***	***L***	***l***	***L***	***L***	***l***	***L***	***L***	***L***
Phases present:-										
Melilite	L	L	L	L	L	L	L	L	L	L
Merwinite	-	-	-	-	vs	vs	-	-	-	-
Larnite & bredigite	-	vs	-	-	vs	-	vs	-	-	vs
Matrix & other silicates	s	s	s	s	s	s	s	s	s	s
Ca & Fe,Mn sulphides	vs	vs	vs	vs	vs	vs	vs	vs	vs	vs
Metal, rust, scale etc.	vs	vs	vs	vs	s	vs	s	s	vs	vs
Spinel	s	s	s	s	s	s	s	s	s	s
RO phase (R mainly Fe)	-	-	-	-	s	-	-	-	-	-
Glassy slag	s	vs	vs	s	vs	vs	vs	vs	vs	vs
Ceramic slag	vs	vs	vs	vs	vs	vs	vs	vs	vs	vs
Alteration products	m	m	m	m	m	m	m	m	m	m
Calcite	-	-	-	-	-	-	-	s	-	-
Gypsum	s	s	m	m	m	s	s	s	m	s
BASIC STEEL SLAG										
Amount	***-***	***-***	***s***	***s***	***-***	***-***	***-***	***-***	***-***	***-***
Phases present:-										
Dicalcium silicate	-	-	l	s	-	-	-	-	-	-
Unetched silicates	-	-	s	-	-	-	-	-	-	-
RO phase	-	-	m	m	-	-	-	-	-	-
CaF phase	-	-	vs	s	-	-	-	-	-	-
R3O4 phase	-	-	s	s	-	-	-	-	-	-
Metal & rust	-	-	-	-	-	-	-	-	-	-
Spinel	-	-	vs	-	-	-	-	-	-	-
Lime phase	-	-	vs	-	-	-	-	-	-	-
Periclase	-	-	vs	-	-	-	-	-	-	-
Fluorite	-	-	vs	-	-	-	-	-	-	-
Alteration products	-	-	m	l	-	-	-	-	-	-
BASIC REFRACTORIES										
Amount	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***vs***	***-***	***-***
OTHER CONSTITUENTS										
Quartz, sandstone, etc.	s	vs	vs	vs	-	vs	s	vs	-	s
Acid steel slag	-	-	-	-	-	-	s	-	-	-
Metal, rust & scale	vs	vs	vs	vs	vs	-	vs	vs	vs	vs
Fume	-	-	-	m	vs	-	-	-	-	-
Iron ore, ironstone, sinter, etc.	vs	-	-	-	-	vs	-	vs	-	s
Shale, clay & ash	-	-	-	-	vs	vs	s	vs	-	s
Coke	s	vs	vs	s	vs	vs	s	vs	vs	s
Coal & char	vs	-	-	-	-	-	vs	vs	-	vs
Cementitious material & clay	s	s	s	s	s	s	s	s	s	s
Used Portland cement	vs	-	-	-	-	-	vs	-	-	-

L = very large, l = large, m = medium, s = small and vs = very small amounts

TRS SAMPLES BG7F 01-14 (Sheet 2 of 2)

	11	12	13	14
BLAST FURNACE SLAG				
Amount	***L***	***L***	***s***	***l***
Phases present:-				
Melilite	L	L	L	L
Merwinite	-	vs	-	-
Larnite & bredigite	-	vs	-	-
Matrix & other silicates	s	s	s	s
Ca & Fe,Mn sulphides	vs	vs	vs	s
Metal, rust, scale etc.	vs	vs	vs	vs
Spinel	s	s	s	vs
RO phase (R mainly Fe)	vs	-	-	s
Glassy slag	vs	vs	-	-
Ceramic slag	vs	vs	-	-
Alteration products	m	m	s	s
Calcite	-	s	-	s
Gypsum	s	s	-	s
BASIC STEEL SLAG				
Amount	***-***	***-***	***L***	***m***
Phases present:-				
Dicalcium silicate	-	-	l	l
Unetched silicates	-	-	s	s
RO phase	-	-	m	m
CaF phase	-	-	s	s
R3O4 phase	-	-	s	s
Metal & rust	-	-	s	vs
Spinel	-	-	-	-
Lime phase	-	-	s	s
Periclase	-	-	s	s
Fluorite	-	-	-	-
Alteration products	-	-	m	m
BASIC REFRACTORIES				
Amount	***-***	***-***	***-***	***vs***
OTHER CONSTITUENTS				
Quartz, sandstone, etc.	m	vs	s	-
Acid steel slag	-	-	-	m
Metal, rust & scale	vs	vs	vs	s
Fume	-	-	s	-
Iron ore, ironstone, sinter, etc.	vs	-	vs	vs
Shale, clay & ash	s	-	-	-
Coke	vs	vs	s	vs
Coal & char	-	-	vs	vs
Cementitious material & clay	s	s	s	s
Used Portland cement	-	-	-	-

L = very large, l = large, m = medium, s = small and vs = very small amounts

GENERAL EXPLANATION

L = very large, l = large, m = medium, s = small and vs = very small amounts.

Blast furnace slag. When present this consists mainly of melilite (Ca,Mg,Al silicate ranging in composition between $Ca_2Al_2SiO_7$ and $Ca_2MgSi_2O_7$). Other common phases are merwinite ($Ca_3MgSi_2O_8$), larnite (ß-Ca_2SiO_4) and bredigite (Ca_2SiO_4 with some Mg in solid solution). The matrix often consists of some of the above phases, especially melilite, but may also contain other phases such as wollastonite ($CaSiO_3$), anorthite ($CaAl_2Si_2O_8$) and pyroxene ($(CaMg)SiO_3$). Spinel ($MgAl_2O_4$) may be present. Sulphides and metal usually occur and are mostly finely dispersed, but the metal sometimes occurs as prills and may contain some graphite and Ti carbo-nitride (TiCN). Material reported as ceramic in appearance is very finely crystalline. The alteration products often include calcite and gypsum but are mostly silicate and/or sulpho-aluminate hydrates that are difficult to identify specifically under the microscope.

Basic steel slag. When present this consists mainly of dicalcium silicate, mostly the ß-form (larnite) but sometimes the alpha form. Phosphoric slags may contain nagelschmidtite (Ca_2SiO_4 with $Ca_3P_2O_8$ in solid solution). Other silicate often present in small amounts, unetched by dilute HCl, is probably melilite. RO, R_3O_4 and RF phases are typically present and are mainly FeO and Fe_3O_4 with some Mg, Mn, Ca, etc. in solid solution and complex Ca alumino-ferrites. There may also be some Fe_2O_3 and spinel ($(Mg,Fe)Al_2O_4$). The slag typically carries minor amounts of periclase (MgO with some Fe in solid solution) and lime phase (CaO with some Fe, Mn & Mg in solid solution). Other possible minor constituents include fluorite (CaF_2) and apatite (Ca fluoro-phosphate), the last present in phosphoric slags. The alteration products are, again, difficult to identify specifically but are probably, mainly, hydrated silicates. Portlandite ($Ca(OH)_2$) may be present.

Basic refractory material. When present, this is mainly magnesian and consists of granular periclase (MgO) with interstitial silicates. Sometimes samples contain chrome-magnesia material with chromite present in addition to the other phases. Hot face material (from close to the furnace) may also occur. The periclase and interstitial silicates show secondary alteration similar to that of the basic steel slag. Brucite ($Mg(OH)_2$ is likely.

Acid steel slag. When present this consists mainly of fayalite ($(Fe,Mn)_2SiO_4$), Fe,Mn oxides and cristobalite (high temperature SiO_2).

Other slags. The 'intermediate slag' (probably primary flush slags from steel furnaces) has a variable phase assemblage, being mainly formed of silicates, particularly dicalcium silicate, melilite, merwinite and a complex olivine phase together with spinel and wustite (FeO). Sometimes it contains significant amounts of periclase, well embedded in the slag. The 'ferrous slag' (probably from foundry operations) has similar silicates but much more substantial content of iron oxides, usually wustite. It is often associated with scale (iron oxides formed on the surface of steel during reheating/cooling). When present, the 'cindery slag' consists of various silicates and silicate glass with Fe oxides, hercynite ($FeAl_2O_4$) and, sometimes, corundum (Al_2O_3). It is usually derived from heating furnaces and is often associated with burnt shale. When present, the 'siliceous clinker' is similar but devoid of iron oxides.

Other constituents The alumino-silicate brick includes a range of refractory firebrick, common brick and alumina-rich refractories. The 'quartz, sandstone, etc.' may include used silica refractory material consisting of quartz and its high temperature forms. Sometimes there is a distinct granular texture and it is derived from silcrete, a kind of chert. Cementitious material may bond the finer particles together. It is similar to the other alteration products consisting mostly of complex hydrates difficult to identify under the microscope Sometimes some is used Portland cement recognised by the relict textures of the clinker and the embedded quartz sand.

APPENDIX B

MECHANISMS OF VOLUMETRIC INSTABILITY IN IRON AND STEEL INDUSTRY SLAGS

Volumetric change with time can occur in some types of iron and steel industry slags. These mechanisms are briefly described in this section.

Blast Furnace Slags

Fresh-make air-cooled, i.e. crystalline, blast furnace slags are almost always volumetrically stable after cooling. The two mechanisms for volumetric instability listed in BS1047:1983 – "Air Cooled Blast furnace Slag for use in Construction" are:-

a) Beta to gamma inversion of dicalcium silicate.

b) Iron unsoundness.

a) Research by G H Thomas on this phase transformation has shown the transformation to be athermal rather than isothermal. In practical terms this means that inversion, and the expansion associated with it, can only occur during the cooling cycle. In fully cooled material there would appear to be no further risk of instability from this mechanism.

b) Iron unsoundness is a very rare form of instability frequently associated with operating problems in the blast furnace. TRS know of only one instance in over 40 years. The mechanism, which is a hydrolysis reaction, is immediately triggered off by the presence of water. Once water has initiated the reaction, the mechanism proceeds to completion. It is impossible to arrest the process once started; at least by methods operating in normal ambient conditions.

It follows that the risk of late expansion from either of these mechanisms in blast furnace slag is remote.

c) Sulphoaluminate Type Activity

Some years ago, G. H. Thomas discovered a third mechanism that may give rise to volumetric instability. The process is possible only in some old blast furnace slag altered by weathering. When the sulphide sulphur in the blast furnace slags is oxidised during

weathering to sulphate, under some circumstances reactions can take place within the slag to produce an 'ettringite' type product. The process is somewhat analogous to sulphatic attack on concrete and has a similar result - expansion of the mass and associated disruption.

For the mechanism to have any significance, the slag needs to have residual potential for this reaction. Evidence of past activity does not necessarily indicate further reaction is possible.

The TRS accelerated expansion test is, we believe, uniquely capable of identifying such slags, as well as instability attributable to free CaO and free MgO in steel slag & etc.

Basic Steel Slags

Basic steel slags commonly contain significant quantities of free CaO and free MgO. These free oxides are well known for the massive expansion associated with their hydration. In practical terms, it is impossible to forecast when hydration will take place, but it can be up to decades after the material was cooled – or placed. The reasons are complex, but include the varying density of the oxides, due to the variation in temperatures at which the products have been held in the furnace. Other factors influencing rate of hydration include:-

- the protection of slags by a reaction product at the oxide interface with the slag.
- the presence of the oxides as lime or magnesia rich solid solutions instead of the pure oxide.

The result is potential future volumetric instability but at an unforeseeable date. Periclase, i.e. free MgO, is relatively much slower than free CaO to hydrate.

Scrap High Magnesia Refractories

These are particularly undesirable components in fill as they commonly result in high concentrations of free MgO. The problems associated with these concentrations are similar to those where periclase is found in basic steel slag.

TRS REPORT

Report Ref: BG8B/AEG/SLS1015/TRS/04/18/RP2
Date Issued: 25 April 2018
TRS Sample Refs: BG8B01-24
Order No: LA1970

EXAMINATION OF 24 SAMPLES

FROM

CONTRACT SLS1015,

FORMER SSI STEELWORKS, REDCAR

FOR

ALLIED EXPLORATION & GEOTECHNICS LTD

Thomas Research Services Ltd.
Tel: +44 (0) 1469 532 929
www.slagtest.co.uk
Unit 7, Tattershall Castle Court, Morgan Way, New Holland,
North Lincolnshire, DN19 7PZ, United Kingdom
A Limited Company registered in England. Company Registration No: 2518421

EXAMINATION OF 24 SAMPLES
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1. BACKGROUND

Twenty four bulk samples were received from the above site on 13th February 2018. Each sample was weighed and allocated a unique TRS reference number, the details of which are recorded below:-

TRS Ref	Site Ref	Depth/m	Mass/kg	TRS Ref	Site Ref	Depth/m	Mass/kg
BG8B01	S2TPA15	1.5-2.0	16.7	BG8B13	TPE05	0.5	9.5
BG8B02	S2TPA43	0.2-0.3	15.4	BG8B14	TPE20	0.5-0.8	4.0
BG8B03	S2TPA51	1.9-2.3	14.1	BG8B15	TPE59	3.5-4.0	6.1
BG8B04	S2TPA55	0.5	15.8	BG8B16	TPF04	0.7	15.3
BG8B05	S2TPA57	4.0-4.3	14.1	BG8B17	TPH08	1.2-1.5	23.9
BG8B06	S2TPA74	1.0-1.5	9.7	BG8B18	TPH12	1.0-1.3	19.2
BG8B07	S2TPA96	3.0-4.0	20.5	BG8B19	TPH27	1.8	19.7
BG8B08	TP13	2.4	20.8	BG8B20	TPH30	1.8-2.1	20.4
BG8B09	TPB02	0.3-0.6	2.3	BG8B21	TPI03	3.4-3.7	19.4
BG8B10	TPB03	2.8-3.1	20.4	BG8B22	TPI19	3.4-3.7	9.7
BG8B11	TPB08	1.7-2.0	21.4	BG8B23	TPI25	2.7-3.0	16.6
BG8B12	TPD34	0.2-0.8	20.0	BG8B24	TPI33	3.3-3.6	16.4

The purpose of the exercise was to identify the range and relative concentrations of any iron and steelmaking slags present in the samples, and whether there was any potential for volumetric instability from the materials.

2. SAMPLE PREPARATION & PROGRAMME OF ANALYSIS

The samples were primary crushed to reduce particle size down to <50mm, portions then being selected and dried at low temperature to constant weight. The dried material was subjected to a regime of stage crushing and quartering to further reduce particle size down to <5mm. Portions of this <5mm material were made up into resin bound blocks, one face of which was ground flat and polished using diamond pastes. Further portions of the <5mm material were milled to a fine powder. Fractions of material were extraction throughout the preparation procedure to provide the materials necessary for the tests and analyses required in the programme.

A petrological examination was made of the polished blocks using reflected light microscopy, the complete findings of which are recorded in appendix A. The results of this examination were recorded and discussed in our report of 27th February 2018. On the basis of that report, further work was authorised on the samples on 15th March 2018 as follows:-

Mixed slag expansion testing on samples BG8B 01-03, 05-09, 11-13, 15, 17-19 & 22-24. (Note:- Sulphur and sulphate analyses were only carried out on samples containing medium or more amounts of blast furnace slag. Free CaO & free MgO analyses were only carried out on samples containing medium or more amounts of basic steel slag.)

The results of the analyses are recorded as follows:-

- Water & acid soluble sulphates (table 1)
- Total sulphur (table 1)
- Free CaO & free MgO (table 2)
- Thermal analysis (DTA & TGA) (table 3)
- TRS accelerated expansion test (table 4)

3. DISCUSSION OF RESULTS

3.1 Petrology

A petrological examination was made of the 24 samples using reflected light microscopy. The complete findings of this examination are recorded in appendix A.

Blast furnace slag was present in all but one of the samples, with significant quantities present in all but samples 16, 18, 19, 20 and 21. The blast furnace slag was mostly vesicular and crystalline, with vesicular infill and particle coatings from secondary materials (products of weathering). The unaltered slag consisted predominantly of melilite, along with more minor amounts of merwinite, larnite, bredigite, wollastonite, monticellite, Ca, Mn & Fe sulphides and graphitic iron. Some glassy and finely ceramic material was also present. Secondary alteration was moderate, consisting mainly of pore infill and surface rinds. Products of alteration included calcite, gypsum and possibly ettringite. Old weathered blast furnace slag may occasionally contain pockets of potentially expansive material. This potential can only be assessed by direct expansion testing (see sections 3.2-3.5).

Basic steel slag was present in all but seven of the samples. Most of these samples contained fairly moderate amounts (small / very small), but samples 07, 15, 17, 18 & 19 contained much more significant concentrations. The unaltered basic steel slag consisted mainly of dicalcium silicate, along with more minor amounts of RO & R_3O_4 phase, CaF phase, possibly melilite, lime phase and periclase. The slag was extensively altered due to weathering, the secondary phases being difficult to identify specifically under the microscope. The mineralogy of the basic steel slag would suggest that it may have significant potential for expansion. This potential can only be assessed by direct expansion testing (see sections 3.2-3.5).

Minor amounts (small / very small) of basic refractory material were seen in samples 15 and 18. This material, even in minor amounts, can have significant potential for expansion.

Other constituents seen in the samples, in varying concentrations, included alumino-silicate refractories, quartz (mainly as sand but also silt and sandstone), iron ore, ooidal (local) ironstone, fume, metallic iron, rust, shale, coal and coke. A cementitious material often bound the smaller particles together. This material appeared similar to the slag alteration products.

3.2 Sulphur Species

The following range of analyses were performed on samples BG8B 01-03, 05-06, 08-09, 11-13, 15, 17 & 22-24 (These samples contained medium or more amounts of blast furnace slag). The results are recorded in table 1:-

- Water soluble sulphate
- Acid soluble sulphate
- Total sulphur

Total sulphur values were in the range 0.27 to 1.73 percent. Acid soluble sulphates were in the range 0.27 to 2.86 percent, with corresponding water soluble sulphates of 0.32 to 1.62 g/l. These sulphate and sulphur values were variable, commensurate with the variable amounts of blast furnace slag present. However, some values were very high, and consequently, care should be taken when specifying concrete that may come into contact with the slag. Calculations show that between 23 and 80 percent of the available sulphur is present as sulphate.

3.3 Thermal Analysis

Simultaneous differential thermal analysis (DTA) and thermo-gravimetric analysis (TGA) were performed on samples BG8B 01-03, 05-09, 11-13, 15, 17-19 & 22-24. The results are recorded in table three.

Ettringite was seen in eight of the samples examined, at levels between trace and 0.8 percent. Gypsum was seen in all but one of the samples, at between trace and 7.2 percent. On comparing the gypsum values with the acid soluble sulphates, some of the gypsum values were overstated. This is common in old weathered blast furnace slag, and is usually an indicator of the presence of thaumasite. The presence of ettringite and possibly thaumasite would suggest some past expansion has occurred in the blast furnace slag.

Calcium hydroxide was recorded in two of the samples, at trace and 0.5 percent. Magnesium hydroxide was measured in eight of the samples, at between trace and 1.2 percent. These values were used to correct the free CaO and free MgO analyses recorded in table 2.

Calcite was present in all of the samples examined at between trace and 20.6 percent. This product is an indicator as to the weathered state of the slag, although some may have come from other components present in the samples.

3.4 Free CaO & Free MgO

Free CaO & free MgO analyses were carried out on samples BG8B 07, 15 & 17-19 (These samples contained medium or more mounts of basic steel slag). The results are recorded in table 2. Both original and corrected values are recorded. The original values include both the oxide (CaO and MgO) and the hydroxide ($(Ca(OH)_2$ and $Mg(OH)_2)$) contents. The corrected values report only the oxide content (CaO and MgO) after correction using the hydroxide values from the thermal analyses. These corrected values are the more significant, as it is only the oxides that are still free to hydrate, i.e. expand.

Free lime was recorded in the samples at between 0.3 and 1.1 percent. Free magnesia was recorded at between 1.1 and 2.8 percent. These corrected free lime and free magnesia levels record oxides that are potentially still free to hydrate (i.e. expand).

3.5 TRS Accelerated Expansion Test

The TRS accelerated expansion test was performed on samples BG8B 01-03, 05-09, 11-13, 15, 17-19 & 22-24. The results are recorded in table four. The samples were subjected to the test for a period of 14 days unless basic steel slag was present in medium or more amounts, where the test duration was extended to 28 days. Note that the test measures potential for future expansion, and is not a measure of expansion that may have taken place in the past.

Samples consisting predominantly of blast furnace slag, with only minor amounts of basic steel slag recorded 14 day expansion results of between 0.01 and 0.30 percent. Samples containing medium or more concentrations of basic steel slag recorded 28 day expansion results of between 0.80 and 2.05 percent.

4. CONCLUSIONS & RECOMMENDATIONS

The following conclusions can be drawn:-

- Blast furnace slag present in all but one of the 24 samples examined, and was a dominant constituent in 18 of them. The slag was mainly crystalline although minor amounts of glassy and ceramic material were seen. The slag showed some alteration due to weathering. Old weathered blast furnace slag may occasionally contain pockets of potentially expansive material.
- Further testing of samples consisting predominantly of blast furnace slag (with only minor amounts of basic steel slag) recorded expansion results of between 0.01 and 0.30 percent. Thermal analysis indicated some evidence of past expansion of the blast furnace slag (presence of ettringite and possibly thaumasite). Some of the sulphate values were very high and should be taken into consideration when specifying concrete that may come into contact with the slag.
- Basic steel slag was seen in all but 7 of the samples, with significant amounts present in five.
- Expansion testing of these five samples recorded expansion results of between 0.80 and 2.05 percent.
- Minor amounts of basic refractory material were seen in two of the 24 samples examined. This product can be a significant source of expansion.
- Other products seen in the samples, in varying amounts, included alumino-silicate refractories, quartz, iron ore, ooidal ironstone, fume, metallic iron, rust, shale, coal and coke. A cementitious material often bound the smaller particles together. This material appeared similar to the slag alteration products.

The following recommendations are made:-

The site contains significant proportions of iron and steel industry slag. Do date, only 24 samples have been examined from this part of the site. A more significant site investigation, commensurate with the volume of material, should be undertaken. This should aim to determine the distribution of slag types across the site, and further assess the expansive properties of the slag.

Note

These conclusions apply only to the samples tested and may not represent the bulk of the material on the site from which they were taken.

Ian D. Thomas

Ian D Thomas BSc(Hons) 25 April 2018

TABLE 1 SULPHUR SPECIES ANALYSES

TRS Ref	Site Ref	Water Sol. SO_3 (g/l)	Acid Sol. SO_3 (%)	Total S (%)
BG8B01	S2TPA15	1.20	0.81	1.21
BG8B02	S2TPA43	0.32	0.43	0.63
BG8B03	S2TPA51	1.55	1.02	0.79
BG8B05	S2TPA57	1.24	0.80	0.73
BG8B06	S2TPA74	0.74	0.27	0.47
BG8B07	S2TPA96	-	-	-
BG8B08	TP13	1.62	2.86	1.73
BG8B09	TPB02	1.62	0.91	0.75
BG8B11	TPB08	1.38	1.40	1.13
BG8B12	TPD34	1.13	0.81	0.69
BG8B13	TPE05	0.83	0.33	0.27
BG8B15	TPE59	1.43	1.46	0.73
BG8B17	TPH08	0.45	0.64	0.56
BG8B18	TPH12	-	-	-
BG8B19	TPH27	-	-	-
BG8B22	TPI09	0.48	1.20	0.69
BG8B23	TPI25	1.24	0.99	0.83
BG8B24	TPI33	1.33	1.06	0.96

TABLE 2 ANALYSIS FOR FREE CaO AND FREE MgO

TRS Ref	Site Ref	Free CaO Original (%)	Free CaO Corrected (%)	Free MgO Original (%)	Free MgO Corrected (%)
BG8B01	S2TPA15	-	-	-	-
BG8B02	S2TPA43	-	-	-	-
BG8B03	S2TPA51	-	-	-	-
BG8B05	S2TPA57	-	-	-	-
BG8B06	S2TPA74	-	-	-	-
BG8B07	S2TPA96	0.3	0.3	1.1	1.1
BG8B08	TP13	-	-	-	-
BG8B09	TPB02	-	-	-	-
BG8B11	TPB08	-	-	-	-
BG8B12	TPD34	-	-	-	-
BG8B13	TPE05	-	-	-	-
BG8B15	TPE59	1.1	1.1	1.7	1.3
BG8B17	TPH08	0.9	0.9	1.8	1.3
BG8B18	TPH12	0.5	0.5	1.8	1.3
BG8B19	TPH27	0.9	0.9	3.1	2.8
BG8B22	TPI09	-	-	-	-
BG8B23	TPI25	-	-	-	-
BG8B24	TPI33	-	-	-	-

TABLE 3 RESULTS FROM THERMAL ANALYSIS

TRS Ref	Site Ref	Mass % by Thermal Analysis						
		L.O.I.	Ettringite	Gypsum	Calcite	$Ca(OH)_2$	$Mg(OH)_2$	Others
BG8B01	S2TPA15	2.87	0.8	0.8	trace	0.0	0.0	clay?
BG8B02	S2TPA43	9.09	trace	trace	8.3	0.0	0.0	-
BG8B03	S2TPA51	2.27	0.0	1.5	0.4	0.0	0.0	-
BG8B05	S2TPA57	2.34	0.7	0.8	0.4	0.0	0.0	-
BG8B06	S2TPA74	5.07	0.0	0.2	trace	0.0	0.0	clay?
BG8B07	S2TPA96	0.91	0.0	0.0	0.2	trace	0.0	-
BG8B08	TP13	7.34	0.0	7.2	1.3	0.0	0.0	-
BG8B09	TPB02	6.29	0.0	1.9	3.9	0.0	0.1	-
BG8B11	TPB08	4.69	0.0	6.0	1.1	0.0	0.0	-
BG8B12	TPD34	2.21	0.0	1.2	0.6	0.0	trace	-
BG8B13	TPE05	15.83	0.0	0.5	20.6	0.0	0.0	quartz
BG8B15	TPE59	9.43	0.0	4.7	4.1	0.0	0.6	-
BG8B17	TPH08	6.46	trace	1.4	3.3	0.0	0.7	quartz
BG8B18	TPH12	4.56	trace	1.0	1.6	0.0	0.7	-
BG8B19	TPH27	2.28	trace	trace	0.9	0.0	0.4	-
BG8B22	TPI09	9.42	trace	2.5	3.7	0.5	1.2	-
BG8B23	TPI25	4.13	0.0	3.5	1.5	0.0	0.0	-
BG8B24	TPI33	5.03	trace	4.2	1.5	0.0	trace	-

TABLE 4 TRS ACCELERATED EXPANSION TEST

TRS Ref	Site Ref	7 day (%)	14 day (%)	21 day (%)	28 day (%)
BG8B01	S2TPA15	0.06	0.10	-	-
BG8B02	S2TPA43	0.05	0.06	-	-
BG8B03	S2TPA51	0.05	0.06	-	-
BG8B05	S2TPA57	0.03	0.04	-	-
BG8B06	S2TPA74	0.06	0.06	-	-
BG8B07	S2TPA96	0.80	1.05	1.18	1.21
BG8B08	TP13	0.10	0.13	-	-
BG8B09	TPB02	0.17	0.30	-	-
BG8B11	TPB08	0.08	0.11	-	-
BG8B12	TPD34	0.00	0.01	-	-
BG8B13	TPE05	0.05	0.07	-	-
BG8B15	TPE59	0.56	0.75	0.90	1.01
BG8B17	TPH08	0.49	0.84	1.03	1.13
BG8B18	TPH12	0.96	1.46	1.84	2.05
BG8B19	TPH27	0.22	0.41	0.61	0.80
BG8B22	TPI09	0.15	0.18	-	-
BG8B23	TPI25	0.08	0.11	-	-
BG8B24	TPI33	0.04	0.04	-	-

APPENDIX A

PETROLOGICAL REPORT ON SAMPLES BG8B 01-24

A petrological examination has been carried out of twenty-four samples, BG8B 01 to 24.

Polished blocks were prepared using particulate material crushed to a nominal size of –5mm. Representative material was made up into resin-bonded blocks. One face of each of these was ground flat and polished using diamond pastes. In addition, when appropriate, the surfaces were selectively etched with water, 10% $MgSO_4$ solution and 0.1%N HCl in order to help with the phase identification.

The detailed results are given in the accompanying Table.

Blast furnace slag occurs in large or very large amounts in the majority of the samples (1-6, 8-12, 23 and 24). Basic steel slag occurs in large or very large amounts in several samples (7, 15, 17 and 18) and in medium amounts in some others. Very little basic (magnesian) refractory material was seen. Several samples contain medium or larger amounts of other materials such as quartz sand (9-22 and 24), iron ore and iron ore sinter (1, 9, 10, 13 and 16) and coal and coke (6 and 16). Most samples contain aggregates consisting of loosely compacted 'dust' (particles less than about 100µm in size) that sometimes includes fume (less than 20µm).

The blast furnace slag is mostly vesicular and crystalline with vesicles infilled by secondary material. It is mostly dark grey or greenish in colour.

The unaltered slag consists mainly of melilite (Ca,Mg,Al silicate) with spinel ($MgAl_2O_4$) as a second principle phase. Minor amounts of merwinite (Ca,Mg silicate) and dicalcium silicate (e.g. larnite (ß-Ca_2SiO_4) and bredigite (Ca_2SiO_4 with some Mg in solid solution)) are occasionally present and other silicates such as wollastonite (Ca silicate) and monticellite (Ca,Mg silicate) also occur forming a matrix to the melilite crystals. However, it's believed that the calcium-rich silicates have been partly removed as a result of weathering. Some glassy slag is present, again mostly as a matrix phase. There is also some finely crystalline ceramic slag. Very small amounts of Ca, Mn and Fe sulphides are present and graphitic iron occurs as minute spherules and occasional larger prills. Secondary alteration is mainly moderate in amount, mainly infilling pores and occurring as surface rinds. Some has replaced the original phases especially the calcium-rich silicates as noted above. It consists mainly of granular material and aggregates of needle shaped crystals that are probably silicate and sulpho-aluminate

hydrates such as ettringite. Calcite ($CaCO_3$) occurs in some samples and some samples have well-crystallised gypsum ($CaSO_4.2H_2O$).

The unaltered basic steel slag consists mainly of dicalcium silicate, RO and R_3O_4 phases (FeO and Fe_3O_4 with some Al, Mn, Mg and Ca in solid solution) and CaF phases (complex Ca alumino-ferrites). In some samples there are amounts of another silicate, probably melilite (Ca,Mg,Al silicate). This is sometimes associated with small prismatic crystals probably identified as apatite (Ca fluoro-phosphate).There are small amounts of lime phase (CaO with some Fe, Mn and Mg in solid solution) and periclase (MgO with some Fe in solid solution). The lime phase mostly forms rounded grains up to about 0.3 mm in size or is finely crystalline, well dispersed at other phase boundaries. The periclase occurs mostly as rounded grains up to about 0.1 mm in size that are often encapsulated in RO phase. These two oxide phases are distributed sporadically being often absent and concentrated in some particles. The slag is extensively altered with the formation of secondary phases difficult to identify specifically under the microscope.

A little basic refractory material is present. This consists of partly hydrated periclase.

The compacted dust is made up of particles ranging in size from less than 1 to about 100 microns of iron oxides, glass, coke, etc. embedded in an extremely fine-grained matrix. It sometimes includes spheroidal particles of fume, mostly iron oxide or slag glass.

Other constituents include quartz (as sand, sandstone and silt), iron ore, ooidal (local) ironstone, metallic iron with associated rust, shale, coal and coke. There are small to medium amounts of cementitious material binding the smaller and adherent to the larger particles. This appears to be similar to the slag alteration products but may also include clay.

TRS SAMPLES BG8B 01-24 (Page 1 of 2)												
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
BLAST FURNACE SLAG												
Amount	***L***	***L***	***L***	***L***	***L***	***l***	***-***	***l***	***l***	***l***	***l***	***L***
Phases present:-												
Melilite	L	L	L	L	L	L	-	L	L	L	L	L
Merwinite	-	-	-	-	-	-	-	-	-	-	vs	-
Larnite & bredigite	-	-	-	-	-	-	-	-	-	vs	-	-
Matrix & other silicates	s	s	s	s	s	s	-	s	s	s	s	s
Ca & Fe,Mn sulphides	vs	vs	vs	vs	vs	vs	-	vs	vs	vs	vs	vs
Metal, rust, scale etc.	vs	s	vs	vs	vs	s	-	vs	vs	vs	s	vs
Spinel	vs	-	s	s	s	s	-	s	s	s	s	s
Glassy slag	s	m	s	vs	-	s	-	s	s	m	s	s
Alteration products	s	s	s	s	s	s	-	m	m	m	m	s
Calcite	s	-	s	-	-	s	-	s	-	s	-	s
Gypsum	-	-	vs	s	s	s	-	-	-	-	-	s
BASIC STEEL SLAG												
Amount	***-***	***vs***	***-***	***-***	***-***	***-***	***L***	***s***	***s***	***s***	***vs***	***-***
Phases present:-												
Dicalcium silicate	-	l	-	-	-	-	l	l	l	l	l	-
Tricalcium silicate	-	-	-	-	-	-	-	-	-	-	-	-
Unetched silicates	-	-	-	-	-	-	m	s	s	s	s	-
RO phase	-	m	-	-	-	-	m	m	m	m	m	-
CaF phase	-	s	-	-	-	-	s	s	s	s	vs	-
R3O4 phase	-	s	-	-	-	-	-	s	-	-	-	-
R2O3 phase	-	-	-	-	-	-	-	-	-	-	-	-
Metal & rust	-	vs	-	-	-	-	vs	s	-	s	-	-
Spinel	-	-	-	-	-	-	-	-	-	s	-	-
Lime phase	-	vs	-	-	-	-	-	-	s	s	-	-
Periclase	-	-	-	-	-	-	-	-	s	s	-	-
Apatite	-	-	-	-	-	-	vs	-	vs	-	-	-
Alteration products	-	m	-	-	-	-	s	m	m	m	m	-
BASIC REFRACTORIES												
Amount	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
OTHER CONSTITUENTS												
Alumino-silicate brick	-	-	-	-	-	-	-	-	-	-	-	-
Quartz, sandstone, etc.	vs	s	vs	vs	vs	m	vs	s	m	s	s	vs
Acid steel slag	-	-	-	-	-	-	-	vs	-	vs	vs	-
Cindery slag	-	-	-	-	-	s	-	-	-	-	-	-
Siliceous clinker	-	-	-	-	-	m	-	s	-	s	s	vs
Metal, rust & scale	vs	vs	s	vs	-	s	vs	s	s	s	s	vs
Fume	-	vs	-	-	-	-	-	vs	vs	vs	vs	-
Limestone & dolomite	-	-	-	-	-	-	-	-	-	-	-	-
Iron ore, ironstone, sinter, etc.	m	vs	vs	vs	-	vs	vs	s	m	m	s	vs
Shale, clay & ash	-	-	-	vs	-	s	-	s	s	s	s	vs
Coke	vs	s	s	vs	vs	m	-	s	vs	s	s	vs
Coal & char	-	-	-	-	-	m	-	vs	-	-	-	-
Cementitious material & clay	s	s	s	s	s	m	-	m	m	m	m	s
Used Portland cement	-	-	-	-	-	-	-	-	-	-	-	-
L = very large, l = large, m = medium, s = small and vs = very small amounts												

TRS SAMPLES BG8B 01-24 (Page 2 of 2)												
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
BLAST FURNACE SLAG												
Amount	***m***	***m***	***m***	***s***	***m***	***s***	***s***	***vs***	***s***	***m***	***l***	***L***
Phases present:-												
Melilite	L	l	l	l	l	l	l	L	L	L	L	L
Merwinite	-	-	-	-	-	s	-	-	-	-	-	-
Larnite & bredigite	-	vs	-	-	-	-	-	-	-	-	-	-
Matrix & other silicates	s	s	s	s	s	s	s	vs	s	s	s	s
Ca & Fe,Mn sulphides	vs	vs	vs	vs	vs	s	vs	-	-	vs	vs	vs
Metal, rust, scale etc.	vs	vs	vs	vs	vs	vs	vs	-	-	vs	s	s
Spinel	s	s	s	s	s	s	vs	-	vs	s	s	s
Glassy slag	s	m	s	s	s	m	s	-	-	s	s	s
Alteration products	s	s	m	m	m	m	m	vs	s	s	m	m
Calcite	-	-	-	-	-	-	-	-	-	-	-	-
Gypsum	-	-	-	-	-	-	-	-	-	-	-	-
BASIC STEEL SLAG												
Amount	***-***	***s***	***l***	***vs***	***l***	***l***	***m***	***s***	***s***	***s***	***vs***	***s***
Phases present:-												
Dicalcium silicate	-	l	l	s	l	m	l	l	l	l	-	l
Tricalcium silicate	-	-	-	-	-	-	-	-	-	vs	-	-
Unetched silicates	-	m	vs	-	-	s	s	-	s	-	-	-
RO phase	-	m	m	-	m	l	m	m	m	m	s	m
CaF phase	-	vs	vs	-	vs	s	s	s	s	s	s	s
R3O4 phase	-	-	vs	-	vs	s	s	s	-	s	-	s
R2O3 phase	-	-	-	-	vs	s	-	-	-	-	-	-
Metal & rust	-	-	vs	-	-	-	vs	-	-	s	-	s
Spinel	-	-	-	-	-	-	-	-	-	-	-	-
Lime phase	-	-	-	-	vs	-	s	s	-	vs	-	-
Periclase	-	vs	s	-	s	m	s	s	vs	vs	-	-
Apatite	-	s	-	-	-	-	-	-	-	-	s	-
Alteration products	-	m	m	L	m	m	m	m	m	m	l	m
BASIC REFRACTORIES												
Amount	***-***	***-***	***vs***	***-***	***-***	***s***	***-***	***-***	***-***	***-***	***-***	***-***
OTHER CONSTITUENTS												
Alumino-silicate brick	s	-	-	-	-	-	s	-	s	s	-	s
Quartz, sandstone, etc.	m	m	m	m	m	m	m	L	l	m	s	m
Acid steel slag	-	-	s	-	-	-	-	-	-	-	-	-
Cindery slag	-	-	-	-	-	-	-	-	-	-	-	vs
Siliceous clinker	s	s	s	-	-	-	-	-	-	-	s	-
Metal, rust & scale	-	-	-	-	-	-	-	-	-	-	-	-
Fume	vs	vs	-	-	-	m	vs	-	vs	vs	-	-
Limestone & dolomite	m	s	-	s	-	vs	-	-	-	-	-	-
Iron ore, ironstone, sinter, etc.	l	s	s	m	s	s	s	vs	vs	s	s	s
Shale, clay & ash	s	s	-	s	s	m	s	vs	l	m	m	-
Coke	s	s	s	l	s	s	s	vs	vs	s	s	s
Coal & char	-	s	-	s	s	-	-	vs	vs	s	vs	-
Cementitious material & clay	s	s	m	m	s	m	m	s	s	m	s	s
Used Portland cement	-	-	-	-	-	-	-	-	-	-	-	-
L = very large, l = large, m = medium, s = small and vs = very small amounts												

GENERAL EXPLANATION

L = very large, l = large, m = medium, s = small and vs = very small amounts.

Blast furnace slag. When present this consists mainly of melilite (Ca,Mg,Al silicate ranging in composition between $Ca_2Al_2SiO_7$ and $Ca_2MgSi_2O_7$). Other common phases are merwinite ($Ca_3MgSi_2O_8$), larnite (ß-Ca_2SiO_4) and bredigite (Ca_2SiO_4 with some Mg in solid solution). The matrix often consists of some of the above phases, especially melilite, but may also contain other phases such as wollastonite ($CaSiO_3$), anorthite ($CaAl_2Si_2O_8$) and pyroxene ($(CaMg)SiO_3$). Spinel ($MgAl_2O_4$) may be present. Sulphides and metal usually occur and are mostly finely dispersed, but the metal sometimes occurs as prills and may contain some graphite and Ti carbo-nitride (TiCN). Material reported as ceramic in appearance is very finely crystalline. The alteration products often include calcite and gypsum but are mostly silicate and/or sulpho-aluminate hydrates that are difficult to identify specifically under the microscope.

Basic steel slag. When present this consists mainly of dicalcium silicate, mostly the ß-form (larnite) but sometimes the alpha form. Phosphoric slags may contain nagelschmidtite (Ca_2SiO_4 with $Ca_3P_2O_8$ in solid solution). Other silicate often present in small amounts, unetched by dilute HCl, is probably melilite. RO, R_3O_4 and RF phases are typically present and are mainly FeO and Fe_3O_4 with some Mg, Mn, Ca, etc. in solid solution and complex Ca alumino-ferrites. There may also be some Fe_2O_3 and spinel ($(Mg,Fe)Al_2O_4$). The slag typically carries minor amounts of periclase (MgO with some Fe in solid solution) and lime phase (CaO with some Fe, Mn & Mg in solid solution). Other possible minor constituents include fluorite (CaF_2) and apatite (Ca fluoro-phosphate), the last present in phosphoric slags. The alteration products are, again, difficult to identify specifically but are probably, mainly, hydrated silicates. Portlandite ($Ca(OH)_2$) may be present.

Basic refractory material. When present, this is mainly magnesian and consists of granular periclase (MgO) with interstitial silicates. Sometimes samples contain chrome-magnesia material with chromite present in addition to the other phases. Hot face material (from close to the furnace) may also occur. The periclase and interstitial silicates show secondary alteration similar to that of the basic steel slag. Brucite ($Mg(OH)_2$ is likely.

Acid steel slag. When present this consists mainly of fayalite ($(Fe,Mn)_2SiO_4$), Fe,Mn oxides and cristobalite (high temperature SiO_2).

Other slags. The 'intermediate slag' (probably primary flush slags from steel furnaces) has a variable phase assemblage, being mainly formed of silicates, particularly dicalcium silicate, melilite, merwinite and a complex olivine phase together with spinel and wustite (FeO). Sometimes it contains significant amounts of periclase, well embedded in the slag. The 'ferrous slag' (probably from foundry operations) has similar silicates but much more substantial content of iron oxides, usually wustite. It is often associated with scale (iron oxides formed on the surface of steel during reheating/cooling). When present, the 'cindery slag' consists of various silicates and silicate glass with Fe oxides, hercynite ($FeAl_2O_4$) and, sometimes, corundum (Al_2O_3). It is usually derived from heating furnaces and is often associated with burnt shale. When present, the 'siliceous clinker' is similar but devoid of iron oxides.

Other constituents The alumino-silicate brick includes a range of refractory firebrick, common brick and alumina-rich refractories. The 'quartz, sandstone, etc.' may include used silica refractory material consisting of quartz and its high temperature forms. Sometimes there is a distinct granular texture and it is derived from silcrete, a kind of chert. Cementitious material may bond the finer particles together. It is similar to the other alteration products consisting mostly of complex hydrates difficult to identify under the microscope Sometimes some is used Portland cement recognised by the relict textures of the clinker and the embedded quartz sand.

APPENDIX B

MECHANISMS OF VOLUMETRIC INSTABILITY IN IRON AND STEEL INDUSTRY SLAGS

Volumetric change with time can occur in some types of iron and steel industry slags. These mechanisms are briefly described in this section.

Blast Furnace Slags

Fresh-make air-cooled, i.e. crystalline, blast furnace slags are almost always volumetrically stable after cooling. The two mechanisms for volumetric instability listed in BS1047:1983 – "Air Cooled Blast furnace Slag for use in Construction" are:-

a) Beta to gamma inversion of dicalcium silicate.

b) Iron unsoundness.

a) Research by G H Thomas on this phase transformation has shown the transformation to be athermal rather than isothermal. In practical terms this means that inversion, and the expansion associated with it, can only occur during the cooling cycle. In fully cooled material there would appear to be no further risk of instability from this mechanism.

b) Iron unsoundness is a very rare form of instability frequently associated with operating problems in the blast furnace. TRS know of only one instance in over 40 years. The mechanism, which is a hydrolysis reaction, is immediately triggered off by the presence of water. Once water has initiated the reaction, the mechanism proceeds to completion. It is impossible to arrest the process once started; at least by methods operating in normal ambient conditions.

It follows that the risk of late expansion from either of these mechanisms in blast furnace slag is remote.

c) Sulphoaluminate Type Activity

Some years ago, G. H. Thomas discovered a third mechanism that may give rise to volumetric instability. The process is possible only in some old blast furnace slag altered by weathering. When the sulphide sulphur in the blast furnace slags is oxidised during

weathering to sulphate, under some circumstances reactions can take place within the slag to produce an 'ettringite' type product. The process is somewhat analogous to sulphatic attack on concrete and has a similar result - expansion of the mass and associated disruption.

For the mechanism to have any significance, the slag needs to have residual potential for this reaction. Evidence of past activity does not necessarily indicate further reaction is possible.

The TRS accelerated expansion test is, we believe, uniquely capable of identifying such slags, as well as instability attributable to free CaO and free MgO in steel slag & etc.

Basic Steel Slags

Basic steel slags commonly contain significant quantities of free CaO and free MgO. These free oxides are well known for the massive expansion associated with their hydration. In practical terms, it is impossible to forecast when hydration will take place, but it can be up to decades after the material was cooled – or placed. The reasons are complex, but include the varying density of the oxides, due to the variation in temperatures at which the products have been held in the furnace. Other factors influencing rate of hydration include:-

- the protection of slags by a reaction product at the oxide interface with the slag.
- the presence of the oxides as lime or magnesia rich solid solutions instead of the pure oxide.

The result is potential future volumetric instability but at an unforeseeable date. Periclase, i.e. free MgO, is relatively much slower than free CaO to hydrate.

Scrap High Magnesia Refractories

These are particularly undesirable components in fill as they commonly result in high concentrations of free MgO. The problems associated with these concentrations are similar to those where periclase is found in basic steel slag.

Appendix B
Factual information SSI1

FACTUAL REPORT – INITIAL TRIAL PITTING.

SSI REDCAR – SSI 1

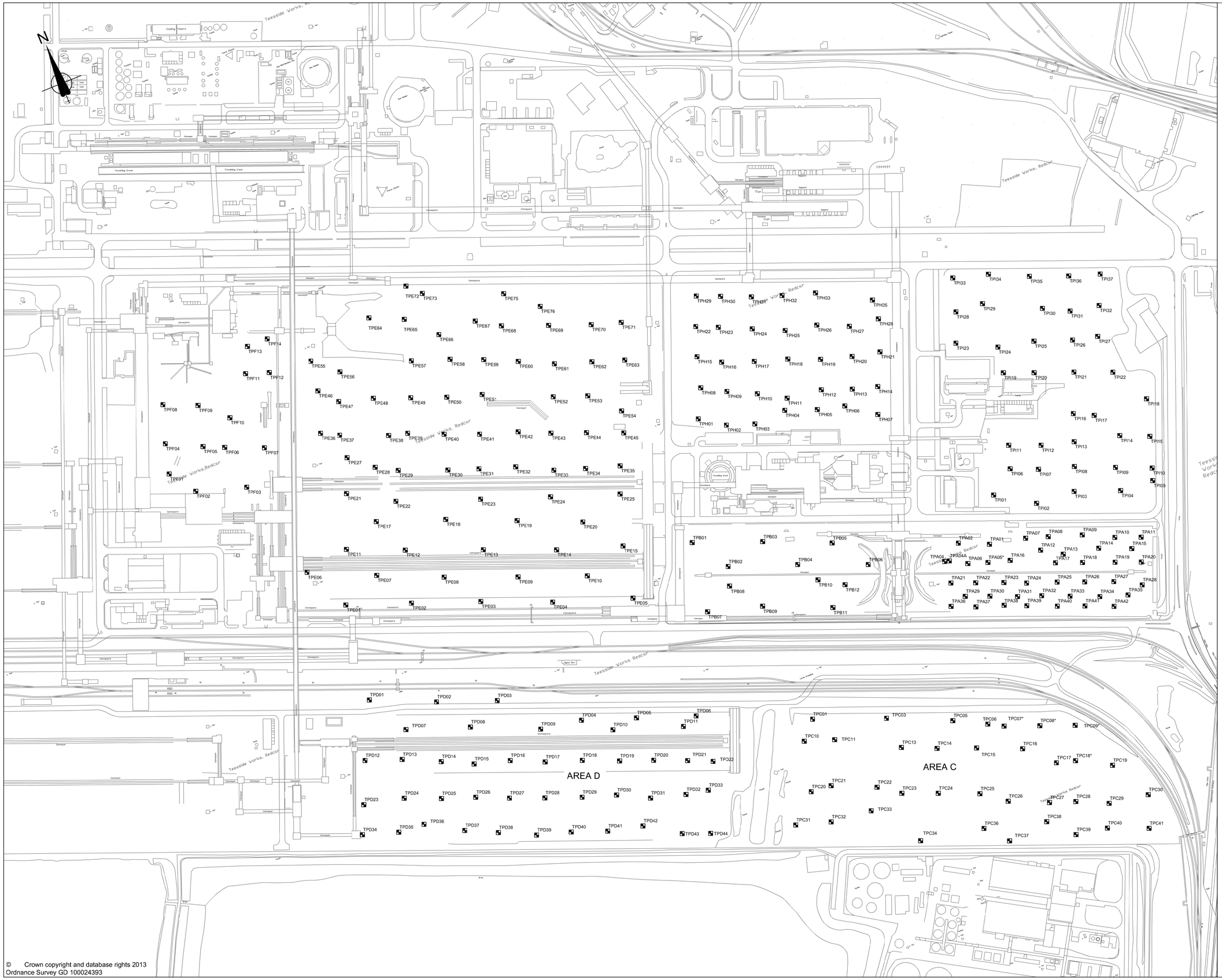
Prepared for

South Tees Site Company

November 2017

Dunedin House Riverside
Teesdale Business Park
Stockton-on-Tees,
TS17 6BJ
GB
+44 1642 632 800

Exploratory hole Location Plan



NOTES

1. POSITIONS SUBJECT TO CHANGE ON SITE, INDICATIVE ONLY.

KEY

- TRIAL PIT MAXIMUM 4.5M DEEP, 4M LONG, 1.5M WIDE TOTAL = 328 HOLES
- BOREHOLES
- SSI 1 BOUNDARY
- AREAS CURRENTLY EXCLUDED DUE TO PLANT, BUILDINGS AND UTILITIES

TESTING

GEOTECHNICAL TESTS = ?? NO.

CHEMICAL TESTS = ?? NO.

SLAG TESTING = ?? NO.

Rev	By	Chkd	Apprvd	Date	Description
01	FM	-	-	07/06/17	Updated to reflect correct as-built positions of trial pits

Client

Homes & Communities Agency

CH2M
Dunedin House, Riverside, Stockton-on-Tees
Tel +44 (0)1642 632800
www.CH2M.com

Project

SSI REDCAR

Drawing

Ground Investigation As Dug Exploratory Hole Location Plan - SSI 1

Drawn by: LC	Date: 26/07/2016
Checked by: IDK	Date: 26/07/2016
Approved by: IDK	Date: 26/07/2016
Drawing No. 678079_600_003	Revision -

Drawing Scale: 1:2500 @ A1; 1:5000 @A3

Drawing file path & name :
X:\reference file path\
folder and File name

Exploratory hole logs

Trial Pit Log

Trialpit No **TPA01** Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456898.00 - 524797.00 Level:	Date 11/01/2017
Location:	SSI Redcar		Dimensions (m): 4.4 x 2.3 Depth 2.80	Scale 1:25
Client:	Homes and Communities Agency			Logged MW

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.05			MADE GROUND: Dark grey black fine to coarse GRAVEL of sinter MGR
	0.60	ES					MADE GROUND: Dark brown very gravelly SAND with occasional to frequent cobbles of grey & yellow slag. Gravel is fine to coarse slag & red brick fragments rebar. MGR
							From 1.5: Gravelly becoming slightly clayey.
	1.70	B					*From 1.8: Hard slag layer approx 0.30m thick.*
				2.80			End of pit at 2.80 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPA02**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456858.00 - 524815.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.95	Date 30/11/2016 Scale 1:25
Client:	Homes and Communities Agency		Logged

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Sinter MGR
				0.50			MADE GROUND: Dense grey slightly sandy slightly gravelly COBBLES and BOULDERS. Gravel is fine to coarse, angular to sub-angular of slag and occasional brick. Cobbles and boulders of slag, occasionally concrete. Sand is of ash. MGR
	1.00 - 1.40 1.00 - 1.40	B D					MADE GROUND: Yellow brown gravelly cobbly SAND with medium boulder content. Gravel is fine to coarse, angular to sub-angular of slag and occasional red brick. Cobbles and boulders are of slag and concrete. MGR *Becoming brown* *Large boulder of slag in north face of pit* *Sulphur odour*
							Increasing number of boulders
				2.95			End of pit at 2.95 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No
TPA04
Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456830.00 - 524798.00 Level:	Date 01/12/2016
Location: SSI Redcar		Dimensions (m): Depth 1.10	Scale 1:25
Client: Homes and Communities Agency			Logged

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10 - 1.10	ES					

1
2
3
4
5

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPA04A**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456837.00 - 524796.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.30	4.9 × 2.6
Client:	Homes and Communities Agency		

Date: 12/01/2017

Scale: 1:25

Logged: MW

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10 - 1.10	ES		0.05			MADE GROUND: Dark grey black fine to coarse GRAVEL of sinter. MGR
				0.35			MADE GROUND: Grey sandy gravelly COBBLES of slag with occasional boulders. MGR
							MADE GROUND: Dark orangeish brown sandy GRAVEL. Gravel is fine to coarse of slag with frequent cobbles & occasional boulders of slag. MGR
				1.00			MADE GROUND: Light to dark grey fine to coarse gravelly SAND. Gravel is of slag. Occasional cobbles of slag. MGR
	1.10	ES					
							From 2m: Layer of refractory bricks; fragments and whole bricks.
							From 2.5m: Bricks becoming abundant, Red + refractor. Becoming slightly clayey. Demolition Rubble?
▼							*From 3.2m: Groundwater in flow, Slightly discoloured.*
				3.30			End of pit at 3.30 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPA05**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456887.00 - 524774.00 Level:	Date 30/11/2016
Location: SSI Redcar		Dimensions (m): 3.9 x 2.9 Depth 3.40	Scale 1:25
Client: Homes and Communities Agency			Logged FLM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.08			MADE GROUND: Sinter MGR
							MADE GROUND: Grey slightly sandy slightly gravelly COBBLES with medium boulder content. Sand locally white ash. Gravel, cobbles and boulders of slag. Occasional cobbles of yellow refractory brick - approx. 5%. MGR
							From 0.4m: Sandy. Orange on south side of pit.
							From 0.4m to 1.2m: Orange layer, sandy cobbles of slag.
	1.10 - 1.50	B		1.10			MADE GROUND: Dark grey gravelly SAND with low cobble content. Occasional cobble sized fragments of metal tube/pipe. Gravel is fine to coarse, angular to sub-angular of refractory brick fragments, slag and occasional red brick fragments. Cobbles are of brick and slag. MGR
							At 1.2m: Hard layer. Identified as slag.
							Below 1.5m: Red brick content increasing to approx. 10%
							At 2.1m: Slight seepage.
							Below 2.5m: Hard dig. Occasional timber and fabric.
▼	3.10 - 3.40	B					*Below 3.1m: Grey sand and gravel with ash, slag and occasionally brick, wire and pipe.*
				3.40			End of pit at 3.40 m

1 2 3 4 5

Remarks: Position Approximate

Stability:

AGS

Trial Pit Log

Trialpit No **TPA06** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456860.00 - 524783.00 Level:	Date 12/01/2017
Location: SSI Redcar		Dimensions (m): 4.6 × 2.1, Depth 3.80	Scale 1:25
Client: Homes and Communities Agency			Logged MW

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Dark grey black fine to coarse GRAVEL of sinter. MGR
				0.40			MADE GROUND: Dark grey sandy fine to coarse GRAVEL of slag with occasional boulders and frequent cobbles of slag. MGR
	0.70	ES					MADE GROUND: Orangeish brown gravelly SAND with frequent cobbles and rare boulders of slag. MGR
							From 0.9m: Fine to medium yellow sand.
	1.10	B					
				1.20			MADE GROUND: Dark grey gravelly SAND with frequent cobbles & occasional boulders of slag, Cobbles include slag and red brick. MGR
				1.90			MADE GROUND: Black/grey slightly sandy fine to medium, some coarse GRAVEL of porous slag. Occasional cobbles of slag. MGR
	2.00	ES					
	2.10	B					*From 2.1m: Slightly ashy looking.*
				2.50			MADE GROUND: Dark brown slightly clayey gravelly SAND with frequent cobbles of brick, some wood & slag shoes & steel. MGR
▼							*From 2.5m: Possible wall section.*
							From 3.5m: Faint hydrocarbon?
	3.70	ES					
				3.80			End of pit at 3.80 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPA07**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456949.00 - 524786.00 Level:	Date 11/01/2017
Location: SSI Redcar		Dimensions (m): 4.5 × 2.5 Depth 3.20	Scale 1:25
Client: Homes and Communities Agency			Logged MW

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Dark grey black medium to coarse GRAVEL sinter. MGR
							MADE GROUND: Grey sandy fine to coarse GRAVEL with abundant cobbles & frequent boulders. Cobbles include slag, fragments of brick & refractory brick. MGR
							From 0.5m: Hard dig, ashy?
							From 1.5m: Becoming brown.
							From 1.5m: Becoming cobbly.
▼				3.20			End of pit at 3.20 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPA08**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456979.00 - 524775.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.40	4 × 2.3
Client:	Homes and Communities Agency		

Date 29/11/2016

Scale 1:25

Logged AC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Black to dark grey medium to coarse GRAVEL of sinter. MGR
							MADE GROUND: Grey brown sandy gravelly COBBLES AND BOULDERS of slag. Occasional fragments of brick. Gravel is fine to coarse, subangular and angular of slag. MGR
	1.20 1.20	B D					*Below 1.3m: Red brown slag.*
				1.70			MADE GROUND: Red brown very sandy very gravelly COBBLES AND BOULDERS. Gravel is fine to coarse, subangular and angular. Cobbles are subangular and angular of slag. MGR
							Below 2.2m: Slightly silty
▼	2.80	B					
				3.40			End of pit at 3.40 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPA09** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457025.00 - 524760.00 Level:	Date 10/01/2017
Location: SSI Redcar		Dimensions (m): 5 × 2.4, Depth 3.50	Scale 1:25
Client: Homes and Communities Agency			Logged MW

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Dark grey black sinter. MGR
							MADE GROUND: Dark yellowish brown gravelly SAND with frequent cobbles and rare boulders of light grey slag. MGR
							From 1.0m: Becoming brown.
	1.50	B					
							From 2.5m: Very gravelly occasional cobbles.
▼							
	3.10	ES					
							From 3.2m: Seepage.
▼							
				3.50			End of pit at 3.50 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPA10**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457066.00 - 524739.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.25	4.2 × 2.2
Client:	Homes and Communities Agency		

Date: 28/11/2016

Scale: 1:25

Logged: AC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Black fine GRAVEL of Sinter MGR
							MADE GROUND: Light grey sandy gravelly COBBLES and BOULDERS of slag. Gravel is fine to coarse, sub-angular to angular of slag. Cobbles are sub-angular and angular of slag. MGR
	0.90 0.90	B D		0.90			MADE GROUND: Orange brown gravelly SAND with cobbles. Gravel is fine to coarse of sandstone and grey/ dark orange-brown slag. Cobbles are sub-angular and angular of slag. MGR
							Below 1.9m: Becoming very sandy gravelly Cobbles and Boulders
▼	3.00 - 3.10 3.00 - 3.10	B D					*Below 3.0m: Becoming slightly clayey*
							Below 3.0m: Becoming damp
				3.25			End of pit at 3.25 m

Remarks: Sulphur odour during excavation

Stability:

Trial Pit Log

Trialpit No **TPA11**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457101.00 - 524726.00 Level:	Date 25/11/2016
Location: SSI Redcar		Dimensions (m): Depth 3.60	Scale 1:25
Client: Homes and Communities Agency			Logged FLM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10 - 0.50 0.10 - 0.50	B D		0.10			MADE GROUND: Sinter MGR
							MADE GROUND: Very dense grey sandy GRAVEL and COBBLES with low boulder content. Gravel and cobbles are fine to coarse angular and subangular predominantly of slag, occasional brick. Boulders are sub-angular of slag up to 400x250x170mm. Sand is fine to coarse of ash. Brick are mostly refractory. MGR *From 0.5 to 1m: Higher proportion of bricks.* *Below 0.8m: Darker in colour* *Below 1.1m: Increasing proportion of cobbles are yellow brick.*
				1.70			MADE GROUND: Medium dense dark grey-black gravelly SAND with low to medium cobble content. Gravel is fine to coarse angular and subangular predominately slag occasional brick. Cobbles are slag and brick. MGR
▼				3.60			End of pit at 3.60 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPA12**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456962.00 - 524762.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.90	4.6 × 2.1
Client:	Homes and Communities Agency		

Date 11/01/2017

Scale 1:25

Logged MW

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Dark grey black GRAVEL of sinter. MGR
							MADE GROUND: Dark brown very sandy GRAVEL of fine to coarse slag with abundant cobble & occasional boulders of slag. MGR
				1.40			MADE GROUND: Dark brown slightly clayey very sandy fine to coarse GRAVEL of slag with occasional cobbles of slag. MGR
▼	1.80	ES					*From 1.4m: Sulphur odour.*
				2.90			End of pit at 2.90 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPA13**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456990.00 - 524745.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.30	3.8 × 2.2
Client:	Homes and Communities Agency		

Date 29/11/2016

Scale 1:25

Logged AC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Black fine and medium GRAVEL of sinter MGR
	0.60 - 1.00	B					MADE GROUND: Grey brown sandy gravelly COBBLES and BOULDERS. Occasional fragments of brick (Red & Refractory) rarely intact bricks. Gravel is fine to coarse, subangular and angular of slag. Cobbles and boulders are subangular and angular of slag. MGR *Below 0.6m: Dark grey brown*
				1.70			MADE GROUND: Red brown slightly clayey very sandy GRAVEL with cobbles and boulders of grey and orange brown slag. Gravel is subangular and angular, fine to coarse of slag. MGR
	2.40 2.40	B D					*Below 2.5m: Slightly clayey/silty*
▼				3.20			End of pit at 3.30 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPA14** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457039.00 - 524734.00 Level:	Date 10/01/2017
Location: SSI Redcar		Dimensions (m): 4.4 × 2.4 Depth 2.90	Scale 1:25
Client: Homes and Communities Agency			Logged MW

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Greyish black sinter. MGR
				0.35			MADE GROUND: Light grey sandy fine to coarse GRAVEL of slag with occasional cobbles. MGR *From 0.05m: Reddish brown cobbles.*
	0.80	ES					MADE GROUND: Dark yellowish brown slightly clayey gravelly SAND. Gravel includes slag, concrete, occasional refuse & cobbles. MGR *From 0.9m: Reinforced concrete slab.*
				1.10			MADE GROUND: Dark brown gravelly SAND. Gravel is fine to coarse includes slag & brick. Occasional slag cobbles. MGR
	2.00	B					
				2.10			MADE GROUND: Very soft white CLAY. MGR *From 2.1m: Highly plastic odour. Lime?*
	2.30 2.30	D ES					
▼				2.50			MADE GROUND: Dark brown speckled white sandy GRAVEL with cobbles. MGR
				2.90			End of pit at 2.90 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPA15**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457082.00 - 524716.00 Level:	Date 10/01/2017
Location: SSI Redcar		Dimensions (m): 5.6 x 2.7 Depth 0.90	Scale 1:25
Client: Homes and Communities Agency			Logged MW

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.45	ES		0.05			MADE GROUND: Dark blackish grey sinter. MGR
				0.40			MADE GROUND: Light grey sandy fine to coarse GRAVEL with frequent cobbles & occasional boulders of slag. MGR
				0.90			MADE GROUND: Dark brownish grey gravelly SAND with some ash. Gravel is fine to coarse and includes slag. MGR *From 0.6m: Becoming cobbly.* End of pit at 0.90 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPA16**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456917.00 - 524765.00 Level:	Date 29/11/2016
Location: SSI Redcar		Dimensions (m): 3.7 x 1.9 Depth 3.10	Scale 1:25
Client: Homes and Communities Agency			Logged AC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Black/brown fine and medium GRAVEL of Sinter MGR
				0.40			MADE GROUND: Grass over; firm orangeish brown very sandy CLAY; locally very clayey gravelly sand with low cobble content. Gravel is subangular to angular fine to coarse of mixed lithologies. Cobbles are mixed, some slag, some red brick fragments. MGR
	1.00 1.00	B D		0.90			MADE GROUND: Grey reddish brown sandy very gravelly COBBLES and BOULDERS of slag. Cobbles and boulders are angular to subangular. Gravel is fine to coarse, angular to subangular. Fragments of red and yellow refractory brick. MGR *Below 0.7m: Becoming red brown/grey.* *Below 1.1m: Light grey.*
				1.60			MADE GROUND: Medium dense dark grey slightly gravelly SAND with low cobble content. Gravel is fine to coarse angular to rounded of slag pellets, red brick frags, iron ore, yellow brick. Assorted metal scrap including steel plate, tin sheet, conveyor rollers and re-bar. MGR *Below 0.7m: Becoming red brown/grey.*
▼	3.10 3.10	B D		3.10			MADE GROUND: Medium dense grey gravelly SAND with low cobble and boulder content. Gravel is fine to coarse, angular to subangular of slag, iron ore, brick frags. Cobbles are slag, iron ore and brick. Boulders are slag. Assorted metal scrap, see above (large electrical motor x2 approx. 2.0m depth.) MGR *Below 1.1m: Light grey.*
				4.40			MADE GROUND: Reddish brown very sandy gravelly COBBLES and BOULDERS. Gravel is fine to coarse angular to subangular of red-brown/grey slag. Cobbles and boulders are angular to subangular of slag. MGR End of pit at 3.10 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPA17** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456975.00 - 524737.00 Level:	Date 11/01/2017
Location: SSI Redcar		Dimensions (m): Depth 3.20 — 5 × 1.8	Scale 1:25
Client: Homes and Communities Agency			Logged MW

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Dark grey black sinter. MGR
							MADE GROUND: Light grey sandy GRAVEL of slag with frequent cobbles and rare boulders of slag. MGR
				0.80			MADE GROUND: Dark brown very gravelly SAND with frequent cobbles & rare boulders. Cobbles include slag & brick fragments. Boulders are slag. MGR
	2.20 2.20	B ES					*From 2.3m: Sulphur odour.*
				2.70			MADE GROUND: Brown slightly clayey sandy GRAVEL of fine to coarse slag. Rare cobbles of slag. MGR
▼							*From 2.7m: Sulphur odour.*
				3.20			End of pit at 3.20 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPA18**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457011.00 - 524724.00 Level:	Date 29/11/2016
Location: SSI Redcar		Dimensions (m): 4.3 × 2.7 Depth 3.10	Scale 1:25
Client: Homes and Communities Agency			Logged AC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Black fine and medium GRAVEL of sinter MGR
							MADE GROUND: Light grey sandy gravelly COBBLES and BOULDERS of slag. Gravel is fine to coarse, subangular to angular of slag. Occasional fragments of red brick. MGR
							Below 0.8m: Becoming dark grey brown, very sandy, no brick fragments.
	1.50 - 1.70 1.50 - 1.70	B D					
▼							
	3.10	LB		3.10			End of pit at 3.10 m

1
2
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4
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Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPA19**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457053.00 - 524707.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.20	3.8 × 2.8
Client:	Homes and Communities Agency		

Date 28/11/2016

Scale 1:25

Logged AC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Black fine GRAVEL of Sinter MGR
	0.50 - 0.90 0.50 - 0.90	B D					MADE GROUND: Grey/brown sandy gravelly COBBLES and BOULDERS of slag with occasional fragments of brick. Gravel is fine to coarse, subangular and angular of slag. MGR
							Below 1.0m: Becoming very sandy and no brick fragments.
	2.00 - 2.20	B					
▼	3.10 - 3.20 3.10 - 3.20	B D		3.20			End of pit at 3.20 m

Remarks: Sulphur odour during excavation

Stability:

Trial Pit Log

Trialpit No **TPA20**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457088.00 - 524693.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.40	5 × 2.4
Client:	Homes and Communities Agency		

Date 09/01/2017

Scale 1:25

Logged MW

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Loose dark grey black GRAVEL of sinter MGR
							MADE GROUND: Light grey sandy fine to coarse GRAVEL. Gravel of slag includes fragments of brick & refractory brick. MGR
				0.80			MADE GROUND: Brown very sandy cobbly fine to coarse GRAVEL of slag. Gravel includes brick, refractory brick, rare boulders of slag. Rare wood fragments. MGR
	1.10 - 1.40	B					*From 0.8m: Sulphur odour, becoming gravelly SAND.*
	1.30	ES					*From 1.0m: Ashy (black fine).*
▼	3.30	B		3.30			MADE GROUND: Dark reddish brown gravelly SAND with cobbles of brick. MGR
				3.40			End of pit at 3.40 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPA21**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456828.00 - 524767.00 Level:	Date 12/02/2016
Location: SSI Redcar		Dimensions (m): 3.9 × 2.5 Depth 3.50	Scale 1:25
Client: Homes and Communities Agency			Logged AC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Black fine and medium GRAVEL of sinter MGR
				0.50			MADE GROUND: Red brown fine to coarse GRAVEL with cobbles and boulders of grey/brown slag. Gravel is subangular and angular. Cobbles are subangular and angular of slag with occasional fragments of red brick. MGR
	0.90 - 1.10 0.90 - 1.10	B D					MADE GROUND: Dark grey brown sandy gravelly COBBLES and BOULDERS. Subangular medium and coarse. Gravels are subangular and angular of slag. MGR
				1.40			MADE GROUND: Light grey very sandy gravelly COBBLES with boulders of grey slag. Gravel is fine to coarse, subangular and angular of slag. Some red/brown gravels. Cobbles of slag. MGR
	1.70 - 2.20	B					*Below 1.7m: Becoming dark grey with occasional orange-brown sand. Slightly cobble very sandy gravel. Occasional refractory brick fragments.*
							From 2.4 to 2.7m: Greyish brown layer of fine sandy gravel.
▼							*From 2.7 to 3.5m: As from 1.7m with more frequent fragments of brick. Dark grey colouration possibly ash.*
				3.50			End of pit at 3.50 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPA22**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456860.00 - 524754.00 Level:	Date 15/12/2016
Location: SSI Redcar		Dimensions (m): 4.1 x 2.4 Depth 3.40	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.02			MADE GROUND: Loose dark grey/black sinter MGR
	0.20	ES					MADE GROUND: Loose grey very gravelly SAND with low cobble content. Gravel is fine to coarse, angular to subangular of slag and clinker. Cobbles are slag and clinker. MGR
				0.50			MADE GROUND: Medium dense light grey very gravelly SAND with medium cobble and boulder content. Gravel is fine medium and coarse, subangular and angular of slag, clinker and rare brick fragments. Cobbles and boulders are slag, clinker and brick. MGR
	0.70 - 1.10	B					
				1.20			MADE GROUND: Medium dense dark grey gravelly SAND with medium cobble content and low boulder content. Cobbles and boulders are slag. MGR
	1.50 - 2.00	LB					*At 2.0m: Large boulder. 1050 x 900 x 400mm.*
				2.10			MADE GROUND: Loose to medium dense grey gravelly SAND with low cobble and low boulder content and fine sand-sized white 'ash'. Cobbles are slag and occasional yellow brick. Boulders are slag. MGR
	2.30	ES					*At 2.4m: Partially decomposed timber. Soaked in creosote. Strong odour.* *Below 2.5m: Low ash content.*
▼				3.40			End of pit at 3.40 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPA23**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456897.00 - 524739.00 Level:	Date 05/12/2016
Location: SSI Redcar		Dimensions (m): Depth 3.30	Scale 1:25
Client: Homes and Communities Agency			Logged FLM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.02			MADE GROUND: Sinter MGR
	0.20 - 0.70	LB					MADE GROUND: Loose to medium dense grey sandy GRAVEL with medium cobble content and occasional boulders. Gravel is fine to coarse, angular and subangular of slag and clinker, occasional white ash. Cobbles are subangular of slag and clinker. Slight sulphur odour. Occasional coarse gravel-sized/small cobble sized metal. MGR
				0.70			*From 0.5 to 0.7m: Slightly darker colouration.*
	0.80 - 1.20	B					MADE GROUND: Loose to medium dense slightly clayey SAND and GRAVEL with low cobble content and occasional cobble-sized fragments of reworked brown grey firm laminated clay with coarse subangular gravel (possible slag). Locally reddish brown. MGR
							Below 1.5m: Sidewalls unstable.
	2.10 - 2.30	B					
				2.30			MADE GROUND: Medium dense grey slightly sandy slightly gravelly COBBLES and BOULDERS of slag and clinker. MGR
	2.50 - 2.80	LB					
				2.90			MADE GROUND: Loose to medium dense slightly clayey SAND and GRAVEL with low cobble content and occasional cobble-sized fragments of reworked brown grey firm laminated clay with coarse subangular gravel (possible slag). Sand is probable ash. Locally reddish brown. MGR
▼				3.30			End of pit at 3.30 m

Remarks:

Stability:

Trial Pit Log

ch2m.			Trialpit No **TPA24** Sheet 1 of 1
Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456927.00 - 524726.00 Level:	Date 06/12/2016
Location: SSI Redcar		Dimensions (m): 4.2 × 2.1 Depth 3.40	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Dark grey to black fine and medium gravel-sized sinter MGR
	0.50 - 0.80	B					MADE GROUND: Loose dark grey slightly sandy GRAVEL with medium cobble content and low boulder content. Gravel is subangular to angular, fine to coarse of slag, clinker and rare burnt lime. Rare red brick fragments less than 50mmx30mmx20mm. MGR
							Between 0.1 and 0.7m: Discontinuous layer of loose brownish grey slightly sandy GRAVEL with occasional yellow refractory bricks approx 5-10% content.
							Between 0.7 and 2.4m: Medium boulder content. Very slightly sandy.
							Below 2.0m: Brownish grey.
▼	2.70 - 3.00	B					
				3.40			End of pit at 3.40 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPA25**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456967.00 - 524712.00 Level:
Location:	SSI Redcar	Dimensions (m): 4.3 × 2.1	Scale 1:25
Client:	Homes and Communities Agency	Depth 3.10	Logged TL
			Date 14/12/2016

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Loose dark grey to black fine and medium gravel-sized sinter MGR
	0.40	ES					MADE GROUND: Loose reddish brown gravelly SAND with medium cobble and low boulder content. Gravel is fine medium and coarse, subangular and angular of slag, clinker and yellow brick fragments. Cobbles are slag and occasional yellow brick. Boulders are slag. MGR
				0.70			MADE GROUND: Loose becoming medium dense grey sandy GRAVEL with medium cobble and low to medium boulder content. Gravel and cobbles are slag and clinker. Boulders are slag, up to 500 x 250 x 200mm. Some slag boulders have white crystallisation on outer surface. MGR
							Between 0.7 and 2.0m: Rare yellow 'refractory' brick.
	2.20 - 2.50	B					*Below 2.5m: Medium dense*
▼				3.10			End of pit at 3.10 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPA26**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457003.00 - 524697.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.20	4.4 × 2.5
Client:	Homes and Communities Agency		

Date: 13/12/2016

Scale: 1:25

Logged: TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Dense dark grey fine grained sinter MGR
							MADE GROUND: Loose light grey very sandy GRAVEL with medium cobble and low boulder content. Gravel is fine medium and coarse, angular and subangular of slag, clinker and rare yellow brick. Cobbles and boulders are slag. MGR
							Between 0.3 and 0.5m: Medium boulder content.
	0.80	ES		0.80			MADE GROUND: Loose becoming medium dense very sandy GRAVEL with medium cobble and boulder content. Gravel is fine to coarse, subangular and angular of slag, clinker and burnt lime. Cobbles and boulders are slag and rare yellow brick (<5% content). Some slag fragments have white crystallisation on outer surface. MGR
							Between 1.1 and 1.4m: High boulder content.
	2.00	LB					*Below 2.0m: Boulder size increasing.*
	2.20 - 2.50	B					
▼				3.20			End of pit at 3.20 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPA27**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457042.00 - 524682.00 Level:	Date 08/12/2016
Location: SSI Redcar		Dimensions (m): 4.6 × 2.7 Depth 3.30	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Dark grey to black fine gravel-sized sinter MGR
	0.30 - 0.60	B					MADE GROUND: Loose dark greyish brown very gravelly SAND with low cobble content. Gravel is fine and medium rarely coarse of slag and clinker. Cobbles are slag and red and yellow brick. MGR
				0.60			*Note: Yellow 'Refractory' bricks are approx. 5 - 10% of total content.* MADE GROUND: Loose grey very sandy becoming sandy GRAVEL with medium cobble and boulder content. Gravel is fine medium and coarse of slag and some clinker. Cobbles and boulders are slag. MGR
▼				3.30			End of pit at 3.30 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPA28**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457077.00 - 524663.00 Level:	Date 12/12/2016
Location: SSI Redcar		Dimensions (m): 3.7 × 2.2 Depth 3.40	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Medium dense dark grey fine and medium gravel-sized sinter MGR
	0.20 - 0.50	B					MADE GROUND: Loose dark grey gravelly SAND with low cobble and low boulder content. Gravel is fine medium and coarse, subangular and angular of slag, clinker and red/yellow brick fragments. Cobbles and boulders are slag and red/yellow brick, rare clinker. MGR
	0.50	ES					*Greyish yellow gravelly SAND with low cobble content. Gravel is fine to coarse subrounded to subangular of slag. Cobbles are subangular of slag.*
							Below 1.0m: Pit unstable, undermined on 3 sides.
				1.10			MADE GROUND: Loose dark grey very sandy GRAVEL with medium cobble and boulder content. Gravel is fine medium and coarse, subangular of slag and clinker. Cobbles and boulders are slag with rare red/yellow brick. MGR
				1.70			MADE GROUND: Loose light grey with light brown patches sandy GRAVEL and COBBLES with medium boulder content. Gravel is fine medium and coarse, subangular of slag, rare clinker. Boulders are slag. MGR
				2.30			MADE GROUND: Loose to medium dense light brownish grey sandy GRAVEL with low cobble and low boulder content. Gravel is fine and medium rarely coarse, subangular and angular of slag and clinker. Cobbles and boulders are slag. MGR
▼	2.70 - 3.00	B					
				3.40			End of pit at 3.40 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPA29** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456839.00 - 524742.00 Level:	Date 05/12/2016
Location: SSI Redcar		Dimensions (m): 4.5 × 2.3 Depth 3.30	Scale 1:25
Client: Homes and Communities Agency			Logged FLM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Sinter MGR *Top 0.5m: Occasional patches of white dust/sand. Possibly burnt lime ash on surface of slag.*
	0.50 - 0.80	LB					MADE GROUND: Medium dense dark grey sandy GRAVEL and COBBLES with low boulder content. Gravel is fine to coarse, angular to subrounded of slag, clinker and occasional refractory brick/tile. Cobbles of slag and clinker. Sand portion possibly ash with slag and clinker, all grey. Slight sulphur odour. MGR *Below 0.8m: Slight lightening in colour.*
	0.80 - 1.00	B					
	1.50 - 1.70	ES		1.50			MADE GROUND: Loose white and grey gravelly SAND with low cobble content and white ash of burnt lime. Gravel is fine to coarse, angular and subangular of slag, clinker and occasional lime/burnt lime. Cobbles are subangular and angular of clinker, slag and occasional red brick. MGR *Below 1.7m: Medium dense.* *From 1.7 to 1.85m: Pockets of red brick, approximately 40% of total volume.*
				2.20			*Below 2m: Becoming locally black & brown.* *Below 2.1m: Refractory bricks approximately 5-10% of total volume.* MADE GROUND: Dense dark orange brown sandy GRAVEL with low cobble content. Gravel is slag and clinker. Cobbles are slag and clinker. MGR *Below 2.2m: Very dense/dense* *Below 2.6m: Occasional wood/timber cobbles.*
▼	3.10 - 3.30	B		2.70			MADE GROUND: Medium dense grey black white sandy GRAVEL. Gravel is fine to coarse, subangular and angular of clinker and slag occasionally lime and yellow brick/tile. MGR
				3.30			End of pit at 3.30 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPA30**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456872.00 - 524729.00 Level:	Date 06/12/2016
Location: SSI Redcar		Dimensions (m): 4.3 × 1.9 Depth 3.00	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Dark grey to black fine and medium gravel-sized sinter MGR
	0.50 - 0.90	B					MADE GROUND: Loose to medium dense dark grey sandy GRAVEL with low cobble content. Gravel and cobbles are slag, clinker, yellow/red brick and rare burnt lime. MGR *At 0.4m: Metal debris. Sheet approx. 500 x 300mm. Bar approx 20mm diameter 500mm long.* *Below 0.5m: Grey* *Below 0.9m: Low boulder content. Slag.*
				1.40			MADE GROUND: Loose to medium dense light grey slightly sandy gravelly COBBLES with medium boulder content. Gravel and cobbles are subangular of slag, clinker and burnt lime. Boulders are mostly slag rarely clinker, up to 380 x 380 x 280mm. MGR
	2.10 - 2.30	B					*Below 2.3m: Red brick and tile approx. 1-2% of total volume.* *Below 2.6m: Sandy.*
▼				3.00			End of pit at 3.00 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPA31**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456908.00 - 524713.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.20	4.4 × 2.5
Client:	Homes and Communities Agency		

Date: 15/12/2016

Scale: 1:25

Logged: TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.02			MADE GROUND: Medium dense dark grey/black sinter MGR
	0.60	ES		0.60			MADE GROUND: Loose light brownish grey sandy GRAVEL with low to medium cobble content. Gravel is fine medium and coarse, subangular of slag occasionally clinker. Cobbles are slag and rare yellow brick fragments. MGR *Between 0.1 and 1.0m: Strong ammonia odour.* *At 0.5m: Large boulder. 1150 x 800 x 850mm. 'Conglomerate' of slag boulders.*
							MADE GROUND: Loose becoming medium dense grey very sandy GRAVEL with low to medium cobble content and low boulder content. Gravel is fine medium and coarse, subangular and angular of slag, clinker and lime. Cobbles and boulders are slag and clinker, rare lime. MGR *Below 1.5m: Low cobble content.* *Between 1.5 and 2.7m: Medium boulder content.*
	2.30 - 2.60	B					*Below 2.7m: Low boulder content.*
▼				3.20			End of pit at 3.20 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

ch2m.			Trialpit No **TPA32** Sheet 1 of 1
Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456940.00 - 524702.00 Level:	Date 07/12/2016
Location: SSI Redcar		Dimensions (m): 4.8 × 2.6 Depth 3.30	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.02			MADE GROUND: Dark grey to black fine and medium gravel-sized sinter MGR
							MADE GROUND: Loose greyish brown and grey sandy GRAVEL with low cobble content. Gravel is fine medium and coarse, sub angular and angular of clinker, rare slag. MGR
	0.70 - 1.00	B		0.70			MADE GROUND: Loose becoming medium dense grey very sandy GRAVEL with low to medium cobble and low boulder content. Gravel is fine, medium and coarse, subangular rare angular of slag, clinker and possible iron ore. Coarse gravels are mixed grey and reddish brown. MGR *Below 1.0m: No reddish brown iron ore.* *Between 1.2 and 1.4m: Dark grey.*
				1.40			MADE GROUND: Loose locally dense grey slightly sandy GRAVEL with low cobble content and medium boulder content. Gravel is angular and subangular, fine medium and coarse of slag, rare clinker. Boulders are slag. MGR
	2.60 - 3.00	B					
▼							*At 3.1m: Hard layer of compacted slag. Slowed excavation.*
				3.30			End of pit at 3.30 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPA33**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456977.00 - 524686.00 Level:	Date 07/12/2016
Location: SSI Redcar		Dimensions (m): 4.3 × 2.9 Depth 3.10	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10 - 0.40	B		0.05			MADE GROUND: Dark grey to black fine and medium gravel-sized sinter MGR
							MADE GROUND: Loose grey locally brownish grey sandy GRAVEL with low cobble and low boulder content. Gravels are clinker and slag, rare red/yellow brick. MGR
							Between 0.5 and 0.7m: Greyish brown with approx. 5% yellow/red brick content.
				0.70			MADE GROUND: Loose to medium dense grey becoming dark grey with depth sandy GRAVEL with medium cobble and boulder content. Gravel, cobbles and boulders are clinker and slag with some ferrous staining and white staining on edges. MGR
							At 0.7m: Large boulder. Conglomerate of slag. 950 x 600 x 500mm. *Between 0.7 and 1.1m: Medium grey.*
	1.80 - 2.10	B					
							Below 2.5m: No red/yellow brick.
▼				3.10			End of pit at 3.10 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPA34**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457015.00 - 524670.00 Level:	Date 13/12/2016
Location: SSI Redcar		Dimensions (m): 4.5 × 2.6 Depth 3.10	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Dark grey/black sinter MGR
	0.30	ES					MADE GROUND: Loose grey very sandy GRAVEL with medium cobble content. Gravel is fine medium and coarse, angular and subangular of clinker, slag and burnt lime. Cobbles are slag and clinker, rare red/yellow brick. MGR *At 0.2m: Fragment of iron ore. 400 x 200 x 100mm.*
	0.70 - 1.00	B		0.60			MADE GROUND: Medium dense dark brownish grey gravelly SAND with low cobble and low boulder content. Gravel is fine medium and coarse, subangular of slag and occasional yellow brick fragments. Cobbles and boulders are slag and red/yellow brick. MGR
▼				1.20			MADE GROUND: Loose locally medium dense grey very sandy GRAVEL and COBBLES with medium boulder content. Cobbles and boulders are slag. Gravel is fine medium and coarse, subangular and angular of slag, clinker and rare yellow brick fragments. MGR
				3.10			End of pit at 3.10 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPA35**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457053.00 - 524657.00 Level:
Location:	SSI Redcar	Dimensions (m): 4.1 × 3.1	Scale 1:25
Client:	Homes and Communities Agency	Depth 3.10	Logged TL
			Date 09/12/2016

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Dark grey to black fine and medium gravel-sized sinter MGR
				0.60			MADE GROUND: Loose brownish grey very sandy GRAVEL with high cobble content and low boulder content. Gravel is fine medium and coarse, subangular, rarely angular mostly slag some clinker. Cobbles are slag, clinker and yellow brick. Boulders are slag. MGR
							MADE GROUND: Loose dark brownish grey very sandy GRAVEL with medium cobble content and medium boulder content. Gravel is fine medium and coarse, subangular of slag and clinker. Cobbles and boulders are slag and clinker. MGR *Below 0.7m: Boulder size increasing with depth.* *At 1.0m: Two large boulders. 1150 x 900 x 550mm and 1800 x 1400 x 800mm.*
				1.40			MADE GROUND: Loose light grey very sandy GRAVEL with low to medium cobble content and low boulder content. MGR
	1.70 - 2.00	B					
				2.30			MADE GROUND: Loose to medium dense light orangeish brown very sandy GRAVEL/gravelly SAND with medium cobble content and low boulder content. Sand is medium to coarse. Gravel is fine medium and coarse, angular and subangular of slag and clinker. Cobbles are slag and clinker. Boulders are slag. MGR
▼	2.40 - 2.70	B					
				3.10			End of pit at 3.10 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPA36**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456815.00 - 524736.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.60	5 / 1.8
Client:	Homes and Communities Agency		

Date: 01/12/2016

Scale: 1:25

Logged: FLM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Sinter MGR
	0.70 - 1.10 0.70 - 1.10	B D					MADE GROUND: Loose to medium dense grey sandy GRAVEL with low cobble content. Gravel predominantly coarse, angular to subrounded of slag, clinker and occasional red/yellow brick. Cobbles of intact yellow brick and slag. Sand of ash, locally white, possibly burnt lime. MGR *Between 0.3 and 0.4m: Higher white ash content.* *Below 1.1m: Increasing cobble content. Occasional boulders of slag. Brick content reduced to almost zero. Cobbles and boulders less aerated (air cooled slag?). Noticeable sulphur odour and sulphur deposits on some cobbles.*
				1.60			MADE GROUND: Dark grey gravelly SAND AND GRAVEL with low cobble content. Gravel is predominately coarse, angular to subrounded of slag, clinker and occasional red/yellow brick. Cobbles are slag and occasional fragments of subrounded lime. Fragments of yellow refractory tile and brick are approximately 5% of total volume. MGR *From 2.4m: Occasional gravel and cobble-sized fragments of red brick.*
	2.50 - 2.80	B					
▼				3.30			MADE GROUND: Dense to very dense dark grey gravelly SAND. Gravel is fine to coarse of slag and clinker with occasional cobbles of yellow tile/brick, <5% of total volume. Boulders of slag >320 x 250 x 200mm. Hard material slowed digging. MGR
				3.60			End of pit at 3.60 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPA37**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456848.00 - 524722.00 Level:	Date 16/12/2016
Location: SSI Redcar		Dimensions (m): Depth 3.80	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Medium dense dark grey/black SINTER MGR
	0.40	ES					MADE GROUND: Medium dense reddish brown gravelly SAND with low cobble content and low boulder content. Gravel and cobbles are slag and clinker. Boulders are slag. MGR *Between 0.05 and 0.2m: Greyish brown.*
							At 1.00m: Red brick, intact.
				1.10			MADE GROUND: Loose light grey very sandy GRAVEL with medium cobble and medium boulder content. Gravel is fine medium and coarse, subangular and angular of slag, clinker, burnt lime and occasional yellow brick fragments. Cobbles and boulders are slag rarely clinker and burnt lime. MGR
				1.90			MADE GROUND: Dense dark grey gravelly SAND with low cobble and low boulder content. Sand is fine and medium some coarse. Gravel is fine medium and coarse, subangular and angular of slag, clinker and yellow brick fragments. Cobbles are slag and yellow brick. Boulders are slag. Red/yellow brick content <5%. MGR *Below 2.0m: Hard material. Slowed excavation.*
	2.10	ES					
	2.70 - 3.10	B					
▼							
▽				3.80			End of pit at 3.80 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPA38**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No.: 678079	Co-ords: 456886.00 - 524709.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.40	3.7 × 2.1
Client:	Homes and Communities Agency		

Date: 06/12/2016

Scale: 1:25

Logged: TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Dark grey to black fine and medium gravel-sized SINTER MGR
	0.50 - 0.80	B					MADE GROUND: Loose dark grey slightly sandy GRAVEL with low cobble content and rare boulders. Gravel is fine, medium and coarse, subangular of clinker, slag and rare burnt lime. Slag has some white staining on outer edges. MGR *Below 0.8m: Medium cobble content. Sulphur odour.*
				1.10			MADE GROUND: Loose grey very sandy GRAVEL with medium cobble and boulder content. Gravels, cobbles and boulders are angular and subangular of slag and clinker. MGR *At 1.3m: Large boulder. Slag. 900 x 600 x 500mm.*
	1.70 - 2.00	B					*At 1.8m: Boulder of weak light yellow / white fine grained rock with black specks. Possible lime. 400 x 200 x 200mm.*
	2.20	B					*At 2.2m: Boulder of weak light yellow/white fine grained rock with black specks. Possible lime. 400 x 200 x 200mm.*
▼				3.40			End of pit at 3.40 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPA39** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456915.00 - 524696.00 Level:	Date 14/12/2016
Location: SSI Redcar		Dimensions (m): 3.9 x 2.2 Depth 3.40	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.02			MADE GROUND: Loose dark grey/black fine and medium gravel-sized SINTER MGR
	0.30	ES		0.10			MADE GROUND: Loose greyish brown very gravelly SAND with low cobble content. Gravel is fine to coarse, subangular of slag, rare clinker. Cobbles are slag. MGR
							MADE GROUND: Loose to medium dense light grey sandy GRAVEL with low cobble content. Gravel is fine to coarse, subangular of slag, clinker and brick fragments. Cobbles are slag, clinker and brick. MGR
				0.90			MADE GROUND: Medium dense dark grey very sandy GRAVEL with medium cobble and boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker and brick fragments. Cobbles and boulders are slag, occasionally clinker or yellow brick. MGR
	1.00 - 1.30	B					*At 1.5m: Large boulder. 1000 x 600 x 800mm.*
	2.00	ES					*Below 2.0m: Grey.*
▼				3.40			End of pit at 3.40 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPA40**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456954.00 - 524680.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.40	4.4 × 2.3
Client:	Homes and Communities Agency		

Date 14/12/2016

Scale 1:25

Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Medium dense dark grey/black fine and medium gravel-sized SINTER MGR
	0.30 - 0.70	B					MADE GROUND: Medium dense light grey sandy GRAVEL and COBBLES with low boulder content. Gravel and cobbles are slag, clinker and occasional yellow brick fragments. Boulders are slag, up to 650 x 600 x 400mm. MGR
				0.70			MADE GROUND: Medium dense dark grey very sandy GRAVEL with medium cobble and low boulder content. Gravel is fine to coarse of slag and clinker. Cobbles are slag and occasional yellow brick. Boulders are slag with white crystallisation on outer surface of some pieces. MGR
							Between 2.2 and 2.4m: Medium boulder content.
▼	2.60	ES					
				3.40			End of pit at 3.40 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPA41**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456991.00 - 524666.00 Level:	Date 07/12/2016
Location: SSI Redcar		Dimensions (m): 3.8 x 2.2 Depth 3.20	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20 - 0.50	LB					MADE GROUND: Loose grey very sandy GRAVEL with medium cobble content and low boulder content. Gravel is fine to coarse subangular of slag and clinker. Cobbles and boulders are slag with rare red brick. MGR
				0.70			MADE GROUND: Medium dense locally loose brownish grey sandy GRAVEL with low cobble and boulder content. Gravel is fine to coarse subangular of slag, rare clinker. Cobbles and boulders are slag. MGR *Below 1.00m: Medium boulder content. Boulders are slag.* *At 1.2m: Large boulder. Slag. 700 x 600 x 500mm.*
	1.50 - 1.80	B		1.30			MADE GROUND: Loose to medium dense grey becoming dark grey sandy locally very sandy GRAVEL with low cobble and medium boulder content. Gravel is fine to coarse, angular to subangular of slag with white crystallisation on outer edges of approximately 30%. Cobbles and boulders are slag. Boulders are up to 400 x 300 x 300mm. MGR *Below 2.6m: Low boulder content.*
▼				3.20			End of pit at 3.20 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPA42**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457029.00 - 524650.00 Level:	Date 12/12/2016
Location: SSI Redcar		Dimensions (m): 4 × 2.3 Depth 4.00	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Loose to medium dense dark grey/ black SINTER MGR
	0.40	ES					MADE GROUND: Loose light brownish grey gravelly SAND with medium cobble and low boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker and brick. Cobbles and boulders are slag, red and yellow brick. Red and yellow bricks are approximately 5-10% of total content. MGR *From 0.05 to 0.1m: Brown coarse sand.*
	0.50 - 0.80	B					
				0.90			MADE GROUND: Loose becoming medium dense grey very sandy GRAVEL with medium cobble and medium boulder content with rare wood fragments up to 100 x 30 x 30mm. Gravel is fine to coarse, angular to subangular of slag, clinker and red/yellow brick frags. Cobbles and boulders are slag. Some slag pieces have white crystallisation and are very weak. Refractory bricks approximately 5% of total volume. MGR *Below 1.5m: Dark grey.*
	1.70 - 2.00	B					*Below 2.0m: Odour. Possibly hydrocarbon.*
							Below 2.5m: Rare patches of stiff dark grey/black clay *At 2.6m: Steel 'L' Girder. 500 x 100 x 100mm.*
				2.80			MADE GROUND: Stiff brown CLAY with low cobble content. MGR
▼	3.40 - 3.70	B		3.40			MADE GROUND: Loose becoming medium dense grey very sandy GRAVEL with medium cobble and boulder content. Rare wood fragments up to 100 x 30 x 30mm. Gravel is fine to coarse, angular to subangular of slag, clinker and red/yellow brick fragments. Cobbles and boulders are slag. Some slag pieces have white crystallisation and are very weak. Refractory bricks approximately 5% of total volume. MGR *Below 3.4m: Hydrocarbon odour with black staining on some boulders.*
▽	3.90	ES		4.00			End of pit at 4.00 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPB01**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456510.00 - 524956.00 Level:	Date 23/01/2017
Location: SSI Redcar		Dimensions (m): Depth 4.60 — 1.8 × 3.8	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30	ES					MADE GROUND: Medium dense dark reddish brown slightly gravelly fine to medium SAND with low cobble content. Gravel is fine to coarse of cemented sand and slag. Cobbles are cemented sand and slag. Some shiny lustre to sand grains. MGR *From 0.4m: Very dense compacted ground* *From 0.4m: Very hard layer. Slow excavation*
				0.60			MADE GROUND: Medium dense brown and grey SAND AND GRAVEL with medium cobble and low boulder content. Sand is fine to coarse. Gravel is of slag, clinker, red and yellow brick fragments. Boulders are slag up to 600x400x400mm. Some gravel is soft/weak with black specks. MGR *Below 1.4m: Boulder size increasing. Medium boulder*
	2.00 - 2.30	B					*At 2.0m: Cable*
				2.70			MADE GROUND: Loose brownish grey slightly gravelly fine to medium SAND with rare pockets (50x50x20mm) of stiff clay. Gravel is fine to medium, rarely coarse, angular to subangular of slag. Gravelly is not uniformly distributed throughout the unit. Some black specked sand. MGR
	3.70 - 4.00	B					
	4.00	ES					
▼							
▽				4.60			End of pit at 4.60 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPB02**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456545.00 - 524906.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.10	4.5 × 2.3
Client:	Homes and Communities Agency		

Date: 19/01/2017

Scale: 1:25

Logged: TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Loose grey/black fine to medium SAND AND GRAVEL (Sinter) MGR
	0.30 - 0.60	B		0.20			MADE GROUND: Medium dense dark grey sandy GRAVEL with low cobble content. Gravel is fine to medium, occasionally coarse, angular to subangular and includes slag, clinker, yellow brick fragments and burnt lime. Cobbles are assorted types of slag and clinker with some white staining. MGR *Below 0.1m: Sulphur odour @ 0.5m: iron ~ 400 x 400 x 100mm*
				0.80			MADE GROUND: Loose light grey gravelly SAND with some white ash. MGR *Below 0.1m: Sulphur odour @ 0.5m: iron ~ 400 x 400 x 100mm*
							MADE GROUND: Medium dense light grey sandy GRAVEL AND COBBLES with low boulder content and abundant white ash/possible crystallisation. Gravel and cobbles are poorly sorted, angular to subangular of slag, clinker and occasional yellow brick fragments. Boulders are slag. MGR *Below 1.5m: Ammonia odour* *At 1.7m: Hard compacted slag layer*
▼	2.60	ES		2.40			MADE GROUND: Medium dense brownish grey sandy GRAVEL with low cobble content and fragments of red and yellow brick. MGR
				3.10			End of pit at 3.10 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPB03** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456603.00 - 524920.00 Level:	Date 23/01/2017
Location: SSI Redcar		Dimensions (m): 4.6 × 2.4, Depth 3.40	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.40	ES		0.50			MADE GROUND: Loose to medium dense dark grey/ black coarse sand to medium gravel sized SINTER MGR *Below 0.2m: Sulphur odour*
				0.60			MADE GROUND: Loose dark grey very gravelly SAND with low cobble content. Gravel is slag, clinker and occasionally yellow brick fragments, angular to subangular fine to coarse. Cobble content is angular to subangular of slag, clinker and rare yellow brick MGR
							MADE GROUND: Loose grey very sandy GRAVEL with low to medium cobble content. Gravel is slag, clinker and rare yellow brick fragments and lime. Cobbles are mostly slag, rare yellow brick fragments and clinker. Boulders are slag. Some slag has white crystallisation on outer surface. Locally sandy gravel. MGR *Below 1.5m: Dark grey. Refractory brick content < 5% of total volume.* *Below 2m: Ammonia odour, slight*
	2.60	ES					
	2.80 - 3.10	B					
				3.40			End of pit at 3.40 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPB04**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456637.00 - 524872.00 Level:
Location:	SSI Redcar	Dimensions (m):	Depth 3.50
Client:	Homes and Communities Agency		

Date: 19/01/2017

Scale: 1:25

Logged: TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Loose dark grey/black coarse sand to medium gravel - sized SINTER MGR
	0.50	ES					MADE GROUND: Medium dense light brownish grey very gravelly SAND with medium cobble content and low boulder content. Gravel is fine to coarse, angular to subangular of slag and clinker. Cobbles and boulders are slag, clinker, yellow brick and weak white tufa. Fragments of tufa throughout MGR
							At 0.9m: Hard layer of compacted slag - Took 15 mins to get through. *From 0.9m to 1.4m: Medium to high boulder*
				1.40			MADE GROUND: Medium dense grey very sandy GRAVEL with medium cobble content and low to medium boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker rare burnt lime, rare red and yellow brick fragments. Cobbles are slag, clinker, re & yellow brick fragments and rare burnt lime. Boulders are mostly slag and some clinker. MGR
	2.00 - 2.30	B					
				3.50			End of pit at 3.50 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPB05**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456693.00 - 524882.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.40	5 / 2.2
Client:	Homes and Communities Agency		

Date 23/01/2017

Scale 1:25

Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Dense dark grey / black coarse sand to fine gravel - sized SINTER MGR *At Om: Dense material. Pit located on an area used by heavy plant.*
				0.50			
	0.70	ES		0.60			MADE GROUND: Loose to medium dense light grey sandy GRAVEL with very low cobble content. Gravel is fine to coarse, angular to subangular of slag, sinter concrete fragments. MGR
				1.10			MADE GROUND: Medium dense dark grey slightly gravelly SAND with low cobble content and rare (very low) boulders. Gravel and cobbles are of subangular slag MGR
	1.70 - 2.00	B					MADE GROUND: Loose grey very sandy GRAVEL with medium cobble and low boulder content. Gravel and cobbles are slag, clinker occasionally. Yellow brick and fragments and burnt lime. Boulders are slag. MGR *From 1.5: medium boulder content* *Below 2.1m: Dark grey, very sandy.*
				3.40			End of pit at 3.40 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPB06** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456729.00 - 524834.00 Level:	Date 20/01/2017
Location: SSI Redcar		Dimensions (m): 4.5 × 2.5 Depth 3.20	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Loose dark grey/black coarse sand to medium gravel - sized SINTER MGR
	0.20	ES					
				0.40			MADE GROUND: Medium dense greyish brown gravelly SAND with low to medium cobble content and low boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker rarely burnt lime and brick fragments. Cobbles and boulders are slag & clinker occasionally yellow brick fragments. MGR
	1.00 - 1.30	B					MADE GROUND: Medium dense grey very gravelly SAND AND GRAVEL with medium cobble content and low to medium boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker rarely burnt lime. Cobbles are slag, clinker and occasional red brick fragments. Boulders are slag. MGR
							Below 0.4m: Light grey with white ash tufa
							Below 2.0m: Low boulder content
	2.50	ES					*Below 2.5m: Boulder size increasing*
				3.20			End of pit at 3.20 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPB07**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456494.00 - 524858.00 Level:	Date 17/01/2017
Location: SSI Redcar		Dimensions (m): 3.8 × 2.1 Depth 3.20	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Loose to medium dense black fine to medium, GRAVEL AND SAND of sinter MGR
							MADE GROUND: Medium dense dark grey gravelly SAND with low to medium cobble content and very low (rare?) boulders with occasional fragments of wood and plastic. Gravel is fine to coarse, angular to subangular of slag, clinker and brick fragments. Cobbles are mostly slag less clinker and red yellow brick boulders are slag. MGR
				0.80			MADE GROUND: Medium dense dark brownish grey gravelly SAND with low to medium cobble content and very low boulder content. Gravel and cobbles are fine to coarse, angular to subangular of slag and clinker occasional red/yellow brick . MGR
	0.90	ES					
	1.20 - 1.60	B					
							Below 2.1m Red/Yellow brick 5-10% of total Almost no boulders
				2.10			MADE GROUND: Loose yellowish brown gravelly SAND with low cobble content. Gravel is fine to coarse, subrounded to rounded of mixed cobbles are R-SR. Natural or reworked with pockets < 300 x 200 x 200 of soft yellowish brown sandy clay. High plasticity MGR
	2.50	ES					
	2.50 - 2.80	B					
				3.20			End of pit at 3.20 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPB08**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456536.00 - 524880.00 Level:	Date 18/01/2017
Location: SSI Redcar		Dimensions (m): 3.7 x 2.2 Depth 3.40	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.02			MADE GROUND: Loose dark grey black SINTER MGR
	0.30	ES					MADE GROUND: Medium dense grey gravelly SAND with low cobble content and occasional boulders. Gravel is fine to coarse, angular to subangular of slag, clinker, brick fragments. Cobbles are slag and clinker occasional yellow brick. Boulders are slag. Some gravel and sand is white possibly ash or tufa. MGR
				0.80			MADE GROUND: Medium dense light grey gravelly SAND with medium locally high cobble and low medium boulder content. Gravel is slag, clinker burnt lime and yellow brick fragments, cobbles and boulders are slag, clinker and brick fragments. No intact bricks seen. White staining on some slag. MGR *Below 1.0m: compacted slag, very dense, slow dig* *Below 1.5m: Medium boulder content. Suspected not natural possible hydraulic fill.*
	1.70 - 2.00	B					
				2.20			MADE GROUND: Loose to medium dense yellowish brown slightly gravelly SAND with occasionally pockets > 300 x 200 x 200 of soft brown clay. Gravel is fine to medium, occasionally coarse, subangular to rounded of mixed lithologies. Some gravel not natural possible drop down. MGR
	3.00	ES					
				3.40			End of pit at 3.40 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPB09** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456569.00 - 524836.00 Level:	Date 17/01/2017
Location: SSI Redcar		Dimensions (m): 3.7 x 2.3 Depth 0.50	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.02			MADE GROUND: loose black fine to medium GRAVEL AND SAND of SINTER MGR
	0.30	ES					*At 0m: Hole located on track used by dumpers 60-70 tonne trucks run along it. Very solid ground unable to progress without risking equipment or unreasonable length of time*
				0.50			MADE GROUND: Very dense grey gravelly fine to coarse SAND with low cobble content and rare boulders. Gravel is fine to coarse, angular to subangular of slag & clinkers cobbles are slag, clinker and yellow brick fragments and rare lime. Boulders are slag. MGR
							End of pit at 0.50 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPB10** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456655.00 - 524841.00 Level:	Date 16/01/2017
Location: SSI Redcar		Dimensions (m): 4.5 × 2.8, Depth 3.20	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Dark grey black gravel-sized SINTER MGR *Below 0.5m: Becoming medium dense* MADE GROUND: Loose light yellowish grey very sandy GRAVEL with low becoming medium cobble content and low boulder content. Locally very gravelly sand. Gravel is fine to coarse, angular to subangular of slag, clinker, burnt lime and some yellow brick. Cobbles are slag, clinker burnt lime and yellow brick. Boulders are slag. MGR
	0.70 - 1.00	B					
				1.50			MADE GROUND: Loose to medium, dense grey sandy fine to coarse, angular to subangular of GRAVEL with medium cobble content and low boulder Gravel is of clinker and occasional burnt lime. Cobbles are subangular of Slag, clinker rare yellow brick. Boulders are slag. White staining tufa on some slag boulders. MGR *Below 2.0m: Tending to travel and cobbles*
	1.70 - 2.00	B					
				3.20			End of pit at 3.20 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPB11**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456660.00 - 524797.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.30	4.5 × 2.5
Client:	Homes and Communities Agency		

Date: 17/01/2017

Scale: 1:25

Logged: TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30 - 0.70	B		0.02			MADE GROUND: Loose black fine to medium gravelly SAND of SINTER MGR *From OM: Slow excavation. Pit located on path used by dumpers soils are compacted*
	0.70 - 2.00	ES					MADE GROUND: Medium dense light brownish grey gravelly SAND with low to medium cobble content and low boulder content. Gravel is fine to coarse, angular to subangular of ash slag and clinker. Cobbles and boulders are mostly slag with some burnt lime and clinker. Some slag boulders have white staining on edges tufa some white sand/ash. MGR
				3.30			End of pit at 3.30 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPB12**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456688.00 - 524820.00 Level:	Date 16/01/2017
Location: SSI Redcar		Dimensions (m): 4.5 × 2.4 Depth 3.20	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30	ES					MADE GROUND: Loose dark grey black gravelly SAND with low cobble content and rare boulders. Gravel is fine to coarse, angular to subangular of slag and clinker and brick fragments. Cobbles and boulders are slag, clinker and yellow and red brick fragments MGR *At OM: TPB12 moved 10m west due to drain shown on service plan.*
				0.70			MADE GROUND: Loose light brownish grey very sandy fine to coarse, angular to subangular GRAVEL with medium cobble content and low boulder content. Gravel is mostly slag with clinker, cobbles and boulders are slag. MGR *Below 1.0m: Gravelly sand.* *Below 1.0m: Ammonia odour*
	1.00 - 1.30	B					
							Below 2.0m: Grey, less sandy.
				3.20			End of pit at 3.20 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPC01**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456575.00 - 524662.00 Level:
Location:	SSI Redcar		Dimensions (m): Depth 1.90
Client:	Homes and Communities Agency		

Date: 29/03/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Topsoil TPS
	1.00 - 1.90	ES		1.00			MADE GROUND: Soft white slightly sandy, slightly gravelly CLAY. Mottled pink & light brown in places and locally sandy gravelly CLAY (possible lime) MGR
				1.90			End of pit at 1.90 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPC03**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456672.00 - 524624.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 1.60	3.6 × 2.5
Client:	Homes and Communities Agency		

Date: 27/04/2017

Scale: 1:25

Logged: JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.00 - 0.40	ES		0.10			MADE GROUND: Topsoil TPS
							MADE GROUND: Loose brown slightly sandy slightly gravelly CLAY with low cobble and boulder content. Gravel is fine to coarse, angular to rounded. Gravel, cobbles and boulders are of brick, concrete, slag, sandstone and other lithologies. . MGR
				0.90			MADE GROUND: Includes plastic bags, nylon wire, white powder, red powder/sand, brick, concrete, wood and piping. (Possible landfill) MGR
				1.60			End of pit at 1.60 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPC05**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456757.00 - 524585.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 0.30	Date 28/03/2017
Client:	Homes and Communities Agency		Scale 1:25 Logged EM

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.00 - 0.30 0.00 - 0.30	ES ES		0.30			MADE GROUND: Topsoil slightly sandy CLAY. Contain possible tar, plastic pellets, broken pipe, plastic, wire, bolts, rubber, grey powdery sand, scrap metal TPS End of pit at 0.30 m

1
2
3
4
5

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPC06**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 465801.00 - 524562.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 1.20	Date 28/03/2017 Scale 1:25
Client:	Homes and Communities Agency		Logged

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	1.00	ES		1.20			MADE GROUND: Soft mottled orange gravelly CLAY. Contains scrap fencing, bags, bricks, cable plastic, rolled plastic, crushed glass, shredded plastic, plastic pellets and shredded green bag. ICI bag identified. MGR End of pit at 1.20 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPC07**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456822.00 - 524551.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.30	3.9 × 2.9
Client:	Homes and Communities Agency		

Date: 28/03/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	1.00 1.00 - 4.00	B ES					MADE GROUND: Loose black gravelly SAND to sandy GRAVEL. Gravel is fine to coarse, angular of coke, occasional cobble of coke. Becoming medium dense thickly laminated grey to dark brown of coal and sand MGR
				2.60			MADE GROUND: Dark grey slightly gravelly SAND. Gravel is fine to coarse of coke. Sand of ash. Pockets of soft brown slightly gravelly CLAY with occasional brick fragments and pockets of soft grey sandy SILT MGR
▼				4.20			End of pit at 4.30 m

Remarks: Position approximate

Stability:

Trial Pit Log

Trialpit No **TPC08** Sheet 1 of 2

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456868.00 - 524533.00 Level:	Date 23/03/2017
Location: SSI Redcar		Dimensions (m): 4.2 x 2 Depth 5.40	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Topsoil TPS
							MADE GROUND: Loose to medium dense black slightly silty SAND. Thinly to thickly laminated, slightly clayey in places. (damp but no obvious groundwater inflow) MGR
				3.90			MADE GROUND: Stiff brown mottled orange slightly sandy gravelly CLAY. Gravel is fine and medium, angular of brick MGR
	4.10 - 5.40	ES		4.10			MADE GROUND: Medium dense blackish grey SAND and sandy SILT. MGR
							Continued on next sheet

1 2 3 4 5

Remarks: Position approximate

Stability:

AGS

Trial Pit Log

Trialpit No **TPC08**

Sheet 2 of 2

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456868.00 - 524533.00 Level:	Date 23/03/2017
Location: SSI Redcar		Dimensions (m): 4.2 × 2 Depth 5.40	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
▼				5.40			End of pit at 5.40 m

Remarks: Position approximate

Stability:

Trial Pit Log

Trialpit No **TPC09** Sheet 1 of 2

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456715.00 - 524515.00 Level:	Date 23/03/2017
Location: SSI Redcar		Dimensions (m): 3.9 x 2.7 Depth 5.50	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10 - 0.50	ES		0.10			MADE GROUND: Topsoil TPS
							MADE GROUND: Loose black to grey slightly silty SAND. Becoming medium dense with depth, thinly laminated (damp) MGR
				3.70			MADE GROUND: Stiff brown mottled orange slightly gravelly slightly sandy CLAY with occasional cobbles. Gravel of coal and brick. MGR
				4.30			MADE GROUND: Medium dense blackish grey slightly silty slightly clayey SAND MGR
							Continued on next sheet

1 2 3 4 5

Remarks: Position approximate

Stability:

AGS

Trial Pit Log

Trialpit No **TPC09** Sheet 2 of 2

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456715.00 - 524515.00 Level:	Date 23/03/2017
Location: SSI Redcar		Dimensions (m): 3.9 x 2.7 Depth 5.50	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				5.50			End of pit at 5.50 m

6
7
8
9
10

Remarks: Position approximate

Stability:

Trial Pit Log

Trialpit No **TPC10** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456552.00 - 524637.00 Level:	Date 29/03/2017
Location: SSI Redcar		Dimensions (m): 4.2 × 2, Depth 5.00	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10 - 0.90	ES		0.10			MADE GROUND: Topsoil TPS
							MADE GROUND: Firm brown sandy gravelly CLAY with possible tar deposits MGR *From: 0.5m hydrocarbon smell*
				0.90			MADE GROUND: Loose grey slightly silty SAND. Pockets white gravelly sand possibly lime. MGR
				1.20			MADE GROUND: Loose grey silty SAND with possible tar deposits MGR
	2.45 - 5.00	ES					
▼				5.00			End of pit at 5.00 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPC11** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456593.00 - 524623.00 Level:	Date 27/04/2017
Location: SSI Redcar		Dimensions (m): 3.6 × 2.5, Depth 2.60	Scale 1:25
Client: Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.00 - 0.40	ES		0.40			MADE GROUND: Loose black brown slightly silty gravelly fine to coarse SAND. Gravel is fine to coarse angular of coke, brick, cemented coal dust and pockets of firm organic brown clay. Rare wire and piping also present (500mmx15mm). Possible slight coal tar odour. MGR
	2.00 - 2.50	ES					MADE GROUND: Loose black slightly silty very gravelly fine to coarse SAND with low cobble content. Gravel is fine to coarse of weakly cemented coal dust, possible coal tar, occasional slag, wood, brick, conveyor belt and rubber strips. Rare pockets of very soft grey slightly sandy clay. MGR
	2.00 - 2.50	ES		2.60			End of pit at 2.60 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPC13**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456676.00 - 524577.00 Level:	Date 28/03/2017
Location: SSI Redcar		Dimensions (m): Depth 1.20	Scale 1:25
Client: Homes and Communities Agency			Logged

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10	ES					MADE GROUND: Loose thickly laminated dark grey slightly sandy SILT. Strong hydrocarbon odour and sheen to seepage. MGR
				1.20			End of pit at 1.20 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPC14**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456722.00 - 524558.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 1.20	3.7 / 1.9
Client:	Homes and Communities Agency		

Date: 28/03/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10 - 1.20	ES		0.10			MADE GROUND: Topsoil TPS
							MADE GROUND: Soft grey to black sandy slightly clayey SILT to silty CLAY. Possible hydrocarbons from 0.1m MGR
				1.20			End of pit at 1.20 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPC15**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456774.00 - 524537.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 1.20	3.9 × 2
Client:	Homes and Communities Agency		

Date 23/03/2017

Scale 1:25

Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
▼	1.00	ES		2.20			MADE GROUND: Soft laminated grey slightly sandy SILT. Possible hydrocarbons & tar, water has an oily sheen. MGR End of pit at 1.20 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPC16** Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456834.00 - 524512.00 Level:	Date 28/03/2017
Location:	SSI Redcar	Dimensions (m): Depth 4.50	2.4 / 3.3	Scale 1:25
Client:	Homes and Communities Agency			Logged FLM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Grass over dark grey brown & black slightly sandy fine GRAVEL/ slightly gravelly SAND. Gravel is fine to coarse sub-angular of clinker, slag & coke. Fine gravel/coarse sand proportion of coal & coke (Possible breeze?) MGR
	3.10 - 3.30	ES					
				3.85			MADE GROUND: Loose light grey thinly to thickly laminated sandy SILT and silty SAND of coal dust and coarse sand. Occasional roots and rootlets MGR
▼	4.20 - 4.50 4.20 - 4.50 4.20 - 4.50	B D ES		4.50			End of pit at 4.50 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPC17**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456871.00 - 524475.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.00	5 / 5
Client:	Homes and Communities Agency		

Date: 24/03/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Topsoil containing slag boulders TPS
							MADE GROUND: Loose black slightly silty to silt slightly gravely SAND. Gravel is fine to coarse subangular to subrounded of coke. MGR
							From: 2.5m bricks and very fast flowing water, potential burst pipe. Brick culvert at 2.9m water pouring in, pit extended to expose brick wall surrounded by gravel. Hole abandoned due to potential service
	1.30	B		1.30			MADE GROUND: Firm to stiff brown mottled orange slightly sandy to sandy gravelly slightly cobble CLAY. Gravel is fine to coarse angular to subrounded of coke. Contains scrap metal, wood, bags, coal, coke. Cobbles are coarse subangular to subrounded of slag, coke and other various lithologies. MGR
	3.00	ES		3.00			End of pit at 3.00 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPC18** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456897.00 - 524468.00 Level:	Date 23/03/2017
Location: SSI Redcar		Dimensions (m): 3.9 x 2.4 Depth 4.50	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Topsoil TPS
	1.00	ES					MADE GROUND: Loose black laminated slightly silty SAND. Becoming medium dense with depth, damp. MGR
				3.50			MADE GROUND: Firm brown mottled orange slightly sandy slightly gravelly CLAY. MGR
▼							*From: 3.5m broken pipe, hole abandoned at 4.5m*
				4.50			End of pit at 4.50 m

1 2 3 4 5

Remarks: Position approximate

Stability:

Trial Pit Log

Trialpit No **TPC19** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456943.00 - 524443.00 Level:	Date 22/03/2017
Location: SSI Redcar		Dimensions (m): 4.2 × 3.5, Depth 2.20	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30	ES		0.10			MADE GROUND: Grass over dark greyish brown sandy SILT with abundant rootlets and occasional shells (snails) MGR
				0.50			MADE GROUND: Grey slightly clayey sandy SILT with frequent rootlets MGR
	0.70	ES					MADE GROUND: Firm brown mottled orange slightly gravelly slightly sandy CLAY. Gravel is fine to coarse, subrounded to subangular of various lithologies including sandstone and grey heavy stone. Occasional black fragments, (red) rare pottery fragments. MGR
	0.80 - 1.10	B		1.20			MADE GROUND: Grey laminated sandy silt with pockets of slightly gravelly SAND. Gravel is fine to medium, subrounded to subangular of grey stone. MGR
				2.20			End of pit at 2.20 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPC20** Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456535.00 - 524567.00 Level:	Date 22/03/2017
Location:	SSI Redcar	Dimensions (m): Depth 0.50	3.8 / 2.1	Scale 1:25
Client:	Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.40	ES		0.30			MADE GROUND: Grass over firm to stiff brown slightly gravelly CLAY. Gravel is fine to coarse subrounded to subangular of various lithologies including slag, coke, abundant rootlets MGR
				0.50			MADE GROUND: Brownish dark grey sandy CLAY. Possible hydrocarbons. Frequent gravel and cobble sized fragments of black, hand and slightly shiny material, some pieces slightly shiny and sticky. MGR
							End of pit at 0.50 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPC21**

Sheet 1 of 2

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456564.00 - 524565.00 Level:	Date 29/03/2017
Location: SSI Redcar		Dimensions (m): 4.2 x 2 Depth 6.00	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.00 - 1.00	ES		0.10			MADE GROUND: Topsoil TPS
							MADE GROUND: Loose blackish grey to grey slightly gravelly silty SAND. Gravel is fine angular of coke; thickly laminated sand in places. Slight hydrocarbon smell. MGR

1 2 3 4 5

Continued on next sheet

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPC21**

Sheet 2 of 2

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456564.00 - 524565.00 Level:	Date 29/03/2017
Location: SSI Redcar		Dimensions (m): 4.2 × 2 Depth 6.00	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
▼				6.00			End of pit at 6.00 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPC22** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456623.00 - 524538.00 Level:	Date 29/03/2017
Location: SSI Redcar		Dimensions (m): 4 × 2, Depth 4.60	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Loose grey silty SAND to sandy SILT. Becoming medium dense with depth, thickly laminated light grey SAND and dark grey SILT. MGR
	3.00 - 4.00	B					
▼	4.00 - 4.60	ES					*Pockets of light brown coarse sand containing shells.*
				4.60			End of pit at 4.60 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPC23**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456652.00 - 524517.00 Level:	Date 29/03/2017
Location:	SSI Redcar		Dimensions (m): 4.2 × 2.6 Depth 4.50	Scale 1:25
Client:	Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10	ES		0.20			MADE GROUND: Topsoil, grass over brownish grey gravelly SAND. Gravel is fine to coarse, subrounded to subangular of coke and slag, rare small red brick fragments TPS
	1.80 1.80	B ES					MADE GROUND: Grey with occasional dark grey laminations, sandy SILT with layers (pockets) of silty sand. Rare brick fragments (red) between 0.3 - 0.8m at the end away from excavator, with frequent cobbles of white slag. MGR
				4.50			End of pit at 4.50 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPC24**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456700.00 - 524498.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.20	3.8 × 2.3
Client:	Homes and Communities Agency		

Date: 28/03/2017

Scale: 1:25

Logged: LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Topsoil TPS
	0.30	ES					MADE GROUND: Grey very sandy SILT with occasional dark grey laminations and layers (pockets) of silty sand. Between 2.5-2.6m layer 0.4m in thickness of light brown silty sand, feels like creamy texture. MGR
	2.60	ES					
				4.10			MADE GROUND: Grey slightly gravelly silty SAND. Gravel is fine to coarse subrounded to subangular of coke. MGR
				4.20			End of pit at 4.20 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPC25**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456754.00 - 524476.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.80	3.9 × 2.6
Client:	Homes and Communities Agency		

Date 28/03/2017

Scale 1:25

Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Topsoil TPS
							MADE GROUND: Grey sandy SILT with with occasional dark grey laminations and layers (pockets) of silty sand. Slightly damp. MGR
				3.70			MADE GROUND: Grey slightly gravelly silty SAND. Gravel is medium to coarse subrounded to subangular of coke MGR
	3.80	ES		3.80			End of pit at 3.80 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPC26**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456787.00 - 524451.00 Level:	Date 28/03/2017
Location: SSI Redcar		Dimensions (m): 3.6 × 2.6 Depth 3.60	Scale 1:25
Client: Homes and Communities Agency			Logged FLM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Grass over loose dark grey and brown thinly laminated to thickly bedded slightly gravelly fine to coarse SAND. Gravel is fine to coarse sub-angular of clinker, slag and occasional coal. Coarse sand includes coal, and occasional recovered as gravel and cobbled sized fragments MGR
	0.90 - 1.00	ES					
				2.00			MADE GROUND: Loose/medium dense thinly laminated grey silty fine SAND. Recovered as gravel & cobble sized fragments (coal/coke breeze?) MGR
				2.30			MADE GROUND: Firm orange brown slightly gravelly CLAY (only on East side of pit). Gravel is fine, subangular to subrounded of possible sandstone, brick and occasional coal and other lithologies. MGR
				2.90			MADE GROUND: Firm orange brown clay (in base and west wall of pit). Locally bands of silt and mottled yellow , grey and orange. Possibly reworked. MGR
▼							*Stiff, locally water softened*
				3.60			End of pit at 3.60 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPC27**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456841.00 - 524427.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.90	4.2 × 2.6
Client:	Homes and Communities Agency		

Date: 24/03/2017

Scale: 1:25

Logged: LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30			MADE GROUND: Grass over blackish grey slightly gravelly silty sand with abundant rootlets. Gravel is medium to coarse subrounded to subangular of coke and slag. TPS
							MADE GROUND: Grey occasionally laminated dark grey sandy SILT with occasional layers (pockets) of silty sand MGR
	1.50 - 1.80	B					
	1.70	ES					
				2.20			MADE GROUND: Firm to stiff brown mottled orange slightly gravelly to gravelly CLAY Gravel is fine to coarse rounded to subangular of various lithologies including sandstone, possibly flint, light and dark grey stones. Occasional small brick fragments (red), 1 whole - 'Armitage 1957'. Rare small pockets of very dark grey organic material. MGR
				2.90			End of pit at 2.90 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPC28**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456876.00 - 524415.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.70	4.1 × 2.3
Client:	Homes and Communities Agency		

Date: 23/03/2017

Scale: 1:25

Logged: LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Grass and brambles over brownish grey slightly gravelly silty SAND with abundant rootlets. Gravel is fine to coarse subrounded to subangular of coke, rare shell fragments (snail) MGR
							MADE GROUND: Grey slightly laminated dark grey sandy SILT with layers (pockets) of silty sand MGR
				1.70			MADE GROUND: Stiff brown mottled orange slightly gravelly to gravelly CLAY. Gravel is fine to coarse subrounded to subangular of various lithologies including sandstone, possibly flint, light brown and dark grey stones (igneous?). Occasional relict rootlets at top, occasional brick fragments (red) MGR
	2.20	ES					
				2.50			MADE GROUND: Grey slightly gravelly sandy silt with layers (pockets) of slightly silty SAND. Sand layers are slightly brownish grey in colour. Gravel is medium to coarse, subrounded to subangular of coke MGR
	3.40	ES					
				3.70			End of pit at 3.70 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPC29**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456918.00 - 524395.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.50	3.4 × 2.6
Client:	Homes and Communities Agency		

Date: 22/03/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Topsoil brown slightly sandy SILT TPS
	0.40	ES					MADE GROUND: Loose orange brown slightly silty SAND MGR
				0.80			MADE GROUND: Soft slightly clayey sandy SILT. Rootlets and laminations of fine sand; suspected fines from coke MGR
	1.00 1.00	B ES					
				2.40			MADE GROUND: Firm brown slightly sandy slightly silty CLAY with occasional cobbles. (Suspected reworked natural as no evidence of lamination in wall of pit.) Containing brick made gravel MGR
	2.50	ES		2.60			MADE GROUND: soft grey slightly sandy gravelly SILT. MGR
▼							*From 3.3m: groundwater fast inflow*
				3.50 3.50			MADE GROUND: Pockets of very soft CLAY to slightly gravelly CLAY. Gravel is fine to coarse of mixed lithologies. MGR End of pit at 3.50 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPC30** Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456974.00 - 524385.00 Level:	Date 23/03/2017
Location:	SSI Redcar	Dimensions (m): Depth 2.30	4.8 / 2.2	Scale 1:25
Client:	Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Topsoil TPS
				0.20			MADE GROUND: Dense black sandy GRAVEL. Gravel is fine to coarse, angular of slag and coke MGR
				0.60			MADE GROUND: Dense greyish brown & grey sandy GRAVEL. Occasional cobble of slag MGR
	1.50 - 2.00	ES					MADE GROUND: Firm to stiff brown mottled orange slightly sandy gravelly CLAY. Gravels composed of brick, sandstone and slag and coal MGR
▼	2.10 - 3.00	ES		2.10			MADE GROUND: Loose grey sandy gravelly BOULDERS of slag. Hydrocarbon smell MGR
				2.30			*From 2.3m: hydrocarbon odour.* End of pit at 2.30 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPC31**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456497.00 - 524532.00 Level:	Date 29/03/2017
Location: SSI Redcar		Dimensions (m): 3.6 x 2.4 Depth 3.30	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Topsoil TPS
							MADE GROUND: Grey occasional dark grey laminated sandy SILT with layers (pockets) of silty sand and abundant rootlets MGR
	2.00	ES					
	3.20	ES		3.20			MADE GROUND: Dark grey sandy GRAVEL. Gravel is fine subrounded to subangular of black shiny material. Rare small brick fragments (red) MGR
				3.30			End of pit at 3.30 m

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPC32**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456545.00 - 524517.00 Level:
Location:	SSI Redcar	Dimensions (m): 3.6 × 2.2 Depth 4.20	Date 29/03/2017 Scale 1:25
Client:	Homes and Communities Agency		Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Topsoil, grass over firm brown sandy CLAY with abundant rootlets. TPS
							MADE GROUND: Grey with occasional dark grey laminations slightly gravelly sandy SILT with layers (pockets) of silty sand. Gravel is medium to coarse subangular of coke MGR
				3.50			MADE GROUND: Dark grey sandy GRAVEL. Gravel is fine to coarse, predominately fine, subrounded to subangular of black shiny material and rare slag. Occasional small brick fragments (red) MGR
				4.20			End of pit at 4.20 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPC33**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456603.00 - 524511.00 Level:	Date 29/03/2017
Location: SSI Redcar		Dimensions (m): 4.5 × 2 Depth 4.60	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Topsoil TPS
							MADE GROUND: Loose blackish grey slightly silty SAND to sandy SILT. Slightly gravelly and thickly laminated in places MGR
	2.00 - 2.60	ES					
				2.60			MADE GROUND: Stiff brown sandy gravelly CLAY. Gravel is fine to coarse, angular to rounded of various lithologies containing pockets of wood, brick, broken pipe, coal, (black sand). Contains brick and coke, occasional cobble of brick. Mottled orange - red in places MGR
				4.60			End of pit at 4.60 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPC34**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456652.00 - 524445.00 Level:
Location:	SSI Redcar		Dimensions (m): Depth 4.50
Client:	Homes and Communities Agency		

Date: 30/03/2017

Scale: 1:25

Logged

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.50	ES					MADE GROUND: Soft to firm brown mottled orange slightly sandy slightly silty gravelly CLAY. Gravel is fine to coarse angular to subrounded of coke, possible tar and brick. Frequent rootlets and occasional cobbles of coke. Occasional boulders. MGR
				2.40			MADE GROUND: Medium dense grey thickly laminated slightly gravelly slightly silty SAND. Gravel is fine of coke. Slight hydrocarbon odour. MGR
▼	4.00	ES		4.50			End of pit at 4.50 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPC36**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456741.00 - 524428.00 Level:	Date 28/03/2017
Location: SSI Redcar		Dimensions (m): 4.8 × 2.4 Depth 3.00	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Slightly gravelly silty SAND. Gravel is medium to coarse subrounded to subangular of coke MGR
							MADE GROUND: Grey very sandy SILT with layers (pockets) of silty sand MGR
				0.90			MADE GROUND: Firm to stiff brown slightly gravelly slightly sandy CLAY. Gravel is fine to coarse rounded to subangular of various lithologies including sandstone, slag Occasional red brick fragments MGR
	1.10	ES		1.30			MADE GROUND: Slightly gravelly sandy silt with layers (pockets) of silty SAND. Gravel is medium to coarse subrounded to subangular of coke MGR *From 1.3m: Strong noxious smell like burnt rubber*
	2.00	ES					
				3.00			End of pit at 3.00 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPC37**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456768.00 - 524398.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 5.00	Date 28/03/2017 Scale 1:25
Client:	Homes and Communities Agency		Logged FLM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: grass over brown topsoil TPS
	0.30 - 0.50	ES					MADE GROUND: loose dark grey silty fine SAND with medium boulder content of tyres. Sand possibly coke dust and thinly laminated. Rootlets MGR
				1.00			MADE GROUND: Loose grey silty SAND. Strong odour below 1.5m (rotten eggs to organic, acidic burnt rubber smell). MGR
	1.70 - 1.90	ES					*Becoming dark grey / black in colour*
				1.90			MADE GROUND: Firm to stiff orange brown slightly sandy slightly gravelly silt CLAY. Gravel is fine and medium subangular of limestone, possible sandstone, occasional coal and red brick. MGR
							Odour much stronger below 2.5m
							Perched water with slight odour as strata above. Clay appears in north wall from 2m in north wall, of pit, but much deeper in south wall c. 4.2-4.5mbgl.
							Locally wet black grey sloppy (very soft) clay.
	3.20	ES					
	3.30 - 3.40	ES					*Locally black.*
▼				4.50			MADE GROUND: Loose grey silty SAND. MGR
				5.00			End of pit at 5.00 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPC38**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 465827.00 - 524404.00 Level:	Date 28/03/2017
Location: SSI Redcar		Dimensions (m): 3.5 × 2.6 Depth 2.80	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20	ES		0.30			MADE GROUND: Grass and few brambles over brownish grey silty SAND with abundant rootlets MGR
							MADE GROUND: Grey and dark grey laminated slightly gravelly sandy SILT with layers (pockets) of silty sand. Gravel is medium to coarse subrounded to subangular of coke. One piece of cardboard. Strong antiseptic smell towards the bottom. MGR
	1.60	ES		1.70			MADE GROUND: Stiff brown mottled orange slightly gravelly to gravelly CLAY. Gravel is fine to coarse subrounded to subangular of various lithologies including sandstone, possibly flint, light grey and dark grey rocks (igneous?), black shiny rock. Frequent relict rootlets at top, occasional small red brick fragments. Possible drain, terminated at 2.8m MGR
				2.80			End of pit at 2.80 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPC39**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456858.00 - 524371.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.60	4.3 × 2.6
Client:	Homes and Communities Agency		

Date 23/03/2017

Scale 1:25

Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Grass over brownish grey slightly gravelly slightly silty SAND with abundant rootlets. Gravel is fine to coarse subangular of slag and coke. TPS
				0.40			MADE GROUND: Grey slightly gravelly silty SAND. Gravel is medium to coarse subangular of various lithologies including coke, Rare brick fragments (red) MGR
							MADE GROUND: Grey slightly laminated dark grey slightly gravelly SAND with layers of silty sand. Gravel is medium to coarse subangular of coke. MGR
	3.50	ES					
				4.30			MADE GROUND: Firm to stiff brown mottled orange slightly gravelly CLAY with frequent relict rootlets. Gravel is fine to coarse subrounded to subangular of various lithologies including sandstone, possibly flint, slag. Possibly occasional gravel-sized red brick fragments (weathered, crumbles away easy) MGR
				4.60			End of pit at 4.60 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPC40**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456903.00 - 524363.00 Level:	Date 22/03/2017
Location: SSI Redcar		Dimensions (m): 3.9 × 2.4 Depth 2.70	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.10			MADE GROUND: Grass over dark brownish grey sandy SILT with abundant rootlets TPS MADE GROUND: Grey slightly gravelly silty SAND. Gravel is medium to coarse subrounded to subangular of various lithologies, including sandstone & possibly coke MGR
	0.70	ES		0.90			MADE GROUND: Grey slightly gravelly sandy silt with pockets of silty SAND. Gravel is medium subangular of coke, occasional pockets of very dark grey material. Rare metal fragments MGR
				2.10			MADE GROUND: Firm to stiff greyish brown slightly gravelly to gravelly CLAY. Gravel is fine to coarse rounded to subangular of various lithologies , including sandstone, slag. Abundant bricks, predominately red, rare refractory brick ((50/50) whole / broken) frequent wood and plastic fragments, occasional scrap metal fragments. Rare pottery fragments. MGR
	2.50	ES		2.70			End of pit at 2.70 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPC41**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456957.00 - 524341.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 1.80	3.6 × 2.7
Client:	Homes and Communities Agency		

Date: 22/03/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Topsoil TPS
▼	0.80 - 1.10	ES		0.80			MADE GROUND: Very dense black / brown slightly sandy GRAVEL. Gravel fine to coarse angular of slag and crushed brick MGR
				1.10			MADE GROUND: loose grey slightly sandy GRAVEL. Gravel is fine to coarse angular of slag. Cobbles angular of slag MGR *Very fast water inflow - pit full in 45 mins*
				1.80			MADE GROUND: firm brown slightly gravelly CLAY. Gravel is fine and medium of various lithologies including slag and brick. MGR End of pit at 1.80 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPD01**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456005.00 - 524921.00 Level:	Date 12/04/2017
Location: SSI Redcar		Dimensions (m): 4.1 × 2, Depth 2.50	Scale 1:25
Client: Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30 - 0.60	ES		0.30			MADE GROUND: Loose black slightly silty sandy GRAVEL. Gravel is fine to coarse, angular to rounded of slag and coal with bits of plastic and metal wire (coal and coal dust) MGR
				0.60			MADE GROUND: Medium dense dark brown and grey silty fine to coarse, angular to sub rounded, SAND & GRAVEL with low cobble content MGR
							MADE GROUND: Loose, yellow gravelly fine to coarse SAND. Gravel is fine to medium of various lithologies including shells (Possible hydraulic fill) MGR
	1.20 - 1.80	B		1.20			MADE GROUND: Loose yellow fine to coarse SAND & GRAVEL. Gravel is angular to rounded of various lithologies including abundant shell fragments. MGR
							From 1.8m: Becomes less gravelly
				2.50			End of pit at 2.50 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD02** Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456092.00 - 524883.00 Level:	Date 12/04/2017
Location:	SSI Redcar	Dimensions (m): Depth 2.80	3.7 / 2.3	Scale 1:25
Client:	Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20 - 0.70	LB		0.20			MADE GROUND: Coal dust, loose black, silty, very gravelly fine to coarse SAND, gravel is fine to coarse of coal coke and rare slag MGR
				0.70			MADE GROUND: Loose to medium dense brown silty very gravelly fine to coarse SAND, Gravel is fine to coarse angular to subangular of slag & brick (refractory brick) with medium cobble and low boulder content MGR
							MADE GROUND: loose yellow very gravelly fine to coarse SAND, Gravel is angular to rounded fine to coarse of shell fragments and various waste MGR
▼	2.50 - 2.80	ES		2.80			End of pit at 2.80 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD03** Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 465172.00 - 524853.00 Level:	Date 12/04/2017
Location:	SSI Redcar	Dimensions (m): Depth 2.70	4 / 2.6	Scale 1:25
Client:	Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.00 - 0.30	ES					MADE GROUND: Loose black silty very gravely fine to coarse SAND. (coal dust) Gravel is fine to coarse angular to subangular of coke, coal and slag, rare rootlets are present MGR
	0.30 - 0.70	ES		0.30			MADE GROUND: Medium dense, grey brown, slightly silty fine to coarse, angular to subrounded SAND & GRAVEL & refractory brick MGR
				0.70			MADE GROUND: Loose, yellow brown , gravelly fine to coarse SAND, gravel is fine to coarse of various lithologies & shells. Slightly damp at depth. Side walls unstable, terminated MGR
▼				2.70			End of pit at 2.70 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPD04** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456272.00 - 524782.00 Level:	Date 13/04/2017
Location: SSI Redcar		Dimensions (m): Depth 2.50	Scale 1:25
Client: Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.40 - 0.50	ES		0.40			MADE GROUND: Loose black slightly silty very gravelly fine to coarse SAND (coal dust). Gravel is fine to coarse of coal, coke and slag MGR
				0.70			MADE GROUND: Loose to medium dense dark brown slightly silty fine to coarse SAND & GRAVEL. Gravel is fine to coarse angualrar to subrounded of slag MGR
							Becoming light grey
							MADE GROUND: Loose yellow, gravelly, fine to coarse SAND, Gravel is fine to coarse of angular to rounded various lithologies and shells. (Hydraulic fill) MGR
				2.50			End of pit at 2.50 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD05** Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456345.00 - 524756.00 Level:	Date 13/04/2017
Location:	SSI Redcar		Dimensions (m): 3.7 x 2.2 Depth 2.10	Scale 1:25
Client:	Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10 - 0.30	ES		0.10			MADE GROUND: Loose black slightly silty very gravelly fine to coarse SAND (coal dust). Gravel is fine to coarse of coal and coke. MGR
				0.30			MADE GROUND: Medium dense dark brown very gravelly fine to coarse SAND. Gravel is fine to coarse of slag, coke and coal. MGR
				0.80			MADE GROUND: Medium dense light brown grey fine to coarse SAND & GRAVEL . Gravel is fine to coarse, angular to subangular of slag and rare refractory brick. Low cobble and boulder content. MGR
▼							MADE GROUND: Loose yellow brown gravelly fine to coarse SAND. Gravel is fine to coarse of various lithologies and shells. MGR
				2.10			End of pit at 2.10 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPD06** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456424.00 - 524727.00 Level:	Date 18/04/2017
Location: SSI Redcar		Dimensions (m): 3.4 x 2, Depth 3.00	Scale 1:25
Client: Homes and Communities Agency			Logged AC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.50	ES		0.60			MADE GROUND: Black to dark grey very sandy fine GRAVEL of clinker and brick. Frequent fine to coarse angular to subrounded gravel of coal, occasional fragments of wood. MGR
				0.80			MADE GROUND: Light grey very sandy very gravelly COBBLES and BOULDERS of slag. Gravel is fine to coarse subangular to angular of slag with light orangeish brown sand. MGR
							MADE GROUND: Light yellow brown SAND, with occasional light grey/black thin bands. Damp. MGR
							Pit sides unstable
				3.00			End of pit at 3.00 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD07** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456037.00 - 524863.00 Level:	Date 12/04/2017
Location: SSI Redcar		Dimensions (m): 3.2 × 2 Depth 2.50	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10	ES		0.20			MADE GROUND: Dark grey slightly silty slightly gravelly SAND. Gravel is fine to coarse subrounded to subangular of coal and coke. MGR
				0.60			MADE GROUND: Brown gravelly SAND with medium cobble and low boulder content. Gravel is fine to coarse subrounded to subangular predominately. Subangular of slag. Cobbles and boulders of slag occasional brick fragments (refractory / red 50/50) MGR
	2.20	ES		2.50			MADE GROUND: Yellow occasionally laminated dark grey slightly gravelly SAND. Gravel is fine to coarse rounded to subangular of beach pebbles and slag. Frequent shells, predominately broken. Occasional layers of abundant shells, predominately, broken. TP terminated due to sides collapsing MGR
							From 2.5m: pit dimensions 2.0 x 3.2m
							End of pit at 2.50 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD08**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456123.00 - 524832.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.00	3.4 × 2.2
Client:	Homes and Communities Agency		Scale 1:25 Logged LK
Date	12/04/2017		

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Dark grey slightly silty slightly gravelly SAND. Gravel is fine to coarse subrounded to subangular of coal and coke. MGR
	0.50	ES		0.40			
				0.70			MADE GROUND: Brownish grey very gravelly SAND with medium cobble and low boulder content. Gravel is fine to coarse subrounded to subangular, predominately subangular of slag. Cobbles and boulders of slag occasional brick fragments (70% red / 30% refractory). MGR *Orangeish brown in colour*
							MADE GROUND: Yellow occasionally laminated dark grey slightly gravelly sand. Gravel is medium subangular of slag. Very small shell fragments throughout. MGR
▼				3.00			End of pit at 3.00 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPD09** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456214.00 - 524792.00 Level:	Date 12/04/2017
Location: SSI Redcar		Dimensions (m): 3 × 2.2, Depth 2.70	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	ES		0.10			MADE GROUND: Dark grey slightly silty gravelly SAND. Gravel is fine to coarse subrounded to subangular of coal and coke. MGR
				0.30			MADE GROUND: Brown slightly clayey gravelly SAND. Gravel is fine to coarse subrounded to subangular of coal, slag and coke. Frequent small brick fragments (red / refractory 50/50) MGR
				0.60			MADE GROUND: Brownish grey very gravelly SAND with medium cobble and low boulder content. Gravel is fine to coarse subrounded to subangular, predominately subangular of slag. Cobbles and boulders of slag MGR
							MADE GROUND: Yellow occasionally laminated dark grey slightly gravelly SAND. Gravel is fine to coarse rounded to subangular of beach pebbles and slag. Frequent shell fragments predominately broken. Occasional layers of abundant shells, predominately, broken and occasional beach pebbles. MGR
				2.70			End of pit at 2.70 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD10**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456308.00 - 524753.00 Level:	Date 13/04/2017
Location: SSI Redcar		Dimensions (m): 3.7 x 2.3 Depth 2.30	Scale 1:25
Client: Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.50 - 0.90	LB		0.50			MADE GROUND: Loose black slightly silty very gravelly fine to coarse SAND (coal dust). Gravel is fine to coarse, angular to sub-angular of coke and coal MGR
				0.90			MADE GROUND: Medium dense light grey brown sandy angular to subrounded, fine to coarse GRAVEL of slag, brick and rare coal with medium cobble and boulder content MGR
	2.00 - 2.30	ES					MADE GROUND: Loose yellow brown slightly silty gravelly fine to coarse SAND. Gravel is fine to coarse angular to rounded of various lithologies. At depth occasional layers of loose, black, medium to coarse , angular to subangular SAND, possibly coal dust. (Hydraulic fill) MGR *From 2.3m: pit dimensions 2.3 x 2.3 x3.7 - W.D.L - slow water inflow at base of hole*
▼				2.30			End of pit at 2.30 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPD11** Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456402.00 - 524720.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.30	3.7 × 2.2
Client:	Homes and Communities Agency		

Date 13/04/2017 | Scale 1:25 | Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Dense to medium dense black slightly silty very gravelly fine to coarse SAND (Coal dust). Gravel is angular to subangular, fine to coarse of coal slag, cobble & rare brick, with low cobble and boulder content of weakly cemented coal dust. MGR
				0.50			MADE GROUND: Medium dense light grey brown fine to coarse angular to sub-angular SAND & GRAVEL of slag, rare brick, low cobble and boulder content of slag MGR
				0.90			MADE GROUND: Loose yellow gravelly medium to coarse SAND. Gravel is angular to subrounded, fine to coarse of various lithologies. Occasional bands of darker material, possibly coal dust. (Hydraulic fill) Water steady seepage from 2m MGR
▼				2.20			End of pit at 2.30 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD12** Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 455967.00 - 524844.00 Level:	Date 06/04/2017
Location:	SSI Redcar	Dimensions (m): Depth 2.80	3.6 / 2.2	Scale 1:25
Client:	Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.15			MADE GROUND: Loose to medium dense black sandy fine to coarse, angular to sub-angular GRAVEL, Gravel is of coal / slag. (Coal dust) MGR
							MADE GROUND: Medium dense to dense grey and brown sandy angular to sub-angular fine to coarse GRAVEL with medium cobble content and low boulder content. Gravel is of slag and refractory brick MGR
	0.90 - 1.80	B		0.90			MADE GROUND: Very loose to loose yellow brown slightly gravelly medium to coarse SAND. Gravel is fine to coarse, rounded to sub-angular of various lithologies. MGR
▼	1.80 - 2.80	ES		1.80			End of pit at 2.80 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPD13**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456016.00 - 524826.00 Level:	Date 06/04/2017
Location: SSI Redcar		Dimensions (m): 3.5 × 2.1 Depth 2.50	Scale 1:25
Client: Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20 - 0.70	ES		0.20			MADE GROUND: Loose to medium dense black slightly silty sandy fine to coarse sub-angular to subrounded GRAVEL of coal and slag (Coal dust). MGR
				0.70			MADE GROUND: Medium dense brown and light grey sandy angular to subangular fine to coarse GRAVEL of slag and rare brick. Low to medium cobble and low boulder content MGR
	1.50 - 2.50	ES					MADE GROUND: Loose to very loose light brown grey gravelly medium to coarse to subangular SAND. Gravel is fine to coarse rounded to angular of various lithologies and with low cobble and boulder content . (Hydraulically placed fill) MGR
▼				2.50			End of pit at 2.50 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPD14**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456066.00 - 524802.00 Level:
Location:	SSI Redcar	Dimensions (m): 3.2 × 2.1	Scale 1:25
Client:	Homes and Communities Agency	Depth 2.30	Logged JNB
Date	06/04/2017		

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30 - 0.90	ES		0.30			MADE GROUND: Loose to medium dense black slightly silty fine to coarse, angular to sub-angular GRAVEL of coal , coke, and minor slag. (Coal dust) MGR
				0.90			MADE GROUND: Medium dense light brown slightly silty SAND & GRAVEL with low to medium cobble content and low boulder content. Gravel is angular to sub-angular of slag and refractory brick. MGR
							MADE GROUND: Loose light brown gravelly medium to coarse SAND, with medium cobble and low boulder content. Gravel is fine to coarse subangular to rounded of various lithologies. Cobbles and boulders are of slag. MGR
	2.00 - 2.30	ES					*Becoming darker and with weak organic odour.*
				2.30			End of pit at 2.30 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD15** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456108.00 - 524782.00 Level:	Date 06/04/2017
Location: SSI Redcar		Dimensions (m): 3.6 × 2 Depth 2.50	Scale 1:25
Client: Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.40			MADE GROUND: Loose black slightly silty gravelly fine to coarse SAND. Gravel is fine to coarse angular to subangular of coal. (Coal dust) MGR
	0.80 - 1.40	ES		0.80			MADE GROUND: Loose to medium dense light brown slightly very sandy fine to coarse angular to subangular GRAVEL of slag. Low cobble and boulder content MGR
	1.40 - 2.40	ES					MADE GROUND: Loose light grey gravelly fine to coarse SAND. Gravel is fine to coarse, angular to subrounded of shell fragments and slag. MGR *From 1.4m: becoming light brown with occasional darker bands and low cobble content of slag.*
▼				2.50			End of pit at 2.50 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD16**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456157.00 - 524767.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.40	3.6 × 2
Client:	Homes and Communities Agency		Date 06/04/2017 Scale 1:25 Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.15 - 0.90	ES		0.15			MADE GROUND: Loose, black, slightly silty, fine to coarse, angular to subangular SAND & GRAVEL. Gravel is of coal (Coal dust). MGR
				0.40			MADE GROUND: Loose to medium dense dark brown slightly silty very gravelly fine to coarse SAND. Gravel is fine coarse, angular to subrounded of coal, slag, brick. MGR
				0.80			MADE GROUND: Loose to medium dense yellow brown sandy angular to subangular fine to coarse GRAVEL of slag with medium cobble content and low boulder content and sulphur odour MGR
							MADE GROUND: Loose yellow slightly gravelly fine to coarse SAND with low cobble content. Gravel is fine to coarse angular to sub-angular of slag and occasional pebbles of poorly cemented sands and sandstone (rounded). MGR
	1.60 - 2.40	ES					*Becoming dark grey with less gravel.*
▼				2.40			End of pit at 2.40 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPD17**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456202.00 - 524747.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.90	3.2 × 2.2
Client:	Homes and Communities Agency		Logged LK
			Date 07/04/2017
			Scale 1:25

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.40			MADE GROUND: Dark brown slightly clayey gravelly SAND. Gravel is fine to medium subrounded to subangular of coal and coke, rare small brick fragments (red) MGR
				0.80			MADE GROUND: Light brown sandy GRAVEL with medium cobble content. Gravel is fine to coarse subrounded to subangular, predominately subangular of slag. Cobbles of slag. MGR
				1.70			MADE GROUND: Yellow speckled grey slightly laminated SAND. Occasional small shell fragments, 1 plastic bag fragment MGR
▼	2.80	ES		2.90			MADE GROUND: Yellowish grey laminated dark grey silty SAND. Very small shell fragments throughout. Occasional small pockets of dark grey/black organic material. MGR
							End of pit at 2.90 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD18**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456251.00 - 524729.00 Level:	Date 07/04/2017
Location: SSI Redcar		Dimensions (m): 3.4 × 2.2 Depth 2.60	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	ES		0.40			MADE GROUND: Dark grey slightly silty gravelly SAND with low cobble content. Gravel is fine to coarse subrounded to subangular of coal and coke, cobbles of coal and coke. Rare small red brick fragments. MGR
	0.50 0.50 - 0.80	ES B		0.90			MADE GROUND: Light brown sandy GRAVEL with medium cobble content. Gravel is fine to coarse subangular of slag. Cobbles and boulders of slag, some pieces of cobbles have traces of iron. MGR
				1.50			MADE GROUND: Yellow occasionally laminated dark grey SAND. Very small shell fragments throughout. MGR
				2.60			MADE GROUND: Grey laminated silty SAND with occasional pockets of dark grey organic material. Very small shell fragments throughout MGR End of pit at 2.60 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD19** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456300.00 - 524709.00 Level:	Date 07/04/2017
Location: SSI Redcar		Dimensions (m): 3.3 x 2.2 Depth 2.50	Scale 1:25
Client: Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20 - 0.40	ES					MADE GROUND: Loose black slightly silty fine to coarse angular to subangular SAND and GRAVEL. Gravel is poorly cemented coal dust, coke, coal and slag. MGR
							Becoming brown with de
				0.40			MADE GROUND: Medium dense yellow brown sandy fine to coarse angular to subangular GRAVEL of slag and refractory brick. Medium cobble and low boulder content. MGR
				0.80			MADE GROUND: Loose yellow slightly gravelly fine and medium SAND. Gravel is fine to coarse of slag. Gravel may be from overlying strata. MGR
	1.50 - 2.50	B					
	1.50 - 2.50	ES					*Becoming dark grey with sulphur odour*
▼				2.50			End of pit at 2.50 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD20** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456345.00 - 524692.00 Level:	Date 07/04/2017
Location: SSI Redcar		Dimensions (m): 3.5 x 2.2 Depth 1.50	Scale 1:25
Client: Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
							MADE GROUND: Loose black slightly silty fine to coarse subangular to angular SAND and GRAVEL. Gravel is cemented coal dust, coal and coke. MGR
				0.50			MADE GROUND: Loose to medium dense black and grey slightly silty very sandy GRAVEL. Gravel is angular ro subangular fine to coarse of slag, coal, coke and refractory brick. Strong sulphur odour and possible hydrocarbon sheen on water and gravel. MGR
▼	1.00 - 1.50	ES					
				1.50			End of pit at 1.50 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD21** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456389.00 - 524673.00 Level:	Date 10/04/2017
Location: SSI Redcar		Dimensions (m): 3.7 x 2.2 Depth 1.70	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Dark brown gravelly SAND. Gravel is fine to coarse subrounded to subangular of coal, coke and slag, slightly shiny. MGR
				0.50			MADE GROUND: Light brown sandy gravel with medium cobble content. Gravel is fine to coarse subrounded to subangular, predominately subangular of slag. Cobbles of slag. Rare wood and plastic fragments, rare brick fragments (red / refractory) One large boulder. MGR
				1.30			MADE GROUND: Firm to stiff brown mottled dark grey slightly sandy slightly gravelly CLAY. Gravel is fine to medium rounded to subangular of various lithologies including slag, sandstone, coal. MGR
▼	1.50	ES		1.70			End of pit at 1.70 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD22**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456422.00 - 524659.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.00	3.6 × 2
Client:	Homes and Communities Agency		

Date 10/04/2017

Scale 1:25

Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Loose black slightly silty gravelly fine to coarse SAND. Gravel is fine to coarse, angular to subangular of coke and coal. MGR
	0.90 - 2.00	ES		0.90			MADE GROUND: Firm to stiff mottled brown and grey slightly sandy gravelly silty CLAY. Gravel is fine to coarse of brick, coal, slag with rate metal rods (400mm long, 25mm dia). MGR
	2.00 - 3.00 2.00 - 3.00	B D					
	3.80 - 4.00	ES		3.80			MADE GROUND: Loose black slightly silty fine to coarse SAND. Possible hydrocarbon odour within a clay at interface. MGR
▼				4.00			End of pit at 4.00 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPD23**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 455942.00 - 524787.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.90	Scale 1:25
Client:	Homes and Communities Agency		Logged JNB
Date	05/04/2017		

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.15			MADE GROUND: Loose black gravelly SAND. Gravel is fine to coarse, angular to subrounded of coal, weakly cemented coal dust and rare slag. (Coal dust) MGR
				0.40			MADE GROUND: Medium dense to dense sandy subangular to angular GRAVEL with low cobble and boulder content. Gravel is of slag. MGR
	0.90 - 1.40	B		0.90			MADE GROUND: Loose to medium dense yellow brown gravelly fine and medium SAND. Gravel is fine to coarse angular to subrounded of slag at the top and shells. MGR
	0.90 - 1.40	D					
	0.90 - 1.40	ES					MADE GROUND: Loose to medium dense yellow brown gravelly fine and medium SAND. Gravel is fine to coarse angular to rounded of slag and shells. MGR
▼	1.40 - 2.90	ES		1.40			End of pit at 2.90 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD24**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 455998.00 - 524774.00 Level:	Date 11/04/2017
Location: SSI Redcar		Dimensions (m): 3.5 × 2.2 Depth 2.10	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Dark grey slightly silty gravelly SAND. Gravel is fine to coarse subrounded to subangular of coal and coke and slag. MGR
				0.50			MADE GROUND: Light brown SAND & GRAVEL with medium cobble and low boulder content. Gravel is fine to coarse subrounded to subangular, predominately subangular of slag cobbles and boulders of slag. MGR
▼	0.70 0.80 - 1.10	ES B					MADE GROUND: Brown slightly clayey gravelly SAND with medium cobble and boulder content. Rare large boulders. Gravel is fine to coarse subrounded to subangular of slag. Cobbles and boulders of slag. Frequent brick fragments (70% refractory / 30% red) rare wood fragments MGR
				1.20			MADE GROUND: Soft dark grey mottled brown silty CLAY MGR
				1.60			MADE GROUND: White grey slightly clayey slightly sandy GRAVEL with medium cobble and boulder content. Gravel is fine to coarse subangular of slag, cobbles and boulders of slag. Occasional soft dark grey silty clay pockets, Occasional brick fragments (red / refractory 50/50) MGR
▼	1.90	ES		2.10			End of pit at 2.10 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPD25**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456047.00 - 524754.00 Level:	Date 11/04/2017
Location: SSI Redcar		Dimensions (m): 4.3 × 2, Depth 3.00	Scale 1:25
Client: Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20 - 0.60	ES		0.20			MADE GROUND: Loose black slightly silty gravelled fine to coarse SAND. Gravel is fine to coarse angular to subangular of coke, coal and slag. (Coal dust) MGR
				0.60			MADE GROUND: Loose to medium dense grey brown slightly silty fine to coarse SAND and GRAVEL. Gravel is fine to coarse angular to subrounded of slag, brick and coal. MGR
				1.10			MADE GROUND: Soft to very soft mottled black and dark green slightly sandy, gravelly silty CLAY with medium cobble and low boulder content. Gravel is fine to coarse, angular to subangular of slag and rare brick and coal. MGR
	1.70 - 3.00 1.70 - 3.00	D ES		1.70			MADE GROUND: Medium dense to dense blue green sandy clayey fine to coarse angular to subrounded GRAVEL of slag and rare brick with medium cobble and low boulder content. MGR
▼				3.00			MADE GROUND: Very soft to soft dark brown slightly sandy gravelly CLAY with high cobble and boulder content. Gravel is fine to coarse angular to subrounded of slag. MGR End of pit at 3.00 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD26** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456092.00 - 524737.00 Level:	Date 11/04/2017
Location: SSI Redcar		Dimensions (m): 3.9 × 2, Depth 1.30	Scale 1:25
Client: Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Loose black slightly silty gravelly fine to coarse SAND. Gravel is fine to coarse angular to subangular of of coke, coal and slag. (Coal dust) MGR
				0.40			MADE GROUND: Medium dense light brown slightly silty very sandy fine to coarse angular to subrounded GRAVEL of slag and coke. MGR
▼	1.00 - 1.30	ES					MADE GROUND: Medium dense red brown silty fine to coarse SAND and GRAVEL. Gravel is fine to coarse angular to subrounded of slag, coke, brick and rare lime. MGR
							Becoming black in colour with potential hydrocarbon contamination.
				1.30			End of pit at 1.30 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPD27**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456136.00 - 524718.00 Level:	Date 11/04/2017
Location:	SSI Redcar		Dimensions (m): 4 × 2.2, Depth 2.20	Scale 1:25
Client:	Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Dark grey slightly silty gravelly SAND. Gravel is fine to coarse subangular of coke, slag and rare coal MGR
				0.90			MADE GROUND: Brown very gravelly SAND with medium cobble and low boulder content. Gravel is fine to coarse subrounded to subangular, predominately. Subangular of slag. Cobble and boulder of slag. Occasional pockets of soft dark grey silty sand. Frequent brick fragments (red / refractory 50/50) between 0.3-0.6m, layers of abundant bricks. MGR
▼	1.00 - 1.30 1.10	LB ES		1.40			MADE GROUND: Light white grey sandy GRAVEL with high cobble and medium boulder content. Gravel is fine to coarse subrounded to subangular of white/greyish slag. Cobbles and boulders of white/greyish slag. MGR
				2.10			MADE GROUND: Dark grey slightly sandy clayey GRAVEL with medium cobble, low boulder content and frequent soft silty clay pockets. Gravel is fine to coarse subrounded to subangular, predominately. Subangular of slag, some greyish / white slag. Cobbles and boulders of slag, some greenish / white slag. MGR
							End of pit at 2.20 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPD28**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456183.00 - 524700.00 Level:	Date 10/04/2017
Location: SSI Redcar		Dimensions (m): 3.8 × 2.1, Depth 2.20	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Dark brown slightly silty very gravelly SAND. Gravel is fine to coarse, subrounded to subangular, predominately subangular of coke and slag. MGR
				0.40			MADE GROUND: Light brown gravelly SAND with medium cobble content. Gravel is fine to coarse, subrounded to subangular, predominately subangular of slag MGR
	0.90	ES		1.00			MADE GROUND: Orangish red slightly clayey SAND & GRAVEL with medium cobble and boulder content. Rare large boulders. Gravel is fine to coarse subrounded to subangular, predominately subangular of slag. Cobbles & boulders of slag, occasional brick fragments (refractory) MGR
▼	1.20	ES		1.40			MADE GROUND: Soft brown mottled dark grey silty CLAY. MGR
							MADE GROUND: Dark grey slightly sandy clayey GRAVEL with medium cobble and boulder content. Rare pockets of soft dark grey silty clay. Gravel is fine to coarse subrounded to subangular of slag. Cobbles and boulder of slag. Rare wood fragments MGR
				2.20			End of pit at 2.20 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPD29** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456232.00 - 524681.00 Level:	Date 10/04/2017
Location: SSI Redcar		Dimensions (m): 4.3 x 2.2 Depth 1.60	Scale 1:25
Client: Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Loose black slightly silty gravelly fine to coarse SAND. Gravel is fine to coarse angular to subangular of coke, coal and slag MGR
				0.40			MADE GROUND: Loose to medium dense, grey brown silty/clayey very sandy fine to coarse, angular to subangular GRAVEL with medium cobble and boulder content, Gravel is of slag , brick. MGR
▼	1.20	ES		1.20			MADE GROUND: Loose to medium dense red/orange silty/clayey very sandy GRAVEL with large pockets of clay. Clay is soft mottled black, grey and orange, silty CLAY.. Gravel is fine to coarse angular to subangular of slag and brick. MGR *Becoming black.*
				1.60			MADE GROUND: Medium dense grey silty/clayey very sandy GRAVEL. Gravel is fine to coarse, angular to subangular of slag and brick. MGR *From 1.2m: Rapid inflow of water* End of pit at 1.60 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD30**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456278.00 - 524666.00 Level:	Date 10/04/2017
Location: SSI Redcar		Dimensions (m): 3.9 x 2.2 Depth 2.00	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Dark brown slightly silty gravelly SAND with occasional rootlets. Gravel is fine to coarse, subrounded to subangular of coke, slag and coal MGR
	0.70	ES					MADE GROUND: Brown very gravelly SAND with medium cobble and low boulder content. Gravel is fine to coarse subrounded to subangular of slag. Occasional brick fragments (red / refractory 50/50) one large boulder. MGR
							Becoming orangeish red, slightly clayey and with medium boulder content.
				1.20			MADE GROUND: Grey mottled light grey slightly sandy clayey to very clayey GRAVEL with medium cobble and medium boulder content and frequent soft dark grey silty clay pockets. Gravel is fine to coarse subrounded to subangular of slag, white/light grey slag. Rare brick fragments (red / refractory) MGR
▼	1.60	ES					
	1.70 - 2.00	B					
				2.00			End of pit at 2.00 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD31**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456321.00 - 524644.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 1.70	4.3 × 2
Client:	Homes and Communities Agency		

Date 10/04/2017

Scale 1:25

Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Loose black slightly silty gravelly fine to coarse SAND. Gravel is fine to coarse angular to subangular of coke, coal and slag. (Coal dust) MGR
				0.40			MADE GROUND: Medium dense light brown silty very sandy fine to coarse angular to subangular GRAVEL of slag with medium cobble content and low boulder content MGR
	0.65 - 1.00	B		0.65			*Becoming red/orange*
	1.00 - 1.70	ES		1.00			MADE GROUND: Firm mottled brown and black slightly sandy, gravelly silty CLAY. Gravel is angular to subrounded of slag , coal, brick with low cobble content. MGR
							MADE GROUND: Loose to medium dense brown clayey/ silty fine to coarse angular to subrounded SAND & GRAVEL. Gravel is fine to coarse of slag. MGR
▼							MADE GROUND: Medium dense light grey clayey/silty very sandy GRAVEL. Gravel is fine to coarse angular to subrounded of slag with medium cobble & low boulder content. Possible slight hydrocarbon sheen on gravel and water. MGR
				1.70			*From 1.5m: Rapid inflow of water*
							End of pit at 1.70 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPD32**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456369.00 - 524630.00 Level:	Date 10/04/2017
Location: SSI Redcar		Dimensions (m): 3.3 x 2.2 Depth 1.70	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.20			MADE GROUND: Dark brown slightly silty gravelly SAND with occasional rootlets. Gravel is fine to coarse, subrounded to subangular of coke, slag. MGR
	0.50	ES		0.70			MADE GROUND: Brown slightly clayey SAND and GRAVEL with medium cobble, low boulder content and with occasional pockets of firm to stiff brown mottled light grey slightly sandy slightly gravelly clay. Gravel is fine to medium rounded to subangular of various lithologies including sandstone and beach pebble. Gravel is fine to coarse subrounded to subangular of slag. Cobbles and boulders of slag. MGR
	1.00	ES		1.00			MADE GROUND: Layers of COBBLES of slag MGR
▼	1.30 - 1.60	LB					MADE GROUND: No info MGR
				1.70			End of pit at 1.70 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPD33**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456400.00 - 524624.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 1.50	3.9 × 2.2
Client:	Homes and Communities Agency		

Date: 10/04/2017

Scale: 1:25

Logged: JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Loose black slightly silty gravelly fine to coarse SAND. Gravel is fine to coarse angular to subangular of coal, coke, and slag and poorly cemented coal dust. (Coal dust) MGR
				0.60			MADE GROUND: Medium dense light grey and brown silty very sandy GRAVEL. Gravel is fine to coarse, angular to subangular of slag , brick. Low cobble content MGR
▼	1.00 - 1.50 1.00 - 1.50	ES LB					MADE GROUND: Medium dense brown silty/clayey fine to coarse angular to subangular, SAND & GRAVEL. Gravel is of slag (dark green in parts). MGR *Becoming green grey.*
				1.50			End of pit at 1.50 m

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPD34**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 455924.00 - 524748.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 0.80	3.1 × 2
Client:	Homes and Communities Agency		

Date: 05/04/2017

Scale: 1:25

Logged: JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20 - 0.80 0.20 - 0.80	B ES		0.20			MADE GROUND: Loose to medium dense black gravely fine to coarse SAND. Gravel is fine to coarse angular to subrounded of coal and slag MGR
				0.80			MADE GROUND: Layer of slag which required breaking with machines in order to excavate. Recovered as: Dense light grey sandy fine to coarse subangular to angular GRAVEL. (Hole terminated due to ground being too hard to get through with excavator .) MGR End of pit at 0.80 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPD35**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 455973.00 - 524732.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 1.90	3.4 × 2.2
Client:	Homes and Communities Agency		

Date: 05/04/2017

Scale: 1:25

Logged: JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.00 - 0.20	ES					MADE GROUND: Medium dense to dense light grey sandy GRAVEL. Gravel is fine to coarse angular to subangular of slag, medium cobble content, low boulder content. (Required breaking with excavator bucket.) MGR
				0.80			MADE GROUND: Medium dense to dense black SAND and GRAVEL with low cobble content. Gravel is fine to coarse angular to subangular of slag. MGR
				1.20			MADE GROUND: Soft mottled black & brown slightly gravelly slightly sandy silty CLAY. Gravel is fine to coarse of slag and refractory brick, low cobble content. MGR
▼	1.80 - 1.90	ES		1.60			MADE GROUND: Medium dense black and light grey slightly silty SAND & GRAVEL with medium cobble content and low boulder content. Gravel is of slag and refractory brick, occasional pockets of clay. MGR
				1.90			*From 1.9m: pit dimensions 2.2 x 3.4 x 1.9 Possible hydrocarbon sheen*
							End of pit at 1.90 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPD36**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456010.00 - 524729.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.00	3.7 × 2
Client:	Homes and Communities Agency		

Date: 05/04/2017

Scale: 1:25

Logged: JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Loose black,slightly silty fine to coarse SAND (potentially coal dust). MGR
							From 0m: Pit moved to avoid service
							MADE GROUND: Medium dense white / light grey sandy GRAVEL of slag. Gravel is fine to coarse, angular to subangular. Low cobble content. MGR
	1.00 - 1.40	D					
▼	1.40 - 2.00	ES					
				2.00			End of pit at 2.00 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

ch2m			Trialpit No **TPD37** Sheet 1 of 1
Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456061.00 - 524700.00 Level:	Date 04/04/2017
Location: SSI Redcar		Dimensions (m): 3.6 x 2.2 Depth 1.50	Scale 1:25
Client: Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Medium dense black gravelly SAND with low cobble content. Gravel is fine to coarse, subangular to angular of coke, slag and brick. MGR
							MADE GROUND: Medium dense dark brown and red SAND & GRAVEL with medium cobble content and low boulder content. Gravel is of slag. Hydrocarbon odour, slightly damp. MGR
							Becoming black and light brown in colour with sulphur odour.
▼	0.90 - 1.20	ES		0.90			MADE GROUND: Soft to firm, mottled black and light brown, slightly sandy, silty CLAY MGR
				1.20			MADE GROUND: Dark brown clayey very sandy GRAVEL, slight hydrocarbon odour, Gravel is fine to coarse, subrounded to subangular MGR
▼				1.40			MADE GROUND: Medium dense to dense black sandy GRAVEL with medium cobble content and low boulder content, Gravel is fine to coarse. MGR
				1.50			End of pit at 1.50 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPD38**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456104.00 - 524679.00 Level:	Date 04/04/2017
Location: SSI Redcar		Dimensions (m): 4 × 2, Depth 1.90	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30			MADE GROUND: Dark grey gravelly SAND with medium cobble content. Gravel is fine to coarse subrounded to subangular of slag and coke. Cobbles of slag, rare small brick fragments (red / refractory) slightly shinny. MGR
	0.50	ES					MADE GROUND: Orangeish brown sandy GRAVEL with medium cobble content. Gravel is fine to coarse subrounded to subangular of slag and some coke. MGR *Between 0.3-0.5 on the left side looking at excavator, layer of abundant refractory bricks.*
▼				0.80			MADE GROUND: Firm dark grey slightly gravelly CLAY. Gravel is fine to medium subangular of slag. MGR
				1.10			MADE GROUND: Dark grey slightly sandy clayey GRAVEL with medium cobble and low boulder content. Gravel is fine to coarse subrounded to subangular of slag. Cobbles and boulders of slag, strong sulphur odour, frequent bricks, predominately broken (50/50 red/ refractory) MGR
	1.80	ES		1.90			End of pit at 1.90 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD39**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456152.00 - 524656.00 Level:	Date 03/04/2017
Location: SSI Redcar		Dimensions (m): Depth 1.50	Scale 1:25
Client: Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.70 - 0.85	ES		0.85			MADE GROUND: Firm, locally soft mottled grey and light brown slightly sandy, silty CLAY with rare gravel, of slag shells. Pocket within gravels. MGR
▼	1.40 - 1.50	ES		1.50			MADE GROUND: Medium dense dark brown black slightly silty sandy angular to subangular GRAVEL, Gravel is fine to coarse of slag. Rare pockets of soft dark brown clay medium cobble and boulder content. Odour of sulphur from pit during excavation. MGR
							End of pit at 1.50 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPD40** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456199.00 - 524641.00 Level:	Date 03/04/2017
Location: SSI Redcar		Dimensions (m): 4 × 2.2, Depth 1.90	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND:Topsoil TPS
				0.40			MADE GROUND: Light brown very gravelly SAND with medium cobble content. Gravel is fine to coarse subrounded to subangular of slag. Cobbles of slag. MGR
	1.00	ES					MADE GROUND: Brownish orange slightly clayey sandy GRAVEL with medium cobble and boulder content. Gravel is fine to coarse subrounded to subangular of slag. Occasional gravel-cobble sized pieces of lime. MGR
▼				1.30			MADE GROUND: Dark grey slightly sandy slightly gravelly CLAY with medium cobble and boulder content and with rare pockets of sandy silt. Rare large boulders. Gravel is fine to coarse subrounded to subangular of slag. Cobbles & boulders of slag. Rare small red brick fragments. MGR
				2.20			End of pit at 1.90 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD41**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456247.00 - 524623.00 Level:	Date 06/04/2017
Location: SSI Redcar		Dimensions (m): Depth 1.50	Scale 1:25
Client: Homes and Communities Agency			Logged FLM

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.00 - 0.10	ES		0.10			MADE GROUND: Grass over loose black slightly gravelly silty SAND, Gravel is fine to coarse angular to subangular of coke and slag. MGR
							MADE GROUND: Medium dense dark brown mottled orange slightly sandy to sandy GRAVEL with low cobble content. Gravel is fine to coarse angular to subangular of slag. Orange staining possibly indicates a higher iron content. Low boulder content. MGR
▼							*Becoming orange brown colour with depth, yellow orange mottled at 1m.*
				1.40			MADE GROUND: Soft black and grey slight sandy to sandy slightly silty CLAY. Locally slight sandy slight gravelly, and gravel and clay pockets. Gravel is fine and medium, occasional coarse sub-angular of possible slag. MGR
				1.50			End of pit at 1.50 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPD42** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456296.00 - 524611.00 Level:	Date 03/04/2017
Location: SSI Redcar		Dimensions (m): 4.1 x 2.2 Depth 1.80	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Topsoil TPS
				0.30			MADE GROUND: Grey slightly clayey gravelly SAND with low cobble content. Gravel is fine to coarse subrounded to subangular of slag. Cobbles of slag. MGR
▼	0.70 0.70 - 1.00	ES B					MADE GROUND: Orangeish brown slightly clayey gravelly SAND with medium cobble and low boulder content. Gravel is fine to coarse subrounded to subangular of slag. Cobbles and boulders of slag, some light coloured slag, rare small red brick fragments. Strong smell of sulphur. MGR
				1.30			MADE GROUND: Dark grey slightly clayey sandy GRAVEL with medium cobble, low boulder content and occasional clay pockets. Gravel is fine to coarse subrounded to subangular of slag. Cobbles and boulders of slag. Clay pockets comprise of firm dark grey mottled light grey slightly gravelly clay. Gravel is fine to medium of slag. MGR
				1.80			End of pit at 1.80 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD43**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456343.00 - 524581.00 Level:	Date 03/04/2017
Location: SSI Redcar		Dimensions (m): 3.4 x 2.2 Depth 1.30	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.50	ES		0.10			MADE GROUND: Topsoil. Grass over dark brown gravelly sand with abundant rootlets. Gravel is fine to coarse subrounded to subangular of coke and slag. TPS
				0.40			MADE GROUND: Light grey gravelly SAND with medium cobble and low boulder content. Gravel is fine to coarse subrounded to subangular of slag. Cobbles and boulders of slag. MGR
▼	1.10	ES		0.90			MADE GROUND: Brown mottled orange gravelly SAND with medium cobble and low boulder content. Gravel is fine to coarse subrounded to subangular of slag and with occasional red bricks (50/50 broken/whole). Rare round pellets MGR
				1.30			MADE GROUND: Firm grey mottled light brown slightly sandy gravelly CLAY with low cobble content. Gravel is fine to coarse subrounded to subangular of slag. Slight oil odour. Frequent red bricks (50/50 broken/whole). Rare plastic fragments. MGR
							End of pit at 1.30 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPD44** Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456381.00 - 524566.00 Level:	Date 06/04/2017
Location:	SSI Redcar	Dimensions (m): Depth 0.90	2.9 / 2.3	Scale 1:25
Client:	Homes and Communities Agency			Logged FLM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.25			MADE GROUND: Rough grass over medium dense slightly gravelly SAND (coal dust) Gravel is fine to coarse angular of coke and slag , occasional coal. MGR
	0.50 - 0.70	ES					MADE GROUND: Medium dense grey brown SAND and GRAVEL/sandy GRAVEL. Gravel is fine to coarse of slag and occasional brick. Medium cobble, low boulder content of slag occasional of brick. Sulphur odour. MGR
	0.50 - 0.70	LB					
▼	0.70 - 0.90	ES		0.70			MADE GROUND: Dense to medium dense black slight sandy GRAVEL with medium cobble and boulder content. Gravel is fine to coarse angular to subangular of slag. Rare coarse gravel of brick. Seepage at 0.7m. Water at 0.75m standing, hydrocarbon smell MGR
				0.90			*From 0.75m: Water at 0.75m standing, hydrocarbon smell , end at 0.9m*
							End of pit at 0.90 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPE01**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456024.00 - 525058.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.00	4.4 × 2.1
Client:	Homes and Communities Agency		

Date: 21/02/2017

Scale: 1:25

Logged: LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.40	ES		0.70			MADE GROUND: Dark reddish brown gravelly SAND with occasional cobbles. Gravel is fine to coarse subangular to sub rounded and includes slag and ore. Cobbles of slag. MGR
				3.20			MADE GROUND: Whitish grey very sandy gravel with abundant cobbles, occasional boulders and some large boulders. Gravel is fine to coarse subrounded to subangular including slag, whitish slag. Cobbles and boulders of slag, whitish slag. Rare scrap metal fragments. Sulphur odour noted. MGR *Increase in cobble and boulder content* *Occasional gravel sized red material (ore?) has coloured the soil around.*
				4.00			MADE GROUND: Light brown with black patches, slightly gravelly SAND with rare firm brown clay pockets. Gravel is medium to coarse of sandstone and beach pebbles. Rare shell fragements MGR End of pit at 4.00 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE02**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456111.00 - 525025.00 Level:	Date 21/02/2017
Location: SSI Redcar		Dimensions (m): Depth 1.10	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Medium dense dark grey gravelly SAND with localised reddish brown sand. Gravel is subangular, fine to coarse including ore and slag. Occasional wood fragments. MGR
				0.80			MADE GROUND: Dense light grey very sandy gravel with low to medium cobble content. Occasional fragments of pig iron up to 250x100x50mm. Gravel and cobbles are slag clinker, some concrete. MGR
				1.10			*Disused water pipe strike. Black PVC ~50mm dia., assumed to be waste water. Some water flow, stopped after 30 seconds. Disconnected telecoms cable.* End of pit at 1.10 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE03**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456203.00 - 524991.00 Level:	Date 22/02/2017
Location: SSI Redcar		Dimensions (m): Depth 3.30	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.40			MADE GROUND: Dark reddish brown gravelly SAND with occasional cobbles. Gravel is fine to coarse subrounded to subangular including slag and some iron ore. Cobbles are slag. Shiny lustre, BOS Grit MGR
							MADE GROUND: Grey very gravelly SAND with abundant cobbles and occasional boulders. Gravel is fine to coarse, subrounded to subangular and includes slag (some white mineralisation). Cobbles and boulders are of slag (some white mineralisation). Rare red and silica brick fragments. MGR
	1.50	ES		1.50			MADE GROUND: Greyish light brown gravelly to very gravelly SAND with occasional cobbles and frequent soft to firm brown clay lumps. Gravel is fine to coarse, rounded to subrounded of beach pebbles with some shell fragments. MGR
				3.30			End of pit at 3.30 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPE04**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456296.00 - 524952.00 Level:
Location:	SSI Redcar	Dimensions (m): 4.1 × 2.2, Depth 3.30	Scale 1:25
Client:	Homes and Communities Agency		Logged LK
Date	20/02/2017		

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Dark greyish brown very gravelly SAND with occasional cobbles and rare boulders. Gravel is fine to coarse, subangular to subrounded and includes slag and slag like material (lighter than slag). Rare red and silica brick fragments. MGR
				0.70			MADE GROUND: Greyish brown very sandy GRAVEL with occasional boulders. Gravel is fine to coarse, subangular to subrounded and includes slag. Boulders are slag (some white mineralisation). MGR
	1.00	ES					
	1.50 - 1.80	ES					
				2.50			MADE GROUND: Brownish yellow slightly gravelly SAND. Gravel is fine to coarse, subangular to rounded and includes slag, slag like material (lighter than slag) and some beach pebbles. Rare small shell fragments MGR
				3.30			End of pit at 3.30 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE05**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456404.00 - 524915.00 Level:	Date 20/02/2017
Location: SSI Redcar		Dimensions (m): 4 × 2.2 Depth 3.00	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.50 0.50 - 0.80	ES B					MADE GROUND: Dark greyish brown very gravelly SAND with occasional cobbles, rare boulders and occasional brown clay lenses. Gravel is fine to coarse, subangular to subrounded and includes slag, slag like material (lighter) and possibly crushed silica bricks. Rare wood fragments. MGR *Becoming yellow, frequent boulders of slag*
				1.30			MADE GROUND: Whitish grey sandy GRAVEL with frequent cobbles and occasional boulders. Gravel is fine to coarse subrounded to subangular and includes white, grey and greenish slag. Cobbles and boulders of slag (some white mineralisation) MGR
	1.70	ES					
				2.20			MADE GROUND: Greyish light brown very gravelly SAND. Gravel is fine to coarse, subangular to rounded and includes sandstone, beach pebbles and possible slag. Rare cobble sized beach pebbles. Rare grey clay lenses. Rare small shell fragments. (POSSIBLE HYDRAULIC FILL) MGR
				3.00			End of pit at 3.00 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPE06** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 455991.00 - 525121.00 Level:	Date 22/02/2017
Location: SSI Redcar		Dimensions (m): Depth 1.70	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.05			MADE GROUND: Loose dark greyish black sand MGR
				0.20			MADE GROUND: Dense brownish grey sandy GRAVEL with medium cobble content and rare boulders MGR
	0.80	ES					MADE GROUND: Dense grey very gravelly SAND with medium cobble content and rare boulders. Gravel is fine to coarse, subangular to angular of slag, clinker and rarely concrete. Cobbles and boulders are mostly slag up to 600x400x400mm. Occasional pockets/layers of high red brick content red sand/gravel. MGR
							200mm diameter black plastic pipe. Oily residue inside. Repaired.
				1.70			End of pit at 1.70 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPE07**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456080.00 - 525080.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.00	3.6 × 2.1
Client:	Homes and Communities Agency		

Date: 21/02/2017

Scale: 1:25

Logged: TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Loose dark brownish grey gravelly SAND with low cobble content and rate boulders. MGR *Reddish brown, red brick, crushed* *Dark grey*
				0.90			MADE GROUND: Medium dense grey sandy GRAVEL with medium to high cobble content and medium boulder content. Gravel is fine to coarse, subangular to angular of slag, clinker and rare brown ore. Cobbles and boulders are mostly slag with some clinker. Some slag has white mineralisation on the outer edge. Boulders are up to 500x400x400mm MGR *Dense, compacted* *Boulder size increasing*
	2.20 - 2.50	B					
	3.90	ES		3.80 4.00			MADE GROUND: Loose yellowish grey slightly gravelly SAND. Gravel is rounded to subrounded. (POSSIBLE NATURAL) MGR End of pit at 4.00 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE08**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456168.00 - 525042.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.20	4.5 × 2.4
Client:	Homes and Communities Agency		

Date 22/02/2017

Scale 1:25

Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.70	ES		0.70			MADE GROUND: Dark greyish brown gravelly SAND with rare cobbles. Gravel is fine to coarse, subrounded to subangular of slag. Cobbles are of slag. Rare fragments of red and silica brick. Shiny appearance, BOS Grit. MGR
							MADE GROUND: Whitish grey very sandy GRAVEL with abundant cobbles and frequent boulders. Gravel is fine to coarse, subangular to subrounded of slag (some white mineralisation). Cobbles and boulders are of slag. MGR
				2.60			MADE GROUND: Greyish light brown slightly gravelly SAND with occasional small shell fragments. Gravel is subrounded to rounded and includes beach pebbles and sandstone. MGR
	3.20	B					End of pit at 3.20 m
				3.60			

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPE09**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456264.00 - 525003.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.60	3.9 × 2.3
Client:	Homes and Communities Agency		

Date: 20/02/2017

Scale: 1:25

Logged: TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Loose dark greyish black slightly gravelly SAND. Gravel is fine to coarse, possibly coal or compacted sand. MGR
	1.10 - 1.50	B					MADE GROUND: Medium dense brownish grey very sandy GRAVEL with medium to high cobble content and medium boulder content. Gravel is slag, brick fragments and clinker. Cobbles are slag, brick, clinker, iron ore. Boulders are slag and occasional intact brick. Some slag has blue crystallisation. MGR
				1.90			MADE GROUND: Loose greyish yellow slightly gravelly SAND, gravel is fine to medium and occasionally coarse, rounded of mixed lithologies with occasional pockets of stiff brown clay up to 150x100x100mm. (POSSIBLE NATURAL) MGR
	2.50	ES					
				3.60			End of pit at 3.60 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPE10** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456356.00 - 524968.00 Level:	Date 20/02/2017
Location: SSI Redcar		Dimensions (m): 3.9 × 2.3 Depth 3.70	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10	ES		0.30			MADE GROUND: Loose dark grey gravelly SAND with rare cobbles. Gravel is fine to medium, occasionally coarse, subangular to angular including slag, coal and clinker. MGR
				1.70			MADE GROUND: Medium dense dark grey very sandy GRAVEL with medium cobble and low boulder content. Gravel is fine to coarse, angular to subangular including slag, brick fragments, clinker and some rounded pellets. Cobbles and boulders are mostly slag with some clinker and brick fragments. Occasional intact red and yellow bricks. White mineralisation on slag pieces. MGR *Brownish grey*
	2.40	ES		3.00			MADE GROUND: Dark brownish grey gravelly SAND with low cobble and low to medium boulder content. Gravel is fine to coarse, angular to subangular and includes slag and clinker. Boulders are slag, some brick (intact) up to 500x400x300mm. MGR *White mineralisation on slag pieces*
▼				3.70			MADE GROUND: Loose greyish yellow slightly gravelly SAND with rare shells. Gravel is medium to coarse, subrounded to rounded. MGR End of pit at 3.70 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE11**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456054.00 - 525130.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.35	3.5 × 1.4
Client:	Homes and Communities Agency		

Date 27/02/2017

Scale 1:25

Logged FLM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Loose red brown sandy GRAVEL. Gravel is fine of iron ore. MGR
				0.40			MADE GROUND: Dense grey sandy GRAVEL with low cobble content. Gravel is fine to coarse angular to subangular of slag and clinker. Occasional white dusting to slag. MGR
				0.70			MADE GROUND: Loose yellow brown slightly gravelly SAND. Gravel is medium to coarse, angular to subangular of slag. MGR
				0.80			MADE GROUND: Very dense grey sandy GRAVEL and COBBLES with low boulder content. Cobbles of slag. Orange staining noted. MGR
	1.50 - 1.70	ES		1.50			MADE GROUND: Dense to very dense orange sandy gravelly COBBLES with low boulder content. Sulphur odour noted. Gravel, cobbles and boulders are of slag. Colour same as house brick but none present. MGR
	1.70 - 2.00	LB					
				2.10			Stiff grey brown thinly laminated slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subrounded to rounded of limestone possibly siltstone and other lithologies CL
	2.20 - 2.30	D		2.35			End of pit at 2.35 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPE12**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456131.00 - 525098.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.10	3.8 × 2.2
Client:	Homes and Communities Agency		

Date 21/02/2017

Scale 1:25

Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Loose brown coal, sand & gravel composed of iron ore MGR
	0.55 - 1.00	B		0.55			MADE GROUND: Medium dense black silty SAND composed of coal clay sand is found, occasional pellets of iron ore, blackish purple colour MGR
	1.00 - 1.25	B		1.00			MADE GROUND: Medium dense grey slightly sandy GRAVEL medium cobble contents and boulder composed of slag, cobbles are angular to sub rounded MGR
				2.15			MADE GROUND: Loose yellow slightly gravelling SAND containing shells, gravel is fine to coarse, well-rounded, occasional tar cobbles. Brick found at 1.9m MGR
				2.50			MADE GROUND: Very dense grey gravelled angular cobbles, boulders composed of slag MGR
				3.10			MADE GROUND: Stiff grey brown slightly sandy gravelly CLAY showing occasional laminations, gravel is angular to rounded, poorly sorted fine to coarse composed of various lithologies including slag containing pockets of coarse yellow SAND. Terminated in natural gravel MGR
							End of pit at 3.10 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE13**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456233.00 - 525057.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.50	4.2 × 2.4
Client:	Homes and Communities Agency		

Date 28/02/2017

Scale 1:25

Logged FLM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Loose black/dark grey coal and iron ore sand. MGR
	0.30 - 0.50	ES					MADE GROUND: Loose dark reddish brown slightly gravelly SAND with low cobble content. Gravel is fine to coarse, subangular to rounded of pellets, occasional brick and other lithologies including concrete. Cobbles are of concrete. MGR
	0.50 - 0.60	B		0.60			
				0.70			MADE GROUND: Loose light yellowish grey slightly sandy gravel. Gravel is fine to coarse, angular to subrounded of slag. MGR
							MADE GROUND: Very dense grey sandy GRAVEL with low cobble content. Gravel is fine to coarse, angular to subrounded of slag and occasional brick and house brick. Cobbles are of slag. A metal strip was noted. Refractory brick content of approximately 1-2%. Occasional pockets of stiff brown weakly laminated reworked slightly sandy clay with occasional coarse rounded pebbles and cobbles. MGR
				2.10			Loose brown gravelly SAND with cobble and boulder fragments of stiff brown slightly sandy slightly gravelly to gravelly CLAY, thinly laminated in places with fine sand on laminae. Gravel is fine to coarse subrounded to rounded of sandstone, possibly limestone and other lithologies. Some shell and coal fragments noted. ALV
				2.50			End of pit at 2.50 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPE14**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456329.00 - 525018.00 Level:	Date 24/02/2017
Location: SSI Redcar		Dimensions (m): 4.3 × 2.2 Depth 3.60	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30	ES					MADE GROUND: Medium dense dark greyish black gravelly SAND with low cobble content and rare boulders. Possible BOS Grit MGR
				0.50			MADE GROUND: Dense grey sandy GRAVEL with low to medium cobble content and rare boulders. Gravel is fine to coarse, angular to subangular including slag with some clinker. Cobbles and boulders are mostly slag with some clinker. MGR *Reddish grey*
				1.10			MADE GROUND: Medium dense dark grey very sandy GRAVEL AND COBBLES with medium boulder content. Occasional layers (~200mm thick) of reddish grey sandy gravel. Boulders are slag and some concrete. Gravel and cobbles are slag and clinker. MGR *Ammonia odour* *Concrete boulder 700x700x300mm*
	3.20	ES		3.00			MADE GROUND: Loose yellowish grey gravelly SAND. Gravel is fine to coarse, subrounded to rounded of mixed lithologies. (POSSIBLE NATURAL) MGR
				3.60			End of pit at 3.60 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE15**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456418.00 - 524988.00 Level:	Date 24/02/2017
Location: SSI Redcar		Dimensions (m): 4.6 × 2.3 Depth 1.50	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20	ES		0.30			MADE GROUND: Dark brown slightly clayey sandy GRAVEL. Gravel is fine to coarse, predominantly fine to medium, subangular to subrounded of iron ore and sinter. (Shiny appearance - BOS Grit?) MGR
				0.50			MADE GROUND: Dark brown slightly clayey very gravelly SAND with occasional cobbles. Gravel is fine to coarse, subangular to rounded and includes slag and coke. MGR
	1.20	ES		1.50			MADE GROUND: Brownish grey slightly clayey very gravelly SAND with abundant cobbles and occasional boulders. Gravel is fine to coarse, subangular to subrounded of slag and some dolomite. Cobbles and boulders of slag and some dolomite. Occasional red and refractory brick fragments. Rare scrap metal, wood and rubble fragments. MGR
							End of pit at 1.50 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPE17**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456108.00 - 525151.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.90	4 × 2.2
Client:	Homes and Communities Agency		

Date: 28/02/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Medium dense black slightly gravelly silty SAND comprised of iron and coal, containing occasional pellets. Gravel is fine to coarse, angular to rounded. Occasional cobbles of slag and coke. MGR
				0.60			MADE GROUND: Medium dense slightly sandy SILT. MGR
							MADE GROUND: Very dense grey slightly sandy cobbly GRAVEL with occasional angular boulders of slag. Cobbles are angular to subangular of slag. Slag is aerated. MGR
							Layer of boulders
	3.10	ES		3.10			MADE GROUND: Loose greyish brown slightly gravelly coarse SAND occasional cobbles of slag and pellets. MGR
▼	3.60	D		3.60			MADE GROUND: Loose yellowish brown slightly gravelly slightly silty SAND with pockets of laminated soft brown clay. Gravel is subangular to rounded of various lithologies. (POSSIBLE NATURAL GROUND) MGR
				3.90			End of pit at 3.90 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPE18**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456200.00 - 525117.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.95	4.2 × 2.3
Client:	Homes and Communities Agency		

Date 28/02/2017

Scale 1:25

Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Medium dense black slightly gravelly coarse SAND. Gravel is fine to coarse of BOS grit. MGR
				0.30			MADE GROUND: Medium dense reddish brown slightly gravelly SAND of iron ore. Gravel is fine to coarse, subrounded to rounded. MGR
				0.60			MADE GROUND: Very dense blackish brown slightly sandy GRAVEL. MGR
				0.70			MADE GROUND: Very dense greyish brown sandy angular GRAVEL of slag with frequent cobbles and occasional boulders of slag and refractory bricks, pellets and lime and slag. MGR
				2.00			MADE GROUND: Medium dense yellow SAND. MGR
				2.05			MADE GROUND: Medium dense greyish brown sandy angular to subangular GRAVEL of slag with frequent cobbles. MGR
	2.50 - 2.60	ES					
				3.80			Soft brown to yellowish brown silty sandy CLAY with laminations of coarse sand to fine gravel comprised of coal. (POSSIBLE MADE GROUND) TFD
				3.95			*Sandy silt becoming silty sandy clay with depth* End of pit at 3.95 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPE19**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 465293.00 - 525077.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.00	4.4 × 2.5
Client:	Homes and Communities Agency		

Date: 28/02/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20 - 0.80	ES		0.20			MADE GROUND: Medium dense black slightly gravelly silty SAND containing occasional pellets. Gravel consists of slag, brick and BOS grit. MGR
				0.50			MADE GROUND: Medium dense glittery black slightly silty SAND of iron ore and BOS grit. MGR *Laminations of black BOS grit*
				1.10			MADE GROUND: Dense grey sandy GRAVEL with frequent cobbles are rare boulders of slag. Gravel is angular to rounded composed of slag. 5-6 refractory bricks. Occasional gravel and cobbles of lime. Slag is aerated. MGR *Sulfur odour noted*
	2.10 - 2.60 2.10 - 2.60	B LB		2.60			MADE GROUND: Medium dense reddish brown sandy GRAVEL of slag with abundant cobbles and occasional boulders of slag. 1-2 refractory bricks MGR
				3.00			MADE GROUND: Dense brown sandy gravelly cobbly BOULDERS. MGR
				3.10			MADE GROUND: Ash band MGR
				3.30			MADE GROUND: Medium dense reddish brown sandy cobbley angular to rounded GRAVEL composed of slag with occasional boulders of slag. 1-2 refractory bricks. MGR
				3.80			MADE GROUND: Loose yellow and grey gravelly SAND with pockets of white and grey ash. Sand is composed of lime. Occasional rounded cobbles of lime. Gravel is of slag. MGR
				4.00			Loose yellow slightly gravelly coarse SAND with interbeds of fine to coarse subrounded to rounded gravel of various lithologies. TFD End of pit at 4.00 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPE20**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456378.00 - 525041.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.30	4 × 2.1
Client:	Homes and Communities Agency		

Date: 01/03/2017

Scale: 1:25

Logged: FLM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Loose dark grey black gravelly SAND. Gravel is fine to medium, angular to subangular of iron ore and slag. Sand of coal dust and occasional BOS grit MGR
	0.50 - 0.80 0.50 - 0.80	B ES		0.50			MADE GROUND: Loose dark orange brown slightly gravelly sand of iron ore MGR
				0.80			MADE GROUND: Medium dense grey sandy GRAVEL with low to medium cobble content. Gravel is fine to coarse angular to subangular of slag occasional clinker and rare refractory brick. Cobbles are of slag. Low boulder content. MGR
				1.20			MADE GROUND: Loose orange brown slightly gravelly SAND as above MGR
				1.50			MADE GROUND: Very dense light grey slightly sandy GRAVEL and COBBLES of slag. Low boulder content of slag. Gravel is fine to coarse angular to subangular of slag occasional clinker and rare refractory brick. MGR *Thin yellow brown sand band approx 0.05m* MADE GROUND: Dense to very dense mottled white slightly sandy GRAVEL and COBBLES with medium boulder content. MGR
	2.20 - 2.30	D		2.20 2.30			Stiff dark brown slightly sandy slightly gravelly CLAY with low cobble content. Gravel is fine to coarse, angular to rounded of sandstone, limestone, rare coal and other lithologies. GT End of pit at 2.30 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPE21**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456084.00 - 525203.00 Level:	Date 28/04/2017
Location:	SSI Redcar	Dimensions (m): Depth 4.50	4.2 × 2.2	Scale 1:25
Client:	Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10 - 0.40 0.20 - 0.50 0.20 - 0.50	ES B ES					MADE GROUND: Loose black slightly silty very gravelly fine to coarse SAND of coal with low cobble content. Gravel is fine to coarse, angular to rounded and includes compacted coal dust, slag, iron ore pellets and coke. MGR
	0.80 - 2.50 1.00 - 1.50	LB LB		0.80			MADE GROUND: Dense light grey sandy fine to coarse, angular to subangular GRAVEL AND COBBLES with rare boulders of slag and rare bricks. MGR
▼				2.50			MADE GROUND: Medium dense to dense, greyish brown sandy fine to coarse, angular to subangular GRAVEL with medium cobble content and low boulder content. Gravel, cobbles and boulders are of slag. MGR
▼	4.00 - 4.50 4.00 - 4.50	D ES		4.00			MADE GROUND: Very soft to firm grey slightly sandy silty CLAY with laminations of blackish red coarse sand. (POSSIBLE NATURAL) MGR
				4.50			End of pit at 4.50 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPE22**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456144.00 - 525167.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.80	3.1 × 2.3
Client:	Homes and Communities Agency		

Date: 01/03/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Loose to medium dense black gravelly SAND composed of BOS grit. Gravel is subrounded to rounded. MGR
				0.50			
	0.80 - 1.00 0.80 - 1.00	B ES					MADE GROUND: Very dense grey sandy gravelly subrounded to rounded COBBLES of slag with occasional boulders of green slag. MGR
				1.10			
				1.30			MADE GROUND: Loose to medium dense yellow gravelly SAND. Gravel is fine to coarse subrounded to rounded of various lithologies including shells. MGR
							MADE GROUND: Medium dense brown gravelly SAND. Gravel is angular to subrounded, fine to coarse comprised of slag. MGR
	2.00 - 2.50	ES		2.00			
▼							MADE GROUND: Medium dense slightly clayey sandy GRAVEL with occasional cobbles. MGR
				2.80			End of pit at 2.80 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPE23**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456257.00 - 525125.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.70	3.9 × 2.3
Client:	Homes and Communities Agency		

Date: 01/03/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30			MADE GROUND: Loose to medium dense black slightly gravelly silty SAND composed of BOS grit with occasional cobbles of well compacted BOS grit. MGR
							MADE GROUND: Very dense grey sandy gravelly angular COBBLES AND BOULDERS of slag. MGR
							Loose yellow coarse sand pocket - not laterally extensive
	3.50 - 3.70	ES		3.70			End of pit at 3.70 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE24**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456349.00 - 525091.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.00	4.4 × 2.3
Client:	Homes and Communities Agency		

Date 01/03/2017

Scale 1:25

Logged FLM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Loose black slightly gravelly SAND of coal dust, BOS grit, iron ore and slag. MGR
				0.40			MADE GROUND: Medium dense to very dense dark reddish brown grey slightly sandy gravel (compacted iron ore) with low cobble content of compacted ore. Gravel is fine to medium, subangular to subrounded of iron ore. MGR
				0.70			MADE GROUND: Medium dense dark brown black silty SAND (coal dust) MGR
							MADE GROUND: Medium dense yellowish grey slightly sandy GRAVEL MGR
				1.10			MADE GROUND: Medium dense grey and yellow brown gravelly SAND. Gravel is fine to coarse, subangular of slag. MGR
	1.50 - 1.60	ES		1.50			MADE GROUND: Medium dense to dense yellow grey sandy GRAVEL with low cobble and boulder content. Gravel is fine to coarse angular to subangular of slag and rare clinker. Cobbles and boulders are of slag. MGR
				2.00			*At approximately 1.9m: Very dense, extended pit and cleared out pit but appears as flat surface. Pit terminated as unable to advance without breaker.* End of pit at 2.00 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE25**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456442.00 - 525058.00 Level:	Date 01/03/2017
Location: SSI Redcar		Dimensions (m): 4.4 × 2.2 Depth 3.70	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Dense brownish red slightly silty slightly gravelly SAND of iron ore. Gravel is angular. MGR
				0.40			MADE GROUND: Loose black slightly silty gravelly SAND. Gravel is BOS grit and occasionally slag. MGR
							MADE GROUND: Dense grey sandy cobbly GRAVEL of slag with occasional boulders of slag. Signs of sulfur mineralisation. MGR
							800x700x600mm boulder of slag
	2.70 - 3.70 2.70 - 3.70	ES LB					
							Sulfur odour
				3.70			End of pit at 3.70 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPE27**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456104.00 - 525250.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 1.50	3.7 × 2
Client:	Homes and Communities Agency		

Date: 24/04/2017

Scale: 1:25

Logged: JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Loose black slightly silty very gravelly fine to coarse SAND. Gravel is fine to coarse of coal and coke MGR
				0.50			MADE GROUND: Medium dense reddish brown silty very gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to rounded of various lithologies including slag. MGR
				1.00			MADE GROUND: Medium dense light greyish brown very sandy fine to coarse, angular to subrounded GRAVEL of slag. MGR
				1.50			MADE GROUND: Very dense greyish brown slightly silty very sandy fine to coarse, angular to subrounded GRAVEL of slag and bricks. MGR End of pit at 1.50 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPE28**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456135.00 - 525222.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.30	4.4 × 2.3
Client:	Homes and Communities Agency		

Date: 13/03/2017

Scale: 1:25

Logged: LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Dark grey slightly silty gravelly SAND. Gravel is fine to coarse, subangular to subrounded and includes coke and slag. MGR
	0.80	ES					MADE GROUND: Brown very gravelly SAND with medium cobble content and low boulder content. Gravel is fine to coarse, subangular to rounded to subangular of slag and beach pebbles. Rare red and refractory brick fragments. MGR
▼				1.40			MADE GROUND: Greyish brown sandy GRAVEL with high cobble and low boulder content. Gravel is fine to coarse, subangular to subrounded of slag. Cobbles and boulders are subangular. Rare red and refractory brick fragments. MGR
				3.30			End of pit at 3.30 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

			Trialpit No **TPE29** Sheet 1 of 1
Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456164.00 - 525206.00 Level:	Date 01/03/2017
Location: SSI Redcar		Dimensions (m): 4 × 2.1 Depth 3.50	Scale 1:25
Client: Homes and Communities Agency			Logged FLM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Loose black slightly gravelly silty SAND. Gravel is fine to coarse angular to subangular of slag and compacted coal dust. MGR
	0.50 - 0.60	ES		0.50			MADE GROUND: Loose dark brown gravelly SAND. Gravel is fine to coarse subangular slag and occasional brick and clinker and low boulder content. MGR
				0.60			MADE GROUND: Loose slightly gravelly SAND with low cobble content. Gravel is fine to coarse subangular to rounded of slag, occasional brick and rounded pebbles. Rare shells fragments. Cobbles are of slag. (Hydraulic Fill) MGR
				1.40			MADE GROUND: Dense light grey slightly sandy RAVEL with low boulder and medium cobble content. Gravel, cobbles and boulders are angular to subangular of slag. Gravel is fine to coarse. Sulphur odour noted. MGR *Becoming sandier with depth - sandy GRAVEL.*
				1.80			MADE GROUND: Medium dense dark brown sandy GRAVEL with low cobble and boulder content. Cobbles and boulders of slag. Gravel is of slag, clinker and rare rounded pebbles. MGR
	2.60 - 2.90 2.60 - 2.90	B ES					MADE GROUND: Medium dense light brown yellowish grey SAND and GRAVEL with low cobble content. Gravel is fine to coarse , angular to subrounded of slag with occasional iron ore and rare brick (red and yellow), clinker and rounded pebbles. Cobbles are of slag. MGR
				3.50			End of pit at 3.50 m

1 2 3 4 5

Remarks:

Stability: West wall starting to undermine below c.1.4m. East wall from c.2.5m.

AGS

Trial Pit Log

Trialpit No **TPE30**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456229.00 - 525180.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.60	3.7 × 2.5
Client:	Homes and Communities Agency		

Date 02/03/2017

Scale 1:25

Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30			MADE GROUND: Medium dense blackish red gravelly SAND . Gravel is fine to coarse, angular to subrounded of iron ore MGR
				0.50			MADE GROUND: Medium dense black slightly gravely silting SAND. Sandy silty clay in places BOS grit MGR
							MADE GROUND: Very dense grey sandy fine to coarse, angular to subrounded GRAVEL of slag with rare boulders and frequent cobbles. Slag cobbles are angular to subrounded of slag and refractory brick. Boulders are 500x600x400mm angular composed of slag, boulders and cobbles show signs of sulphur mineralisation - white coatings, green stain, large boulder at 1.9m overlain by sandy GRAVEL pockets containing bits of wood. Pockets of ash. MGR
	3.30 - 3.60	ES		3.30			MADE GROUND: Yellow loose slightly gravelly coarse SAND. Gravel is fine to coarse of various lithologies found in pockets, interbedded with loose white to grey ASH. Ash thought to be from layer above MGR
				3.60			End of pit at 3.60 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPE31**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456271.00 - 525165.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.30	4.4 × 2.7
Client:	Homes and Communities Agency		

Date 02/03/2017

Scale 1:25

Logged FLM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Loose, dark grey black silty gravelly SAND. Gravel is fine to coarse angular to subangular of slag and coke. MGR
				0.20			
				0.30			MADE GROUND: Loose reddish orange brown sandy GRAVEL (iron ore). Gravel is fine to medium, occasionally coarse, angular to subrounded of iron ore. MGR
							MADE GROUND: Medium dense reddish brown silty SAND/sandy SILT. MGR
							MADE GROUND: Medium dense light grey/yellowish grey gravelly SAND with medium cobble content. Gravel is fine to coarse angular to subrounded of slag and ash with occasional clinker. Cobbles are of slag and ash. Sand included white ash. Low boulder content of slag. MGR
	1.20 - 1.30	ES					*Becoming very dense*
							Localised pockets of ashy material consolidated into gravel and cobbles sized fragments - more ashy below 1.4mm
				1.60			MADE GROUND: Medium dense to loose grey sandy gravelly COBBLES of slag with high boulder content. Gravel is fine to coarse angular to subrounded of slag. Cobbles and boulders are of slag. MGR
							Large slag boulder with sulphur deposits on surface (1.2 x 0.7 x 0.6m)
							Darker grey colour, slightly damp with rare clinker gravel. Possibly locally gravelly SAND / sandy GRAVEL pockets. Below 2.6m boulder content low.
	3.40 - 3.50	B					
	3.60	B					*Pockets of sand of ash: Loose grey, locally mottled white gravelly SAND with low cobble content. Gravel is fine to coarse angular to subangular of slag. Cobbles of slag and refractory brick (5%). Sand includes ash.*
				4.30			End of pit at 4.30 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPE32**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456320.00 - 525149.00 Level:	Date 02/03/2017
Location:	SSI Redcar	Dimensions (m): Depth 4.10	4.4 × 2.9	Scale 1:25
Client:	Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Medium dense black mottled reddish brown slightly cobble gravelly SAND bos grit MGR *From 0m: lots of scrap metal*
				0.40			MADE GROUND: Loose grey sandy fine to coarse, subangular GRAVEL, of slag with rare slag cobbles and boulders. Plastic containers - large boulders - scrap metal at 2m, pockets of loose black gravelly sand, slag material MGR
				2.50			MADE GROUND: Medium dense brownish black slightly cobbly sandy fine to coarse, subangular to subrounded Gravel, composed of slag. Hydrocarbon odour Becoming gravelly SAND with depth. Pockets (300x600mm) of ash mixed with slag. MGR
	2.80 - 3.30	ES					
	3.50 - 4.10	B		3.50			MADE GROUND: Loose white/grey slightly sandy slightly cobbly fine to coarse, subangular to subrounded GRAVEL composed of slag and ash. Hydrocarbon odour. MGR
	3.50 - 4.10	ES					
				4.10			End of pit at 4.10 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPE33**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456368.00 - 525124.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.50	4 × 2.7
Client:	Homes and Communities Agency		

Date: 02/03/2017

Scale: 1:25

Logged: FLM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10 - 0.30	ES		0.02			MADE GROUND: Loose grey gravel of coke. Gravel is angular to subangular. MGR
				0.10			MADE GROUND: Loose reddish orange gravelly SAND (iron ore) MGR
				0.50			MADE GROUND: Medium dense black slightly gravelly slightly sandy SILT. Compacted coal dust with occasional angular to medium gravel, possibly of slag. MGR
							MADE GROUND: Medium dense light grey/yellowish grey sandy gravel wit low cobble and boulder content. Gravel and cobbles are fine to coarse, angular to subangular of slag with occasional clinker and ash. MGR
							Becoming loose and slightly darker in colour. Localised thin bands of iron ore below 1m. Gravel and cobbles fine to coarse angular to subrounded of aerated slag, slag clinker and occasional ash. Slight sulphur odour noted.
				3.10			MADE GROUND: Firm brown gravelly sandy CLAY which is weakly thinly bedded with thin bands of slightly gravelly SAND. Gravel is fine to coarse angular to rounded of sandstone, possibly limestone, rare coal, shells and pebbles of other lithologies. Locally stiff. Gravel in sand is fine to medium subangular to rounded and includes shell fragments and pebbles. MGR
	3.40 - 3.50	B					
	3.40 - 3.50	D		3.50			End of pit at 3.50 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPE34**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456410.00 - 525109.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.10	5 / 2.5
Client:	Homes and Communities Agency		

Date 02/03/2017

Scale 1:25

Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.50			MADE GROUND: Medium dense red slightly gravelly SAND, gravel is SA-SK of iron ore and coal laminations of black bos grit, ash band 10mm thick MGR
				1.50			MADE GROUND: Loose grey sandy fine to coarse, angular to subrounded GRAVEL with occasional cobbles and boulders. Some cobbles are white with green staining and contains refectory bricks. Cluster of 6-10 pockets of ash. MGR
				2.10			MADE GROUND: Loose brown cobbley sandy fine to coarse, subangular to subrounded GRAVEL of slag. MGR
				2.60			MADE GROUND: Loose grey cobbly sandy fine to coarse, angular to subrounded GRAVEL of slag. MGR
				4.00			MADE GROUND: Loose grey sandy fine to coarse, angular to rounded GRAVEL of slag with frequent cobbles of slag. Interbeds 0(.2m³) of ash. MGR *From 2.6m: very hard obstruction* End of pit at 4.10 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPE35**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456456.00 - 525095.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.40	4.1 × 2.6
Client:	Homes and Communities Agency		

Date: 02/03/2017

Scale: 1:25

Logged: FLM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.02			MADE GROUND: Dense yellow compacted lime recovered as fine to coarse angular GRAVEL MGR
							MADE GROUND: Loose intermixed grey and reddish brown slightly sandy to sandy GRAVEL with medium cobble and low boulder content. Gravel is fine to coarse angular to subrounded of slag with occasional clinker, rare Coke and refractory brick fragments and occasional slag. MGR *Becoming grey*
				1.80			MADE GROUND: Very stiff brown sandy very gravelly CLAY. Gravel is angular to rounded of pebbles and includes shell fragments (north wall only). Reworked. Pebbles are sandstone and limestone, rare coal and other lithologies. Rare angular fine red gravel (possibly brick). Rare thin metal wire. MGR *Sand and gravel band at 1.8m in south wall with seepage*
	2.00 - 2.10	ES					
				2.60			MADE GROUND: Dense grey sandy GRAVEL/gravelly SAND with low cobble and boulder content. Gravel is fine to coarse angular to subangular of slag. Rare red brick as fine gravel. MGR
	3.00 - 3.20	B					
	3.00 - 3.20	ES					
	3.20 - 3.40	D		3.20			MADE GROUND: Soft grey streak black sandy SILT with black laminations of sand (coal) TFD/ALV
				3.40			End of pit at 3.40 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE36**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456082.00 - 525296.00 Level:	Date 24/03/2017
Location:	SSI Redcar	Dimensions (m): Depth 3.70	3.4 × 2.4	Scale 1:25
Client:	Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Loose black slightly silty very gravelly fine to coarse SAND. Gravel is fine to coarse of coke and occasional coal. MGR
				1.10			MADE GROUND: Loose light greyish brown very sandy fine to coarse, angular to subrounded GRAVEL of slag and brick with medium cobble content and low boulder content. MGR
				2.00			MADE GROUND: Loose reddish brown silty very sandy fine to coarse, angular to subangular GRAVEL of slag and brick with occasional pockets of soft yellow clay and low cobble content. MGR
				2.70			MADE GROUND: Loose yellow gravelly fine to coarse SAND. MGR
▼							MADE GROUND: Medium dense reddish brown clayey very gravelly fine to coarse SAND with low cobble and boulder content and abundant pockets of clay. Gravel is angular to rounded of various lithologies. MGR
▽				3.70			End of pit at 3.70 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPE37**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456106.00 - 525283.00 Level:
Location:	SSI Redcar	Dimensions (m): 4.6 × 2.7 Depth 5.00	Scale 1:25
Client:	Homes and Communities Agency		Logged LK
Date	14/03/2017		

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Dark grey slightly silty gravelly SAND. Gravel is fine to coarse, subangular to subrounded of coke. MGR *Slightly reddish*
							MADE GROUND: Light greyish brown sandy GRAVEL with high cobble content and medium boulder content. Gravel is fine to coarse, subangular to subrounded of slag (some whitish). Cobbles and boulders are subangular slag. Traces of iron. Occasional refractory and red brick fragments. MGR *Slightly sandy GRAVEL with high cobble and medium boulder content.*
				2.40			MADE GROUND: Greyish brown very gravelly SAND with abundant cobbles and occasional boulders. Gravel is fine to coarse, subangular to subrounded and includes slag and black stone (possibly ore). Cobbles and boulders are of slag. Occasional fragments of refractory and red brick. MGR *Right hand side of pit, layer of large (approx. 1m dia.) boulders of whitish slag.*
	3.00	ES					
	3.20 - 3.50	B					
				3.70			MADE GROUND: Interbedded orangish grey slightly gravelly SAND and firm greyish brown mottled very dark grey fissured CLAY with low boulder content. Gravel is fine to coarse rounded to subangular of beach pebbles and slag. Occasional small pockets of dark grey organic matter with rare wood fragments. MGR *Right hand side of pit, layer of large (approx. 1m dia.) boulders of whitish slag.*
				4.10			MADE GROUND: Whitish grey clayey slightly sandy GRAVEL with medium cobble, low boulder and high ash content. Gravel is fine to coarse, subangular to subrounded of slag. Occasional refractory brick fragments. Rare shell fragments. MGR *Evidence of possible oil (thick dark liquid) coming in at the base of the pit.*
▼	4.50	ES					
				5.00			End of pit at 5.00 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPE38**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456170.00 - 525257.00 Level:	Date 21/04/2017
Location: SSI Redcar		Dimensions (m): 4 × 2.2 Depth 4.20	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Loose dark greyish black gravelly SAND (coke/ash residual material) MGR *Medium dense*
				0.30			MADE GROUND: Medium dense sandy GRAVEL AND COBBLES with high boulder content. Gravel and cobbles are slag. Rare concrete fragments. MGR
				1.60			MADE GROUND: Medium dense dark brown gravelly SAND with low cobble content and rare slag boulders. Gravel is angular to rounded of slag, clinker and occasional pellets. Boulders are up to 500x400x400mm. Locally very gravelly. Some slag boulders have white staining with blue and green colouration. MGR *Rare yellow and red brick, some intact*
	2.00	ES					
	2.50 - 2.80	B					
				3.20			*Becoming very clayey SAND AND GRAVEL*
	3.50	ES					
▼							End of pit at 4.20 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPE39**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456196.00 - 525250.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.80	4.4 × 2.4
Client:	Homes and Communities Agency		

Date: 05/03/2017

Scale: 1:25

Logged: LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Dark grey silty gravelly SAND. Gravel is fine to coarse, subrounded of coke. MGR
							MADE GROUND: Light greyish brown sandy to very sandy GRAVEL with abundant cobbles and boulders. Gravel is fine to coarse, subangular to subrounded of slag (occasionally whitish). Cobbles and boulders are slag. Some show traces of white mineralisation and iron. MGR
	1.80	ES					
	2.00 - 2.30	B					*Abundant cobbles, occasional boulders*
							Whitish grey (ash content)
▼				3.80			End of pit at 3.80 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE40**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456243.00 - 525229.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.00	4.5 × 2.2
Client:	Homes and Communities Agency		

Date 06/03/2017

Scale 1:25

Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Medium dense black fine to coarse, angular to rounded black SAND AND GRAVEL. MGR
							MADE GROUND: Loose grey sandy fine to coarse, subangular to rounded GRAVEL of slag with cobbles and boulders of slag. Small pocket of builders sand around large boulders. MGR
				2.00			MADE GROUND: Loose yellow SAND. MGR
				2.10			MADE GROUND: Loose grey sandy gravelly COBBLES. Sand is fine to coarse, gravel is fine to coarse, angular to rounded. MGR
				3.40			MADE GROUND: Dense red gravelly SAND of red brick. Gravel is fine to coarse, angular of red brick. MGR
	3.60 3.60	B ES		3.50			MADE GROUND: Loose grey sandy GRAVEL & COBBLES. Sand is fine to coarse, composed of ash. Gravel is fine to coarse, angular to subrounded. Pockets of natural soft brown laminated slightly sandy silty CLAY. MGR
				4.00			*From 3.5m: strong smell of sulphur* End of pit at 4.00 m

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPE41**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456290.00 - 525210.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.00	3.6 × 2.8
Client:	Homes and Communities Agency		

Date: 06/03/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Medium dense black sandy fine to coarse, angular to rounded GRAVEL (BOS GRIT) MGR
							MADE GROUND: Loose grey sandy fine to coarse, rounded to subrounded GRAVEL of slag with cobbles and boulders. Cobbles angular to rounded of slag and refectory brick. Ash of mixed in with slag, no distinct layers. MGR
	1.70	ES					
				2.80			MADE GROUND: Dense red gravelly SAND AND GRAVEL with occasional cobbles. MGR
				3.90			MADE GROUND: Laminated sandy SILT with coarse sand of coal and slag. (Possible natural) MGR
				4.00			*From 3.9m: Smaell of sulphur* End of pit at 4.00 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPE42** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456341.00 - 525193.00 Level:	Date 06/03/2017
Location: SSI Redcar		Dimensions (m): 3.9 x 2 Depth 4.50	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Medium dense black sandy fine to coarse GRAVEL of BOS grit MGR
				0.50			MADE GROUND: Loose grey sandy fine to coarse, subangular to rounded GRAVEL of slag with occasional cobbles and boulders of slag. Large slag boulder at 1m. Becoming medium dense with depth. MGR
				2.50			MADE GROUND: Medium dense orange sandy fine to coarse, subangular to rounded of GRAVEL of slag with cobbles and boulders of slag. Ashy in places. Pockets of firm laminated clay. MGR
	3.00 - 3.10	ES					
▼				4.00			MADE GROUND: Loose grey/white slightly sandy fine to coarse, subangular to rounded GRAVEL of slag. Sand is of ash. Pockets of sandy clayey silt recovered when digging, possible natural. MGR
	4.20 - 4.50	ES					
				4.50			End of pit at 4.50 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE43**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456383.00 - 525174.00 Level:	Date 05/03/2017
Location: SSI Redcar		Dimensions (m): 4.7 × 2.3 Depth 4.10	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Dark grey slightly silty gravelly SAND. Gravel is fine to coarse, subangular to subrounded of coke. MGR
							MADE GROUND: Light greyish brown very sandy GRAVEL with abundant cobbles and frequent boulders. Gravel is fine to coarse, subangular to subrounded. Predominantly subangular of slag (some whitish). Cobbles and boulders of slag. Occasional red and refractory brick fragments. Rare scrap metal fragments and rare firm brown clay lenses. MGR
	1.50	ES					
				2.80			MADE GROUND: Greyish light brown gravelly SAND with frequent lenses of stiff brown clay. Gravel is fine to coarse, subangular to subrounded of slag. Possible lenses of organic material. MGR
	3.20	ES					
				3.60			MADE GROUND: Whitish grey sandy gravel with high ash content. Gravel is fine to coarse, subangular to subrounded of whitish slag. Occasional refractory brick fragments. MGR
▼				4.10			End of pit at 4.10 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE44**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456430.00 - 525156.00 Level:	Date 06/03/2017
Location: SSI Redcar		Dimensions (m): 4.5 × 2.5, Depth 4.70	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10	ES		0.20			MADE GROUND: Dark grey slightly silty very gravelly SAND. Gravel is fine to coarse, subangular to subrounded of coke. MGR
							MADE GROUND: Light greyish brown very sandy GRAVEL with abundant cobbles and frequent boulders. Gravel is fine to coarse, subangular to subrounded and includes slag (some white mineralisation). Cobbles and boulders are of slag. Occasional red and refractory brick fragments. Rare scrap metal fragments. Two boots (PAIR?). MGR *Orangish to left*
				3.00			MADE GROUND: Light greyish brown slightly gravelly SAND with rare shell fragments. Gravel is fine to coarse, subangular to rounded of slag and beach pebbles. MGR
				3.60			MADE GROUND: Whitish grey sandy GRAVEL with high ash content. Gravel is fine to coarse, subangular to subrounded of slag. Occasional refractory brick fragments. MGR
▼	4.20	ES					
				4.70			End of pit at 4.70 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPE45**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456479.00 - 525136.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.30	4.5 × 2.5
Client:	Homes and Communities Agency		

Date: 06/03/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Medium dense black SAND AND GRAVEL. Gravel is fine to coarse, subangular to rounded of BOS Grit and slag. MGR
				0.50			MADE GROUND: Loose to medium dense orange brown sandy fine to coarse, angular to subrounded GRAVEL of slag with occasional cobbles and boulders of slag. MGR
							MADE GROUND: Loose grey sandy fine to coarse, subangular to rounded GRAVEL of slag with occasional cobbles of slag and refractory brick. Pockets of ash. Red angular boulder at 2.8m MGR
	2.60 - 2.80	ES					
				2.80			
				2.90			MADE GROUND: Medium dense white/grey gravelly SAND. Gravel is subangular to rounded of ash and slag. MGR
							MADE GROUND: Dense brownish grey gravelly SAND with ash and occasional cobbles of slag. MGR
				3.60			MADE GROUND: Medium dense brown silty fine to coarse SAND with laminations of black coarse sand of coal. MGR
							Red angular boulder
	4.20 - 4.30	ES					
				4.30			End of pit at 4.30 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPE46**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456101.00 - 525353.00 Level:	Date 24/04/2017
Location: SSI Redcar		Dimensions (m): 3 × 2.2 Depth 4.20	Scale 1:25
Client: Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30 - 1.10	LB		0.30			MADE GROUND: Loose black slightly silty gravelly, fine to coarse SAND. Gravel is angular to subrounded of coke. (Slightly shiny) MGR
				1.10			MADE GROUND: Medium dense, reddish brown, very sandy fine to coarse, angular to subrounded GRAVEL with medium cobble and boulder content of slag and rare refractory brick. MGR
	1.50	ES					MADE GROUND: Loose brown slightly clayey fine to coarse SAND with medium cobble content, low boulder content and occasional red and refractory brick fragments. Gravel is fine to coarse subangular to rounded of various lithologies including beach pebbles and slag. MGR
				2.20			MADE GROUND: Soft brown slightly sandy gravelly CLAY with medium cobble content and low boulder content. Gravel is angular to rounded of various lithologies including beach pebbles, slag and red and refractory brick. MGR
	3.40	ES					*Pockets of white sandy gravel*
▼				4.20			End of pit at 4.20 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPE47**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 465122.00 - 525328.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.30	4 × 2.7
Client:	Homes and Communities Agency		

Date: 15/03/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Loose black slightly sandy fine to coarse GRAVEL of coke. MGR
				0.80			MADE GROUND: Loose brown sandy fine to coarse , angular to subrounded GRAVEL of slag with abundant angular cobbles of slag and pockets of ash. MGR
				1.30			MADE GROUND: Loose grey slightly sandy fine to coarse, angular to subrounded GRAVEL of slag, with cobbles and boulders of slag. MGR
	2.00	ES		2.50			MADE GROUND: Loose red slightly sandy fine to coarse, angular to subrounded GRAVEL of slag with cobbles and boulders. MGR
				3.40			MADE GROUND: Loose yellow slightly gravelly SAND. Gravel is fine to coarse, angular to subangular of slag. MGR
				4.30			MADE GROUND: Dense grey slightly sandy fine to coarse GRAVEL of slag with occasional pockets of firm clayey silt (possible natural). MGR *From 3.4m: Sulphur smell* End of pit at 4.30 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE48**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456170.00 - 525314.00 Level:	Date 13/03/2017
Location: SSI Redcar		Dimensions (m): 3.7 x 2.2 Depth 3.50	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.20			MADE GROUND: Loose black slightly sandy fine to coarse, angular to subrounded GRAVEL of coke and BOS grit. MGR
	1.50	ES					MADE GROUND: Loose brown slightly sandy fine to coarse, angular to subrounded GRAVEL with abundant boulders and cobbles of slag. Occasional pockets of ash. MGR
				3.50			End of pit at 3.50 m

1
2
3
4
5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPE49** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456219.00 - 525294.00 Level:	Date 07/03/2017
Location: SSI Redcar		Dimensions (m): 4.5 × 2.5 Depth 4.10	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Medium dense black sandy GRAVEL (BOS GRIT) MGR
	0.50	ES					MADE GROUND: Loose grey sandy fine to coarse, angular to rounded GRAVEL of slag with occasional cobbles and boulders of slag. Pockets of speckled white and grey sand (ash). MGR
				0.80			MADE GROUND: Loose yellowish brown SAND MGR
				0.90			MADE GROUND: Loose greyish brown sandy fine to coarse, angular to rounded GRAVEL with occasional cobbles interlaminated with black fine to coarse sand of coal and pockets (500x600mm) of firm brown laminated clayey silt and soft brown clay. Some wire and plastic. MGR
							From 0.9m: refactory bricks at 3.5m
	3.40	ES					
				4.20			End of pit at 4.10 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE50** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456266.00 - 525276.00 Level:	Date 07/03/2017
Location: SSI Redcar		Dimensions (m): 4.3 × 2.4 Depth 4.30	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Dark grey slightly silty gravelly SAND. Gravel is subangular to subrounded of coke. MGR
				0.40			MADE GROUND: Light greyish brown very sandy gravel with abundant cobble and frequent boulders. Gravel is fine to coarse, subangular to subrounded of slag (some white staining). Cobbles and boulders are of slag, some traces of iron staining. Rare red brick fragments. MGR
							Becoming brown very gravelly SAND
				3.70			MADE GROUND: Light whitish grey slightly silty, slightly sandy GRAVEL with high ash content and occasional small cobbles. Gravel is fine to coarse subangular to subrounded of slag. MGR
▼	4.00	ES					
				4.30			End of pit at 4.30 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPE51**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456314.00 - 525261.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.40	4.3 × 2.2
Client:	Homes and Communities Agency		

Date: 07/03/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30			MADE GROUND: Medium dense black sandy fine to coarse, angular to rounded GRAVEL of BOS grit. MGR *Reddish material*
				0.40			MADE GROUND: Brown staining pellets MGR
							MADE GROUND: Loose greyish brown sandy fine to coarse, angular to rounded GRAVEL of slag with occasional cobbles and boulders of slag. MGR
				1.00			MADE GROUND: Loose grey sandy fine to coarse, angular to subangular GRAVEL of slag with frequent cobbles of slag. Some sulfur mineralisation. MGR
	2.00	ES					
				3.40			End of pit at 3.40 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE52**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456406.00 - 525220.00 Level:	Date 07/03/2017
Location: SSI Redcar		Dimensions (m): Depth 4.50	Scale 1:25
Client: Homes and Communities Agency			Logged

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
							MADE GROUND: Dark grey slightly silty gravelly SAND. Gravel is fine to coarse, subangular to subrounded of coke and occasional slag. MGR
				0.50			
	0.90	ES					MADE GROUND: Orange very gravelly SAND with frequent cobbles and occasional boulders. Gravel is fine to coarse, subangular to subrounded of slag and iron ore. Cobbles and boulders are slag. MGR
				1.40			
							MADE GROUND: Grey very gravelly SAND with frequent cobbles and occasional boulders. Gravel is fine to coarse, subangular to subrounded of slag. Cobbles and boulders are of slag. Occasional fragments of refractory bricks. Rare Scrap metal fragments. MGR
				3.80			
▼							MADE GROUND: Greyish yellow gravelly SAND with occasional lenses of firm to stiff brown clay and black organic material. Gravel is fine to coarse, subangular to rounded of various lithologies including beach pebbles and sandstone. (Possibly natural) MGR
				4.50			End of pit at 4.50 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPE53**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456451.00 - 525203.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.10	4.3 × 2.2
Client:	Homes and Communities Agency		

Date 07/03/2017

Scale 1:25

Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30			MADE GROUND: Dark grey slightly silty gravelly SAND. Gravel is fine to coarse, subangular to subrounded of coke. (Slightly shiny - BOS Grit) MGR
				1.00			MADE GROUND: Greyish red very gravelly SAND with frequent cobbles and occasional boulders. Gravel is fine to coarse, subangular to subrounded of slag. Cobbles and boudlers are of slag. Rare refractory brick fragments. MGR
	2.50	ES					MADE GROUND: Whitish grey slightly silty very gravelly SAND with high ash content. Gravel is fine to coarse subangular of slag. Occasional refractory, rare red brick fragments. MGR
▼	3.80 - 4.10	B		4.10			End of pit at 4.10 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE54**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456488.00 - 525166.00 Level:	Date 04/05/2017
Location: SSI Redcar		Dimensions (m): 4.2 x 2.2 Depth 3.30	Scale 1:25
Client: Homes and Communities Agency			Logged FLM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.15			MADE GROUND: Loose dark grey to black slightly gravelly SAND of coal and coke dust. Gravel is fine to medium occasionally coarse of coke and occasionally slag. MGR
				0.40			MADE GROUND: Loose to medium dense dark reddish brown SAND AND GRAVEL with low cobble content of slag. Gravel is fine to coarse, subangular to angular of slag. MGR
							MADE GROUND: Medium dense grey slightly sandy fine to coarse, angular to subangular GRAVEL of slag with a low cobble and boulder content of slag. Rare gravel to cobble size fragments of refractory brick. MGR *Localised pockets of white ash* *Becoming dense and orangish brown in colour, sandy gravelly with low medium cobbles and low boulder content.* *Sulfur odour noted* *1.4x1.45x0.5m boulder of fused slag, iron and brick*
				1.90			MADE GROUND: Black to yellowish grey sandy GRAVEL with low cobble and boulder content. Rare red and refractory brick fragments and whole red bricks. MGR *Becoming medium dense to dense*
	2.80 - 2.90 2.80 - 2.90 2.80 - 2.90	B ES LB					
				3.10			MADE GROUND: Dense brown GRAVEL AND SAND. Gravel is fine to coarse of slag. Occasional red and refractory brick. Rare cobbles of iron. Low to medium cobble content of slag. MGR
				3.40			End of pit at 3.30 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPE56**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456140.00 - 525366.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.90	4.4 × 2.6
Client:	Homes and Communities Agency		

Date 13/03/2017

Scale 1:25

Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Loose black slightly sandy fine to coarse, angular to subrounded GRAVEL of coke and BOS grit. MGR
				0.50			MADE GROUND: Very dense grey slag MGR
				0.80			MADE GROUND: Loose slightly sandy fine to coarse, angular to subrounded GRAVEL of slag with abundant cobbles and occasional boulders of slag. Some ash. MGR
				1.20			MADE GROUND: Loose reddish brown slightly sandy fine to coarse, angular to subrounded GRAVEL with abundant cobbles. MGR
	2.60	ES		2.40			MADE GROUND: Loose yellow slightly gravelly coarse SAND with occasional cobbles of slag. Gravel is fine to coarse, angular of slag. MGR
				3.80 3.90			MADE GROUND: Firm brown thickly laminated with fine brown sand, clayey SILT. (POSSIBLE NATURAL) MGR End of pit at 3.90 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPE57**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456239.00 - 525342.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.20	3.3 × 2.8
Client:	Homes and Communities Agency		

Date: 08/03/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Loose black sandy fine to coarse, angular to subrounded GRAVEL of BOS grit. MGR
				1.10			MADE GROUND: Very dense grey sandy fine to coarse, angular to subangular GRAVEL with abundant cobbles and boulders, ash bands and refractory brick. MGR
	2.50	ES					MADE GROUND: Loose greyish brown slightly sandy fine to coarse, angular to subrounded GRAVEL of slag with abundant cobbles and boulders of slag. MGR
				3.30			MADE GROUND: Loose grey/white mottled brown sandy GRAVEL with some ash. MGR
	4.20	D		4.10 4.20			Firm brown clayey SILT. TFD/ALV End of pit at 4.20 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE58**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456291.00 - 525324.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.50	3.8 × 2.8
Client:	Homes and Communities Agency		

Date 08/03/2017

Scale 1:25

Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Dark grey silty gravelly SAND. Gravel is fine to coarse, predominantly medium to coarse, subangular to subrounded of coke. MGR
							MADE GROUND: Light greyish brown very sandy GRAVEL with abundant cobbles and boulders of whitish slag with rare red and refractory brick fragments. Gravel is fine to coarse, subangular to subrounded and includes slag and whitish slag. MGR
							Asphalt
	1.00	ES					
							Becoming very gravelly SAND
				2.70			MADE GROUND: Greyish white slightly silty, slightly sandy GRAVEL with occasional cobbles and high ash content. Gravel is fine to coarse, subangular to subrounded and includes slag and occasional refractory brick fragments. MGR
▼				4.50			End of pit at 4.50 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE59**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456334.00 - 525306.00 Level:	Date 08/03/2017
Location: SSI Redcar		Dimensions (m): Depth 4.30	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.10			MADE GROUND: Loose black sandy fine to coarse, angular to subrounded GRAVEL. MGR
							MADE GROUND: Very dense grey sandy GRAVEL with abundant cobbles and boulders. Ash band 0.1m MGR
				1.00			MADE GROUND: Dense greyish brown sandy fine to coarse, angular to subrounded GRAVEL of slag with abundant boulders and cobbles of slag, some rare plastic. MGR
	3.50 3.50	B ES					
				3.30			MADE GROUND: Medium dense speckled white and grey sandy GRAVEL ash, MGR
				4.30			End of pit at 4.30 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPE60**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456379.00 - 525285.00 Level:	Date 08/03/2017
Location:	SSI Redcar	Dimensions (m): Depth 4.90	4 / 2.3	Scale 1:25
Client:	Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Dark grey silty gravelly SAND. Gravel is fine to coarse, subangular to subrounded and includes coke. MGR
							MADE GROUND: Light greyish brown very sandy GRAVEL with abundant cobbles and frequent cobbles of whitish slag, rare refractory and red brick fragments. Gravel is fine to coarse, subangular to subrounded of slag. Rare scrap metal and wood fragments. MGR *Hard digging*
	3.50	ES					*2 800x600mm greyish white boulders*
				3.80			MADE GROUND: Whitish grey sandy GRAVEL with occasional cobbles with a high ash content, frequent refractory and red brick fragments and rare wood fragments. MGR *Oil Odour*
▼	4.50	ES					
				4.90			End of pit at 4.90 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPE61**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456425.00 - 525263.00 Level:	Date 08/03/2017
Location: SSI Redcar		Dimensions (m): 3.8 × 2.6 Depth 2.30	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30			MADE GROUND: Medium dense black and red slightly sandy GRAVEL (Iron ore and BOS grit). MGR
				0.80			MADE GROUND: Medium dense becoming loose orange sandy gravelly COBBLES AND BOULDERS of slag. Gravel is fine to coarse, angular to subrounded of slag. MGR
	1.00	ES					MADE GROUND: Loose grey sandy GRAVEL with abundant cobbles MGR
				2.30			End of pit at 2.30 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPE62**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456475.00 - 525246.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.50	4.4 × 2.7
Client:	Homes and Communities Agency		

Date: 07/03/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Medium dense black slightly sandy GRAVEL (BOS grit). MGR
				0.30			MADE GROUND: Loose brown slightly sandy fine to coarse, angular to rounded GRAVEL with occasional cobbles and rare boulders. Iron ore mixed in, ammonia smell. MGR
				1.60			MADE GROUND: Loose grey slightly sandy fine to coarse, angular to subrounded GRAVEL of slag with frequent cobbles and rare boulders of slag and refractory brick. MGR *From 1.6m: Strong ammonia smell, unstable sides, becoming damp*
	3.20	ES					
				4.50			End of pit at 4.50 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPE63**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456518.00 - 525231.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.20	4.5 × 2.3
Client:	Homes and Communities Agency		

Date: 07/03/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.40			MADE GROUND: Dense grey sandy fine to coarse, angular to subrounded GRAVEL. MGR
				1.00			MADE GROUND: Dense greyish brown sandy fine to coarse, angular to rounded GRAVEL of slag with occasional cobbles and boulders of iron ore. MGR
	1.00 - 1.40	ES		1.40			MADE GROUND: Dense red sandy fine to coarse, angular to rounded GRAVEL of slag and iron ore with frequent cobbles. MGR *From 1.4m: railway sleeper*
				2.00			MADE GROUND: Loose grey fine to coarse, angular to rounded GRAVEL with occasional cobbles and boulders, pockets of ash. MGR
				3.10			MADE GROUND: Loose grey white slightly sandy fine to coarse, angular to subrounded GRAVEL of slag with frequent cobbles. MGR
				4.20			MADE GROUND: Loose grey slightly sandy fine to coarse, angular to subrounded GRAVEL of slag with frequent cobbles. MGR End of pit at 4.20 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPE64**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456206.00 - 525421.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.80	4.3 × 2.7
Client:	Homes and Communities Agency		

Date: 08/03/2017

Scale: 1:25

Logged: LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Dark grey slightly silty gravelly SAND. Gravel is fine to coarse, subangular to subrounded of coke. MGR
							MADE GROUND: Light greyish brown slightly silty sandy GRAVEL with abundant cobbles and boulders of whitish slag and rare refractory brick fragments. Gravel is fine to coarse, subangular to subrounded and includes slag. MGR
	1.30	ES					
							Frequent boulders, rare red brick fragments, rare metal and glass fragments.
▼				3.80			End of pit at 3.80 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPE65**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456252.00 - 525401.00 Level:	Date 09/02/2017
Location: SSI Redcar		Dimensions (m): 5 × 2.7 Depth 4.10	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	ES					MADE GROUND: Dark grey slightly silty very gravelly SAND with frequent cobbles and occasional boulders of coke and slag with occasional red and refractory brick fragments. Gravel is fine to coarse, subangular to subrounded of coke and slag. MGR
				1.20			MADE GROUND: Whitish grey SAND AND GRAVEL with abundant cobbles, frequent cobbles with occasional fragments of refractory and red brick. Gravel is fine to coarse, subangular to subrounded and includes slag (some white staining). MGR *Ashy* *Rare wood fragments*
				4.10			End of pit at 4.10 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE66**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456289.00 - 525362.00 Level:	Date 20/04/2017
Location: SSI Redcar		Dimensions (m): 4 × 2.6 Depth 2.80	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Loose dark greyish black gravelly fine SAND. Gravel is fine to medium. Possibly ash/coke dust with mixed slag and coke gravel. MGR
							MADE GROUND: Medium dense grey very gravelly SAND with medium cobble content and rare boulders. Gravel is angular to subangular and includes slag with some clinker, concrete and occasional brick fragments. Locally very sandy gravel. MGR
							Dense *Some light grey/white coated gravel.*
							Low boulder content of slag
	1.50	ES					
				2.40			MADE GROUND: Dense light greyish brown slightly gravelly SAND. Gravel is angular to subangular and includes slag and mixed lithologies. MGR
	2.50	ES					*Very dense layer, no progress ager 15 mins.* *N.B. Gravel dries out and turns light grey/white after 10 minute exposure to air*
				2.80			End of pit at 2.80 m

Remarks:

Stability:

Trial Pit Log

Trialpit No
TPE67
Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456344.00 - 525361.00 Level:	Date 09/03/2017
Location: SSI Redcar		Dimensions (m): Depth 0.10	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Loose black sandy GRAVEL (BOS grit). MGR *From 0.1: Abandoned due to copper water pipe being uncovered* End of pit at 0.10 m

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Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE68**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456375.00 - 525341.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.10	4.5 × 2.5
Client:	Homes and Communities Agency		

Date 13/03/2017

Scale 1:25

Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	2.30 - 2.60	B					MADE GROUND: Light greyish brown very gravelly SAND with medium cobble and low boulder content of slag. Gravel is fine to coarse, subangular to subrounded and includes slag and whitish slag. MGR
	2.50	ES					
							Rare wood fragments. Frequent refractory and red brick fragments
				4.10			End of pit at 4.10 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPE69**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456437.00 - 525316.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.90	3 × 2.1
Client:	Homes and Communities Agency		

Date: 10/03/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Medium dense black slightly sandy fine to coarse, angular to subrounded GRAVEL of BOS grit. MGR *From 0.1: welded slag layer very difficult to break through*
				0.80			MADE GROUND: Very dense grey slightly sandy fine to coarse, angular to subrounded GRAVEL of slag with frequent cobbles and occasional boulders. MGR
				1.00			MADE GROUND: Very dense yellow SAND. MGR
				1.30			MADE GROUND: Very dense grey slightly sandy ashy fine to coarse, angular to rounded GRAVEL of slag with occasional cobbles. MGR
	3.80	ES		3.90			MADE GROUND: Loose grey fine to coarse, angular GRAVEL of slag with frequent cobbles. Strong hydrocarbon smell. Some scrap metal. MGR *Pile of refractory bricks* End of pit at 3.90 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPE70**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456493.00 - 525295.00 Level:
Location:	SSI Redcar	Dimensions (m): 6.2 × 2.1	Scale 1:25
Client:	Homes and Communities Agency	Depth 4.20	Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Loose black slightly fine to coarse, angular to subrounded GRAVEL of BOS grit. MGR
							MADE GROUND: Medium dense grey slightly sandy fine to coarse, angular to subrounded GRAVEL of slag with abundant cobbles and boulders of slag. MGR *From 0.2m: sulphur smell, refractory brick, pockets of Ash*
	1.00	ES					
				1.30			MADE GROUND: Welded slag layer. MGR
				1.50			MADE GROUND: Dense grey slightly sandy fine to coarse, angular to subrounded GRAVEL of slag with abundant cobbles and boulders of slag. MGR
				2.60			MADE GROUND: Medium dense reddish brown slightly sandy GRAVEL with cobbles. MGR
				3.40			MADE GROUND: Welded slag layer. MGR
	3.50	ES		3.50			MADE GROUND: Medium dense brown slightly sandy GRAVEL AND COBBLES. MGR
				4.00			Soft brown slightly sandy clayey SILT with pockets of fine black sand. TFD/ALV
	4.20	D		4.20			End of pit at 4.20 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPE71**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456534.00 - 525282.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.40	5 × 2.6
Client:	Homes and Communities Agency		

Date: 09/03/2017

Scale: 1:25

Logged: LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Dark grey slightly silty very gravelly SAND with occasional cobbles of coke. Gravel is fine to coarse, subangular to subrounded of coke. (shiny - BOS Grit) MGR
							MADE GROUND: Reddish brown sandy to very sandy GRAVEL with abundant cobbles and boulders of white slag. Gravel is fine to coarse, subangular to subrounded and includes slag (some white staining). MGR
							Light greyish brown. Rare refractory brick fragments.
							Very gravelly SAND with abundant cobbles and boulders of slag.
▼				4.40			End of pit at 4.40 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No
TPE72
Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456271.00 - 525443.00 Level:	Date 09/03/2017
Location: SSI Redcar		Dimensions (m): Depth 0.20	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: loose black sandy GRAVEL of coke and coal and bos grit. Abandoned due to concrete MGR *From 0.2m: Abandoned due to concrete* End of pit at 0.20 m

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Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE73**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456289.00 - 525425.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.30	3.7 × 2.3
Client:	Homes and Communities Agency		

Date 20/04/2017

Scale 1:25

Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	ES		0.20			MADE GROUND: Loose dark greyish black fine SAND. Possible coke/coal and ash MGR
							MADE GROUND: Loose grey very gravelly SAND with low cobble content and rare boulders. Gravel is fine to coarse, angular to subangular including slag, concrete, some clinker and some yellow/silica brick fragments. MGR *Dense*
				1.20			MADE GROUND: Medium dense dark grey sandy GRAVEL with low to medium cobble content. Gravel is fine to coarse, angular to subangular and includes clinker, slag and some concrete and brick fragments. Cobbles are slag and clinker, rare intact and fragmented brick. Boulders are mostly slag and some clinker. MGR *Band of blueish dark grey gravel. Discontinuous dipping steeply south.*
	2.40	ES					*Very sandy*
	3.50	ES					
▼				4.30			End of pit at 4.30 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPE75**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456395.00 - 525382.00 Level:	Date 20/04/2017
Location: SSI Redcar		Dimensions (m): 4.7 × 2.5 Depth 4.20	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			MADE GROUND: Loose light and dark grey fine gravelly ash/fine to coarse SAND. (Possible coke/coal) MGR
							MADE GROUND: Loose grey very gravelly SAND with low medium cobble content and rare ash/clinker/ cemented sand boulders. Gravel is angular to subangular, fine to coarse and includes ash, clinker, cement and brick. Cobbles are angular to subrounded of cement and brick. Rare intact yellow brick. MGR
							Whitish grey gravel
	1.00	ES					
							Slight hydrocarbon odour
							Very sandy gravel
							600x500x300mm boulder of slag
	3.00	ES					*Occasional pockets of light grey/white sandy gravel*
▼				4.20			End of pit at 4.20 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPE76**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456436.00 - 525346.00 Level:
Location:	SSI Redcar	Dimensions (m): 3.8 × 2.2 Depth 4.40	Scale 1:25
Client:	Homes and Communities Agency		Logged FLM
Date			19/04/2017

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Loose grey to black sandy GRAVEL. Gravel is fine to coarse angular to subangular of coke MGR
				0.50			MADE GROUND: Dense light yellowish grey slightly sandy GRAVEL with low boulder and low to medium cobble content. Grave is fine to coarse angular of slag and consolidated white ash. Rare refractory brick gravel and cobbles. MGR
							MADE GROUND: Loose white grey gravelly SAND to very gravelly SAND. Gravel is fine to coarse angular to subangular of slag, occasional clinker coke, ash, burnt lime and refractory brick (2-4%).Low cobble content of angular slag. MGR
							Notably ashy below 0.5m
							Notably grey c. 0.9m
	1.50 - 1.60	ES					
				2.10			MADE GROUND: Gravel of slag occasional clinker ash/ burnt lime and yellow refractory brick. MGR
							Rare small yellow refractory bricks.
							Small ash bands/pockets
				4.00			MADE GROUND: Loose brown slightly sandy GRAVEL with low cobble content. Gravel is fine to coarse subangular to angular of slag. Rare fragments of pottery, metal white, time and yellow brick. Rare cobbles of refractory brick. Slivers of shell (coarse gravel sized) MGR
				4.40			End of pit at 4.40 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

			Trialpit No **TPF01** Sheet 1 of 1
Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 455862.00 - 525323.00 Level:	Date 16/03/2017
Location: SSI Redcar		Dimensions (m): 4.6 × 1.9 Depth 4.00	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.70	ES					MADE GROUND: Slightly reddish brown gravelly to very gravelly SAND with low cobble content of slag. Gravel is fine to coarse, subangular to subrounded of slag. Rare fine black shiny mineral/rock. Occasional red and refractory brick fragments. MGR
				1.30			MADE GROUND: Yellow with occasional thin dark grey laminations (likely organic material) slightly gravelly SAND. Gravel is fine to coarse, rounded of beach pebbles. Frequent shell fragments. MGR
							Gravelly sand with abundant brown shells
	2.00	ES					
				4.00			End of pit at 4.00 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPF02**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 455888.00 - 525286.00 Level:	Date 16/03/2017
Location: SSI Redcar		Dimensions (m): 5 × 2.4 Depth 4.50	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.25			MADE GROUND: Medium dense black slightly sandy GRAVEL of coal/coke. MGR
				1.00			MADE GROUND: Medium dense reddish black slightly silty SAND. MGR
				1.10			MADE GROUND: Loose yellow coarse SAND. MGR
				1.40			MADE GROUND: Medium dense grey slightly sandy fine to coarse, angular to subrounded GRAVEL of slag with occasional cobbles. MGR
	2.50	ES					MADE GROUND: Loose yellow slightly gravelly SAND with laminations of black sand. Gravel is fine to coarse, subangular to rounded of various lithologies and shell fragments. MGR
				4.50			End of pit at 4.50 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPF03**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 455957.00 - 525264.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.50	4.4 × 2.7
Client:	Homes and Communities Agency		

Date: 16/03/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Loose black slightly gravelly SAND. MGR
				0.60			MADE GROUND: Dense grey slightly sandy fine to coarse, angular to subrounded GRAVEL of slag with frequent cobbles and occasional boulders of slag. MGR
	3.00	ES					MADE GROUND: Loose yellow slightly gravelly SAND. Gravel is fine to coarse, angular to rounded of mixed lithologies including shells. MGR
				4.50			End of pit at 4.50 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPF04**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 455873.00 - 525364.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.30	4.2 × 2.2
Client:	Homes and Communities Agency		

Date: 16/03/2017

Scale: 1:25

Logged: LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.70 - 1.00 0.80	B ES					MADE GROUND: Dark grey slightly silty very gravelly SAND. Gravel is fine to coarse, subangular to subrounded of coke and slag. Rare red and refractory brick fragments. Rare wood fragments. MGR
							Reddish
				1.10			MADE GROUND: Yellow with some thin dark grey laminations, slightly gravelly SAND. Gravel is fine to medium, rounded of beach pebbles. Occasional shell fragments. MGR
	4.00	ES					
				4.30			End of pit at 4.30 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPF05**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 455921.00 - 525341.00 Level:	Date 16/03/2017
Location: SSI Redcar		Dimensions (m): Depth 4.70, 2.4 × 5	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.50	ES					MADE GROUND: Medium dense black slightly sandy fine, angular to subrounded GRAVEL of coke. Becoming very dense with depth. MGR
				1.00			MADE GROUND: Loose orange slightly sandy fine to coarse, angular GRAVEL of slag. MGR
				1.20			MADE GROUND: Loose yellow slightly gravelly SAND with occasional cobbles and interlaminations of black sand/silt. Gravel is subangular to subrounded of various lithologies containing shells. MGR
				4.70			End of pit at 4.70 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPF06**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 455949.00 - 525328.00 Level:	Date 16/03/2017
Location:	SSI Redcar	Dimensions (m): Depth 3.70	3.5 × 2.5	Scale 1:25
Client:	Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Slightly reddish brown very gravelly SAND with medium cobble and low boulder content. Gravel is fine to coarse, subangular to rounded of slag and some iron ore. Occasional scrap metal fragments. Rare wood and plastic fragments. Occasional red and refractory brick fragments. MGR
				0.80			MADE GROUND: Brownish grey slightly sandy GRAVEL with high cobble content. Gravel is fine to coarse subrounded to subangular of slag. MGR
				1.10			MADE GROUND: Yellow with occasional thin dark grey laminations of slightly gravelly sand. Gravel is fine to medium rounded to subrounded of beach pebbles. MGR
				3.70			End of pit at 3.70 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPF07**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456001.00 - 525306.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.90	3.8 × 2.2
Client:	Homes and Communities Agency		Logged EM

Date: 17/03/2017

Scale: 1:25

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Loose black sandy fine to coarse, angular to subrounded GRAVEL of coke and coal with occasional pellets. MGR
	0.50 - 0.60	ES		0.50			MADE GROUND: Loose grey sandy fine to coarse, angular to subrounded GRAVEL of slag and coal, rare wood. 2000x500x300mm reinforced concrete block. MGR
				0.60			MADE GROUND: Dense black silty SAND. MGR
				0.90			MADE GROUND: Loose grey/yellow very sandy GRAVEL. MGR
							MADE GROUND: Loose yellow slightly gravelly coarse SAND. MGR
				3.90			End of pit at 3.90 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPF08**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 455890.00 - 525416.00 Level:
Location:	SSI Redcar	Dimensions (m): 4.3 × 2.4 Depth 4.20	Date 15/03/2017 Scale 1:25
Client:	Homes and Communities Agency		Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20 - 0.80	ES		0.30			MADE GROUND: Dark grey slightly silty very gravelly SAND. Gravel is fine to coarse subrounded to subangular of coke. Shiny. MGR *Reddish*
				0.90			MADE GROUND: Brown slightly sandy GRAVEL with high cobble and low boulder content both of slag. Gravel is fine to coarse subangular to subrounded of slag. MGR *Large boulder 0.8m dia.*
							MADE GROUND: Yellow slightly gravelly SAND with occasional thin dark grey layers (possible organic material) with low cobble and medium boulder content. Rare refractory brick fragments. MGR
				4.20			End of pit at 4.20 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPF09**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 455936.00 - 525397.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.00	4 × 2.5
Client:	Homes and Communities Agency		

Date: 15/03/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	ES		0.40			MADE GROUND: Medium dense black slightly sandy fine to medium, angular GRAVEL of coke. MGR
				0.80			MADE GROUND: Dense grey slightly sandy fine to coarse, angular to subrounded GRAVEL of slag with abundant cobbles of slag. MGR
							MADE GROUND: Loose yellow slightly gravelly SAND. MGR
				3.00			MADE GROUND: Yellow slighty gravelly SAND with occasional thin dark grey interbeds (possibly organic). Gravel is subrounded to subangular of slag. Occasional broken shell fragments. MGR
				3.00			End of pit at 3.00 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPF10**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 455972.00 - 525364.00 Level:	Date 16/03/2017
Location: SSI Redcar		Dimensions (m): Depth 5.00 — 5 × 3.5	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20 - 0.60	ES		0.20			MADE GROUND: Medium dense black mottled red and brown, slightly sandy fine to coarse, angular to subrounded GRAVEL of coke and coal. MGR
				0.60			MADE GROUND: Loose grey slightly sandy slightly GRAVEL with frequent cobbles. Sulfur smell from slag. MGR
							MADE GROUND: Loose yellow slightly gravelly SAND with occasional cobbles. Gravel is subrounded to angular of various lithologies broken shell fragments. MGR
				5.00			End of pit at 5.00 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPF11**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456015.00 - 525413.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.00	4 × 2.5
Client:	Homes and Communities Agency		

Date: 15/03/2017

Scale: 1:25

Logged: EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Loose black slightly sandy GRAVEL. MGR
				0.30			MADE GROUND: Medium dense slightly sandy GRAVEL. MGR
	1.00	ES					MADE GROUND: Loose yellow slightly gravelly SAND with laminations of black silty sand. Gravel is fine to medium, subangular to rounded of various lithologies including shells. MGR
	2.00	B					
	3.00	ES					
				4.00			End of pit at 4.00 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPF12**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456047.00 - 525402.00 Level:	Date 15/03/2017
Location:	SSI Redcar	Dimensions (m): Depth 3.10	5 / 2.4	Scale 1:25
Client:	Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Dark grey slightly silty gravelly SAND. Gravel is fine to coarse subrounded to subangular of coke and slag. MGR
				0.60			MADE GROUND: Brownish grey slightly sandy fine to coarse, subangular to subrounded GRAVEL with high cobble and medium boulder content, both of subrounded slag. MGR
	2.00	ES					MADE GROUND: Yellow slightly gravelly SAND with occasional thin layers of dark grey material (organic) and shell fragments. Gravel is fine to coarse, subangular to rounded of beach pebbles and some slag. MGR *Railway sleeper* *No gravel*
				3.10			End of pit at 3.10 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPF13** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456032.00 - 525448.00 Level:	Date 15/03/2017
Location: SSI Redcar		Dimensions (m): 4.2 × 2.6 Depth 4.10	Scale 1:25
Client: Homes and Communities Agency			Logged EM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Medium dense black slightly sandy fine to coarse, angular to subrounded GRAVEL of coke, coal an BOS grit. MGR
				0.50			
				0.60			MADE GROUND: Very dense grey welded SLAG. MGR
							MADE GROUND: Loose grey slightly sandy slightly fine to coarse angular GRAVEL of slag with low whitish grey ash content. MGR
	1.00	ES					
				2.30			MADE GROUND: Loose brownish grey slightly sandy slightly fine to coarse, angular GRAVEL of slag with frequent cobbles of slag. MGR
							Grey with dark grey patches of silty sand and base of pit (organic)
	4.00	ES		4.00			
				4.10			MADE GROUND: Loose beige slightly gravelly slightly silty SAND. Gravel is fine to coarse, angular slag. MGR
							End of pit at 4.10 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPF14**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456062.00 - 525447.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.80	4.2 × 2.4
Client:	Homes and Communities Agency		

Date: 15/03/2017

Scale: 1:25

Logged: LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Dark grey slightly silty gravelly SAND with low cobble content of slag. Gravel is fine to coarse, subangular to subrounded of coke and slag. MGR
							Light whitish grey sandy GRAVEL with medium to high cobble content and low boulder content, possibly low ash content. Gravel is fine to coarse, subangular to subrounded of whitish slag. Occasional refractory and red brick fragments. MGR
							Appears oblique-layered bedding
▼				3.80			End of pit at 3.80 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPH01**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456584.00 - 525115.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.40	4.5 × 2.3
Client:	Homes and Communities Agency		

Date: 13/02/2017

Scale: 1:25

Logged: LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Grass over dark brown slightly gravelly SAND with abundant rootlets. Gravel is fine to coarse of slag. TPS
	1.00 - 1.30	B					MADE GROUND: Brownish grey very sandy GRAVEL with frequent cobbles and occasional boulders. Gravel is fine to coarse subrounded to subangular of slag. Cobbles and boulders of slag. Rare stiff brown clay pockets, rare bricks, predominately whole (red, refractory) MGR
	1.20	ES					
▼				1.50			MADE GROUND: Grey slightly sandy slightly silty GRAVEL with frequent cobbles and occasional boulders. Gravel is fine to coarse, subrounded to subangular of whitish slag and slag. Occasional bricks, mostly broken (red, refractory). Rare scrap metal fragments. Dark grey clay at the bottom of the trial pit (cannot see exact level due to presence of ground water) MGR
				2.40			End of pit at 2.40 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPH02**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456617.00 - 525092.00 Level:	Date 14/02/2017
Location: SSI Redcar		Dimensions (m): 4.5 × 2.4 Depth 2.10	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Grass over TOPSOIL: medium dense dark brown/black slightly gravelly sandy SILT with numerous rootlets. TPS
	0.70	ES					MADE GROUND: Medium dense grey gravelly SAND with medium cobble and low boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker, red brick and concrete. Cobbles and boulders are mostly of slag, rarely clinker, occasional intact red and yellow brick. Rare wire and metal waste. Rare pockets of brownish grey and dark grey - possibly ash/sinter and sand content. Some slag has white crystallisation on the edges. MGR *Very dense* *Sulfur odour* *Very gravelly* *Steel H-Beam ~1m long*
▼				2.10			End of pit at 2.10 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPH03**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456655.00 - 525078.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 0.80	Date 14/02/2017 Scale 1:25
Client:	Homes and Communities Agency		Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Grass over TOPSOIL: Medium dense dark brown/black slightly gravelly sandy SILT with rare cobbles and abundant rootlets. TPS
				0.80			MADE GROUND: Medium dense grey very gravelly SAND with medium to high cobble content and low to medium boulder content. Gavel is fine to coarse, angular to subangular and includes slag, clinker and some brick fragments. Cobbles and boulders are mostly slag with some clinker and red/refractory brick. Occasional pockets (<500x200x400mm) of greyish brown clayey sand. Some slag pieces have white crystallisation on the outer edge. MGR *Very dense, compacted* End of pit at 0.80 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPH04**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456701.00 - 525080.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.50	3.6 × 2.6
Client:	Homes and Communities Agency		

Date 25/04/2017

Scale 1:25

Logged AC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Grass over dark brown/black silty TOPSOIL. TPS
							MADE GROUND: Light grey and dark greyish brown very sandy medium to coarse, angular to subangular GRAVEL of slag and red brick with cobbles and boulders. Occasional whole refractory and red bricks. MGR
	0.90	ES					*Occasional metal bars.*
							Yellowish
▼							*Slightly clayey*
	2.40	ES					
				2.50			End of pit at 2.50 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPH05** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456744.00 - 525064.00 Level:	Date 25/04/2017
Location: SSI Redcar		Dimensions (m): 3.2 × 2.1, Depth 2.30	Scale 1:25
Client: Homes and Communities Agency			Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			TOPSOIL TPS
	0.40 - 1.10	ES					MADE GROUND: Loose greyish brown slightly clayey very gravelly fine to coarse SAND with low cobble and boulder content. Gravel is of slag, red and refractory brick and lime (?). MGR *Grey very sandy gravel.*
	1.10 - 1.80 1.10 - 1.80	D ES		1.10			MADE GROUND: Soft to firm brown and white slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is of red and refractory brick and slag. MGR *Increased sand and gravel content*
▼				2.30			End of pit at 2.30 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPH06**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456782.00 - 525054.00 Level:	Date 25/04/2017
Location: SSI Redcar		Dimensions (m): 3.5 × 2.4 Depth 2.80	Scale 1:25
Client: Homes and Communities Agency			Logged AC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Grass over dark brown slightly gravelly sandy silty TOPSOIL. TPS
	0.50	ES					MADE GROUND: Grey brown clayey gravelly SAND with cobbles. Gravel is fine to coarse grey slag. Fragments and whole red and refractory brick. Occasional fragments of cloth. Occasional cobble sized lumps of black clayey material and decomposed wood. MGR
				1.10			MADE GROUND: Greyish brown clayey gravelly SAND with occasional fragments of brick concrete and black organic matter. MGR
							Slightly gravelly sand, occasional intact yellow brick
				1.90			MADE GROUND: soft to firm grey gravelly very sandy CLAY. Gravel is fine to coarse, angular to subangular and includes slag, whole and fragmented red brick and concrete. Fragments of wood. MGR
▼	2.50	ES					
							End of pit at 2.80 m
	3.00	D		3.10			

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPH07**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456821.00 - 525026.00 Level:	Date 16/02/2017
Location: SSI Redcar		Dimensions (m): 3.2 × 1.8 Depth 2.10	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Grass over brown and very dark grey slightly gravelly silty SAND with abundant rootlets. Gravel is fine to coarse subrounded to subangular of slag and coke. TPS
	0.50	ES					MADE GROUND: Greyish brown very sandy GRAVEL with abundant cobbles and occasional boulders. Some pockets of firm brown clay in the upper metre. Gravel is fine to coarse subrounded to subangular of slag, some whitish slag. Cobbles and boulders of slag. Occasional brick fragments (red, refractory) Rare scrap metal, small wood, plastic and glass fragments. Lump of tufa at around 0.5m. Rope of wire at the side looking at excavation at around 0.3m going around the side. Frequent bricks towards bottom, broken and whole (red, refractory) slightly clayey at the bottom 0.5m. Evidence of Oil on bricks. MGR
▼	2.00	ES		2.10			End of pit at 2.10 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPH08** Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456604.00 - 525154.00 Level:	Date 13/02/2017
Location:	SSI Redcar	Dimensions (m): Depth 3.20	4.7 × 2.8	Scale 1:25
Client:	Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Grass over TOPSOIL: Loose dark grey/black slightly gravelly silty SAND with numerous rootlets. TPS
	0.60	ES					MADE GROUND: Medium dense grey gravelly SAND with medium cobble and low boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker, red and refractory brick. Cobbles are mostly slag with some clinker and brick. Boulders are slag. Occasional layers of sandy gravel (~400mm thick). MGR *Vertical red brick wall face exposed in east of pit.*
	1.20 - 1.50	B					
				1.90			MADE GROUND: Firm to stiff greyish brown slightly gravelly CLAY with rare subangular cobbles and occasional patches of reddish brown clay. Gravel is fine to coarse, angular to subangular of slag and clinker. Some lenses of ~10mm thick of white/light grey friable clay. MGR
▽	2.50	ES					
				3.20			End of pit at 3.20 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPH09** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456636.00 - 525136.00 Level:	Date 14/02/2017
Location: SSI Redcar		Dimensions (m): 3.9 x 3.8 Depth 0.60	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Grass over dark brown gravelly silty SAND with abundant rootlets. Gravel is fine to coarse subrounded to subangular of predominately slag and some coke. Rare brick fragments. MGR
	0.40	ES		0.60			MADE GROUND: Grey slightly sandy GRAVEL with abundant cobbles and rare boulders. Gravel is fine to coarse subrounded to subangular of slag. Rare scrap metal fragments. 2 cables/pipes at 0.6m. Yellow slightly gravelly SAND around them. Gravel is fine to coarse of slag. TP terminated due to pipes/cables. MGR
							TP Terminated at 0.6m due to pipes / cables being discovered
							End of pit at 0.60 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPH10** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456674.00 - 525116.00 Level:	Date 14/02/2017
Location: SSI Redcar		Dimensions (m): 3.8 x 2.2 Depth 2.40	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Grass over dark brown slightly gravelly silty SAND. Gravel is fine to coarse subrounded to subangular of slag. TPS
				0.70			MADE GROUND: Grey slightly sandy GRAVEL with frequent cobbles and rare boulders. Gravel is fine to coarse subrounded to subangular of slag, whitish slag. Rare brick fragments (red, refractory). MGR
▼	1.50	ES					MADE GROUND: Greyish brown slightly gravelly SAND. Gravel is fine to coarse subrounded to subangular. Difficult to tell lithologies due to sand, probably slag. Rare very small shell fragments. Rare cobbles of slag. Some very dark grey coloured layers, some pockets of dark brown clay in the upper part. MGR
	1.70 - 2.00	B					*TP Terminated at 2.4m due to groundwater*
				2.40			End of pit at 2.40 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPH11**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456711.00 - 525095.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.10	4.2 × 2.6
Client:	Homes and Communities Agency		

Date: 16/02/2017

Scale: 1:25

Logged: LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Grass over dark greyish brown gravelly silty SAND with abundant cobbles. Gravel is fine to coarse subrounded to subangular of slag and coke. TPS
							MADE GROUND: Brown very sandy gravel to very gravelly SAND with abundant cobbles and frequent boulders. Some firm brown and light brown clay pockets. Gravel is fine to coarse subrounded to subangular slag, some whitish slag. Cobbles and boulders of slag, whitish slag. Rare wood fragments, one is up to 1.5m long. Rare glass fragments, railway line, wood sleepers, frequent bricks (mostly broken, red 50% and 50% refractory) occasional scrap metal, wood fragments at the bottom of TP (associated with railway line) slightly clayey towards bottom, slight hydrocarbon odour. MGR
▼	1.70	ES					
				2.10			End of pit at 2.10 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPH12**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456760.00 - 525088.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 1.90	4.7 × 2.4
Client:	Homes and Communities Agency		

Date: 15/02/2017

Scale: 1:25

Logged: LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Grass over dark brown gravelly silty SAND with abundant rootlets. Gravel is fine to coarse subrounded to subangular of slag. Rare gravel size brick fragments. TPS
	1.00 - 1.30	B					MADE GROUND: Brownish grey very sandy GRAVEL with frequent cobbles, occasional boulders and rare large boulders. Gravel is fine to coarse subrounded to subangular of slag, whitish slag. Cobbles and boulders of slag, whitish slag. Occasional bricks, both whole and broken (red, refractory). Layer of abundant red bricks with black material underneath, between 0.8-1.2m at the side looking at excavator. MGR
▼							*TP Terminated at 1.9m due to groundwater*
				1.90			End of pit at 1.90 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPH13** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456801.00 - 525072.00 Level:	Date 16/02/2017
Location: SSI Redcar		Dimensions (m): 3.8 x 2.3 Depth 2.00	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Grass over TOPSOIL: Loose dark brown slightly gravelly silty SAND with numerous rootlets. TPS
	0.50	ES		0.80			MADE GROUND: Medium dense brownish grey very gravelly SAND with medium cobble and low boulder content and numerous pockets (<100x50x50mm) of stiff brown sandy clay. Gravel is fine to coarse, angular to subangular of slag, clinker and red/refractory brick. Cobbles are mostly slag with some brick. Boulders are slag, rarely intact brick. MGR
▼				1.50			MADE GROUND: Stiff greyish brown sandy gravelly CLAY with pockets of very gravelly sand throughout. MGR
							End of pit at 2.00 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPH14**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456836.00 - 525062.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.50	3.8 × 2.3
Client:	Homes and Communities Agency		

Date 16/02/2017

Scale 1:25

Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Grass over dark brown silty gravelly SAND with abundant rootlets. Gravel is fine to coarse subrounded to subangular of slag. TPS
							MADE GROUND: Grey sandy GRAVEL with abundant cobbles and occasional boulders. Gravel is fine to coarse subrounded to subangular of slag, whitish slag. Cobbles and boulders of slag. 1 large boulder 1m long. Occasional brick fragments (red, refractory). MGR
				0.90			MADE GROUND: Firm brown sandy gravelly CLAY with occasional cobbles. Gravel is fine to coarse subrounded to subangular of slag. Cobbles are of slag. Pockets of firm clay, rare small wood fragments. MGR
▼	2.00 2.10 - 2.30	ES B					*TP Terminated at 2.5m due to groundwater - fast inflow*
				2.50			End of pit at 2.50 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPH15** Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456615.00 - 525197.00 Level:	Date 13/02/2017
Location:	SSI Redcar	Dimensions (m): Depth 3.10	4.4 × 2.5	Scale 1:25
Client:	Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Grass over dark brown very gravelly silty SAND with abundant rootlets. Gravel is fine to coarse subrounded of coke (predominately) and slag. Metal wire also present. TPS
							MADE GROUND: Light brownish grey very sandy gravel to very gravelly SAND with abundant cobbles and occasional boulders. Gravel is fine to coarse subrounded to subangular of whitish slag and slag. Cobbles and boulders of whitish slag, rare brick fragments (red, refractory) MGR
	1.40	ES					
				1.60			MADE GROUND: Light brownish grey very sandy gravel to very gravelly SAND withfrequent cobbles and occasional bricks (mostly broken). Occasional wood fragments up to 0.5m long. Rare scrap metal fragments. Lumps of dark grey/light greyish grey/brown slightly sandy slightly gravelly clay at the bottom (exact level unknown due to groundwater). Fragment of tile (pipe?) within the clay. More bricks towards the bottom. MGR
▼							*TP Terminated at 3.1m due to groundwater*
	3.00	ES					
				3.10			End of pit at 3.10 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPH16**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456644.00 - 525177.00 Level:	Date 14/02/2017
Location: SSI Redcar		Dimensions (m): 4.2 × 2.5 Depth 2.60	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Grass over TOPSOIL: Loose dark brown/black silty sand with abundant fine to coarse subangular gravel of coke and numerous rootlets. TPS
	0.70	ES					MADE GROUND: Medium dense brownish grey gravelly SAND with medium cobble content and rare pockets (<500x300x300mm) of stiff brown sandy clay. Gravel is fine to coarse, angular to subangular of slag, clinker, occasional brick fragments. Cobbles are mostly slag, lesser red and yellow brick (silica and refractory) MGR
				0.90			MADE GROUND: Medium dense grey gravelly clayey SAND with medium cobble content and rare boulders. Gravel is fine to coarse, angular to subangular of slag, clinker and brick fragments. Cobbles are slag and brick. Boulders are slag rarely intact yellow and red brick with occasional wire casing. Locally very clayey to sandy clay. MGR
▼	1.40 - 1.70	B					
	2.20	ES					
▼				2.60			End of pit at 2.60 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPH17**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456687.00 - 525161.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.40	4.3 × 2.7
Client:	Homes and Communities Agency		Logged TL

Date 14/02/2017

Scale 1:25

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Grass over TOPSOIL: Medium dense dark grey/black slightly gravelly sandy SILT. Gravel is medium to coarse of coke. TPS
							MADE GROUND: Loose yellowish grey slightly gravelly SAND with rare cobbles. Gravel is subangular to rounded. Cobbles include occasional red brick fragments and some intact. Occasional linear bands of dark grey to black sand. Rare wood fragments, plastic waste and concrete fragments. MGR
▼							*2m wide piece of reinforced concrete*
				2.40			End of pit at 2.40 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPH18**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456733.00 - 525146.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.20	3.7 × 2.4
Client:	Homes and Communities Agency		

Date 15/02/2017

Scale 1:25

Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Grass over dark grey silty sandy gravel with abundant rootlets. Gravel is fine to medium of coke (predominately) and slag. TPS
							MADE GROUND: Greyish brown very gravelly SAND with frequent cobbles, occasional boulders, rare large boulders and occasional clay pockets. Gravel is fine to coarse subrounded to subangular of slag, cobbles and boulders of clay, some whitish slag, occasional bricks, 50/50 broken/whole (red, refractory) frequent towards the bottom of TP. Rare wood and scrap metal fragments. Occasional clay pockets, greyish brown with light brown and black patches. Rare slate, glass and pottery fragments. Very sandy slightly clayey/silty gravel at the bottom of the TP. MGR
▼	1.30	ES					*TP Terminated at 2.2m due to groundwater*
				2.20			End of pit at 2.20 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPH19**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456775.00 - 525128.00 Level:	Date 15/02/2017
Location: SSI Redcar		Dimensions (m): 3.6 × 2.1 Depth 2.10	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Grass over TOPSOIL: loose very dark brown/black slightly gravelly sandy SILT with abundant rootlets. Gravel is medium to coarse, some fine, subangular of coke and assorted lithologies TPS
	0.80	ES					MADE GROUND: Medium dense dark grey gravelly SAND with low to medium cobble and low boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker, some brick fragments and concrete. Cobbles are slag, some brick fragments and clinker. Boulders are slag and occasional intact refractory brick. Bricks ~5-10% of total volume. Rare scrap metal waste. MGR *Very dense* *Numerous intact refractory bricks*
▼							*Rare partially decomposed wood waste*
				2.10			End of pit at 2.10 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPH20**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456818.00 - 525115.00 Level:	Date 15/02/2017
Location: SSI Redcar		Dimensions (m): 4.2 x 2.7 Depth 2.20	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Grass over dark brown silty gravelly SAND with abundant rootlets. Gravel is fine to coarse subrounded to subangular of slag. Rare brick fragments (red). TPS
							MADE GROUND: Brown very gravelly sand to very sandy GRAVEL with abundant cobbles, occasional boulders and rare large boulders. Rare clay pockets. Gravel is fine to coarse subrounded to subangular of slag. Cobbles and boulders are of slag. Frequent bricks, mostly broken (red, refractory). Rare tile fragments (pipe?), wood and pottery fragments. MGR
				1.60			MADE GROUND: Stiff greyish brown mottled black, slightly gravelly CLAY. Gravel is fine to coarse subrounded of sandstone and possibly slag. MGR
▼	2.00	ES					
				2.20			End of pit at 2.20 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPH21**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456857.00 - 525106.00 Level:	Date 16/02/2017
Location: SSI Redcar		Dimensions (m): 3.6 x 2 Depth 2.40	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Grass over TOPSOIL: Dark brown silty SAND with gravel and rootlets. TPS
							MADE GROUND: Medium dense, locally dense, dark grey very gravelly SAND with low to medium cobble and low boulder content with occasional pockets (500x300x400mm) of brown sand clay. Gravel is fine to coarse, angular to subangular of slag, clinker, brick (red/ yellow), concrete . Cobble are slag, concrete, brick. Boulders are slag, rare intact brick. MGR *Dense* *Dark grey black possible ash in eastern wall of pit.* *Disused pipe, discontinuous.*
▼	1.60	ES					
				2.40			End of pit at 2.40 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPH22**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456629.00 - 525237.00 Level:	Date 13/02/2017
Location: SSI Redcar		Dimensions (m): 3 × 2, Depth 3.00	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10	ES		0.05 0.10			MADE GROUND: Grass over TOPSOIL: dark greyish brown slightly gravelly silty SAND. TPS
							MADE GROUND: Loose dark grey/black medium to coarse GRAVEL of coke with assorted fine gravel. MGR
							MADE GROUND: Dense light brownish grey very gravelly SAND with low to medium cobble content. Gravel is fine to coarse, angular to subangular of slag, clinker and rare brick fragments. Cobbles are mostly slag. Abundant white medium to coarse, subangular gravel (crystallised slag?). Rare yellow brick fragments. MGR
							Very dense, slow excavation.
	1.20	ES					
▼							*Large pockets of stiff brownish grey clay.*
				3.00			End of pit at 3.00 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPH23**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456658.00 - 525224.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.60	4.3 × 2.7
Client:	Homes and Communities Agency		

Date: 14/02/2017

Scale: 1:25

Logged: LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Grass over very dark grey slightly silty very gravelly SAND with abundant rootlets. Gravel is fine to coarse subrounded of coke and slag. TPS
				0.30			MADE GROUND: Layer of grey slag. MGR
							MADE GROUND: Stiff brown / orangish brown slightly gravelly to gravelly CLAY. Gravel is fine to coarse subrounded of various lithologies, including sandstone, coal. Slight hydrocarbon odour. Two blocks of concrete 0.9 x 0.2m. Small layers of brown slightly sandy gravel within. Gravel is fine to coarse subrounded to subangular of slag. Rare glass fragments MGR
	1.50	ES					
	2.50 - 2.80	B					
▼	3.40	ES					
							TP Terminated at 3.6m due to groundwater
				3.50			MADE GROUND: Dark grey gravelly clayey SAND to very sandy CLAY at the bottom of the trail pit. Gravel is fine to coarse of slag, sandstone. Hydrocarbon odour. Occasional shell fragments, rare scrap metal fragments, rare gravel size brick fragments (red). MGR
				3.60			*TP Terminated at 3.6m due to groundwater* End of pit at 3.60 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPH24**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456702.00 - 525204.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.70	4.3 × 2.7
Client:	Homes and Communities Agency		

Date 14/02/2017

Scale 1:25

Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Grass over dark brown slightly clayey gravelly SAND with frequent cobbles and abundant rootlets. Gravel is fine to coarse subrounded to subangular of slag and coke. Rare brick fragments (red, refractory). TPS
							MADE GROUND: Brown very gravelly to gravelly SAND with frequent cobbles and occasional boulders both of slag. Greyish brown from around 1m. Gravel is fine to coarse subrounded to subangular of slag. Occasional bricks, both broken and whole (red, refractory). Rare scrap metal fragments up to 1m long. MGR
				1.60			MADE GROUND: Dense brownish grey slightly gravelly SAND. Gravel is fine to coarse subrounded to subangular of various lithologies (difficult to tell due to sand). Some beach pebbles, possibly slag. Rare shell fragments. Occasional rootlets and black patches. Slight hydrocarbon odour. MGR
▼	2.30	ES					
				2.70			End of pit at 2.70 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPH25**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456744.00 - 525185.00 Level:	Date 15/02/2017
Location: SSI Redcar		Dimensions (m): 3.4 x 2 Depth 2.20	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Grass over TOPSOIL: loose very dark brown/black slightly silty gravelly SAND. TPS
							MADE GROUND: Medium dense brownish grey gravelly SAND with low to medium cobble and low boulder content with pockets (<500x400x300mm) of stiff brown sandy clay. Gravel is fine to coarse subangular to angular of slag, clinker, possibly mortar or some concrete. Cobble and boulders are mostly slag with some clinker and possible lime material. Occasional wood pieces, partially decomposed up to 500mm long. Some small pockets of black possibly ashy material. MGR
							25mm dia. cable
							Hydrocarbon odour
	1.20	ES					
							Three cables tied together, redundant.
▼				2.20			End of pit at 2.20 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPH26**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456788.00 - 525175.00 Level:	Date 15/02/2017
Location: SSI Redcar		Dimensions (m): 3.5 x 2.2 Depth 2.20	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Grass over TOPSOIL: Loose dark brown/black slightly gravelly slightly silty SAND with numerous rootlets with abundant coke, ash and gravel. TPS
	0.60	ES					MADE GROUND: Medium dense brownish grey very gravelly SAND with medium cobble content and low boulder content. Gravel is fine to coarse, angular to subangular of slag and clinker with some yellows brick fragments. Cobbles are slag and some brick fragments. Boulders are slag with occasional intact yellow brick. Occasional pockets (<200x100x100mm) of stiff greyish brown clay. Rare scrap metal waste. MGR
							Very dense.
							Dark grey, possible ash content
	1.50	ES					*Boulder, slag 650x400x200mm*
▼							*Greyish brown, clayey*
				2.20			End of pit at 2.20 m

Remarks:

Stability:

AGS

Trial Pit Log

ch2m			Trialpit No **TPH27** Sheet 1 of 1
Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456830.00 - 525156.00 Level:	Date 15/02/2017
Location: SSI Redcar		Dimensions (m): 3.5 x 2.2 Depth 2.00	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10	ES		0.20			MADE GROUND: Grass over TOPSOIL: Loose dark brown/black slightly gravelly silty SAND with abundant medium to coarse, subangular gravel of coke at the base, numerous rootlets throughout. TPS
							MADE GROUND: Dense very gravelly SAND with medium cobble content and rare boulders. Gravel is fine to coarse, angular to subangular of slag, clinker and brick fragments. Cobbles are slag and brick fragments. Boulders are slag and intact yellow bricks. Rare partially decomposed wood fragments. MGR
							Dark grey
	1.20	ES					*Pockets of stiff brown clay up to 500x300x200mm.*
▼	1.50 - 1.80	B		2.00			End of pit at 2.00 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPH28**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456872.00 - 525151.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.00	3.8 × 2.5
Client:	Homes and Communities Agency		

Date: 16/02/2017

Scale: 1:25

Logged: TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Grass over TOPSOIL: loose dark brown slightly gravelly silty SAND with numerous rootlets. TPS
							MADE GROUND: Dense brownish grey, very gravelly SAND with medium cobble and low boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker and red/yellow brick fragments. Cobbles are slag, clinker and mostly yellow, some red brick. Boulders are slag and intact brick. Some wood fragments, metal waste. MGR
							Very dense *Dark grey*
							Stiff brown sandy clay in north wall
▼	1.50	ES					*Stiff brown sandy clay in west wall.*
				2.00			End of pit at 2.00 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPH29**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456646.00 - 525277.00 Level:	Date 13/02/2017
Location: SSI Redcar		Dimensions (m): 3.9 x 2.7 Depth 3.00	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Grass over TOPSOIL: dark brown slightly gravelly slightly sandy SILT with abundant rootlets. MGR
				0.70			MADE GROUND: Dense grey gravelly SAND with low cobble content. Gravel is fine to coarse, angular to subangular of slag, clinker, red and yellow brick and tile. Cobbles are slag, clinker and brick fragments. MGR
▼	0.80	ES					MADE GROUND: Dense brownish grey gravelly clayey SAND with low to medium cobble and low boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker and rarely red brick. Cobbles and boulders are slag, rarely intact brick and fragments of brick. With rare metal waste, 20mm rebar, pockets of sandy clay. MGR *Sandy clay* *Black, possible as content*
				3.00			End of pit at 3.00 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPH30**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456678.00 - 525263.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.90	5 / 2.6
Client:	Homes and Communities Agency		

Date 14/02/2017

Scale 1:25

Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Dark grey silty sandy GRAVEL with abundant rootlets. Gravel is fine to coarse subrounded to subangular of coke and slag. MGR
				1.10			MADE GROUND: Grey very sandy GRAVEL with frequent cobbles and occasional boulders. Gravel is fine to coarse subrounded to subangular of slag, some whitish slag. Rare brick fragments (red, refractory). Cobbles and boulders of slag MGR
▼	1.80 1.80 - 2.10	ES B					MADE GROUND: Yellowish brown / greyish brown slightly gravelly SAND with rare cobbles. Gravel is fine to coarse subrounded of slag. Cobbles of slag. Rare pockets of clay. Rare wood fragments, some very dark grey patches. MGR *TP Terminated at 2.9m due to groundwater and collapsing*
				2.90			End of pit at 2.90 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPH31**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456718.00 - 525246.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.90	3.8 × 2.5
Client:	Homes and Communities Agency		

Date 15/02/2017

Scale 1:25

Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Grass over dark brown gravelly silty SAND with abundant rootlets. Gravel is fine to coarse subrounded of predominately coke and some slag. MGR
				0.30			MADE GROUND: Dark brown sandy silty GRAVEL. Gravel is fine to coarse subrounded of coke (predominately) and slag. MGR
							MADE GROUND: Brownish grey very gravelly sand with frequent cobbles, occasional boulders and rare large boulders (up to 0.8m long) Rare brick fragments (red, refractory) MGR
				1.50			MADE GROUND: Greyish light brown/yellow slightly gravelly SAND. Gravel is fine to coarse subrounded of possibly slag. Rare shell fragments. MGR
▼	2.00	ES					*TP Terminated at 2.9m due to groundwater and collapsing*
				2.90			End of pit at 2.90 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPH32**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456759.00 - 525232.00 Level:	Date 15/02/2017
Location: SSI Redcar		Dimensions (m): 3.4 x 2.3 Depth 2.50	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Thin grass cover over TOPSOIL: loose dark brown/black slightly gravelly silty SAND with frequent rootlets. TPS
							MADE GROUND: Medium dense light brownish grey gravelly SAND with low to medium cobble and low boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker and yellow brick fragments. Cobbles are mostly slag with some yellow brick fragments and clinker. Boulders are slag. Some slag pieces have white mineralisation on outer edge. MGR
▼	1.50	ES					
				2.50			End of pit at 2.50 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPH33**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456804.00 - 525218.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.30	4 × 2.5
Client:	Homes and Communities Agency		

Date 15/02/2017

Scale 1:25

Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Occasional grass over brown gravelly silty SAND with occasional rootlets. Gravel is fine to coarse subrounded of slag and coke. MGR
							MADE GROUND: Brownish grey very gravelly sand to very sandy gravel with abundant cobbles and occasional boulders. Gravel is fine coarse subrounded to subangular of slag. Whitish slag in the upper metre. Cobbles and boulders of slag (with whitish slag in the upper metre). Occasional bricks, frequent towards bottom of trial pit, both broken and whole (red, refractory). Rare wood fragments up to 0.4m long. Rare fragments of plastic material, fragment of metal pipe 0.4m long. Rare scrap metal and glass fragments. Slight hydrocarbon odour from around 2m. MGR
▼	2.00	ES					*TP Terminated at 2.3m due to groundwater*
				2.30			End of pit at 2.30 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPH35**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456875.00 - 525178.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.20	3.8 × 2.2
Client:	Homes and Communities Agency		

Date 16/02/2017

Scale 1:25

Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Grass over brown gravelly silty sand with abundant rootlets. Gravel is fine to coarse subrounded to subangular of slag. Rare small brick fragments (red). TPS
	0.50	ES		0.80			MADE GROUND: Brownish grey very sandy gravel with frequent cobbles and occasional boulders. Gravel is fine to coarse, subrounded to subangular of slag and whitish slag. Cobbles and boulders of slag, whitish slag. Occasional brick both whole and broken (red, refractory). Rare scrap metal and wood fragments. MGR
							MADE GROUND: Firm to stiff brown slightly sandy gravelly clay. Gravel is fine to coarse subrounded to subangular of slag and possibly sandstone. Occasional brick fragments (red, refractory). Rare scrap metal, pottery and glass fragments. Some very dark grey layers. Gravel of grey slag at the bottom of the trial pit. MGR
▼							*TP Terminated at 2.2m due to groundwater - fast inflow from 2m*
				2.20			End of pit at 2.20 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPI01**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456930.00 - 524859.00 Level:
Location:	SSI Redcar		Dimensions (m): Depth 1.20
Client:	Homes and Communities Agency		

Date 31/01/2017

Scale 1:25

Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Grass over loose orangeish brown gravelly clayey SAND with numerous roots and rootlets, large pieces of red brickwork intact, up to 800x400x200mm. Occasional pieces of rebar <1000mm. MGR
				0.50			
	0.80	ES					MADE GROUND: Loose dark brown slightly gravelly SAND with very low cobble content of slag and brick. Locally clayey. Gravel is fine to coarse, angular to subangular of slag, red/yellow brick, clinker. At 1.2m solid concrete base covering full extent of hole. Hole abandoned. MGR
				1.20			End of pit at 1.20 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPI02**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456982.00 - 524826.00 Level:	Date 31/01/2017
Location: SSI Redcar		Dimensions (m): 4.3 × 2, Depth 5.00	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	ES					MADE GROUND: Grass over loose slightly gravelly clayey SAND with low cobble content. Gravel is fine to medium, occasionally course. Numerous roots and rootlets. TPS *From 0.3m: Sulphur odour.*
				0.50			MADE GROUND: Medium dense grey sandy GRAVEL with low cobble and low boulder content. Cobble are slag, red brick frags, and concrete frags. Boulders same as cobbles. MGR *From 0.6m: Concrete, fractured rebar in place.*
				1.50			MADE GROUND: Medium dense brownish grey gravelly SAND with low cobble content and rare boulders both of slag and brick. Gravel is fine to coarse, angular to subangular of slag, clinker, brick fragments and burnt lime. MGR
	2.70 - 3.00	B					
				3.50			MADE GROUND: Soft to firm dark brownish grey sandy gravelly CLAY with low cobble content of slag, occasionally brick and concrete. Gravel is fine to coarse, angular to subangular of slag, occasionally brick fragments. MGR *From 3.9m: No water seen until hole reached depth and stopped.* *Strong inflow of water after 10 mins.*
	4.00	ES					
				5.00			End of pit at 5.00 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPI03**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457037.00 - 524821.00 Level:	Date 30/01/2017
Location:	SSI Redcar		Dimensions (m): 4.5 × 2, Depth 4.30	Scale 1:25
Client:	Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30	ES					MADE GROUND: Grass over loose orangeish brown clayey SAND with low gravel, cobble and boulder content. Locally sandy clay. Occasional red brick and white tile. MGR
	0.40 - 0.70	B					
				1.40			MADE GROUND: Loose dark grey gravelly SAND with medium cobble and low boulder content both of slag with occasional red/yellow brick, yellow brick content ~5%, some intact. Occasional areas of high white/grey ash content. Gravel is fine to coarse, angular to subangular of slag, slate, sinter, yellow and red brick fragments with rare glass fragments. MGR
							From 3.0m: Hydrocarbon odour. Example taken. No groundwater encountered.
	3.40 - 3.70	B					
	4.00	ES					
				4.30			End of pit at 4.30 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPI04** Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457099.00 - 524798.00 Level:	Date 30/01/2017
Location:	SSI Redcar	Dimensions (m): Depth 5.00	4.2 / 2.3	Scale 1:25
Client:	Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
							MADE GROuND: Grass over soft to firm orangish brown sightly sandy CLAT with occasional fine gravels and rare cobbles with numerous rootlets. MGR
				0.50			MADE GROUND: Loose dark grey gravelly SAND with low cobble and low boulder content. High scrap metal content throughout, lots of rebar, corrugated plate, cable trays, tread boards and some concrete with rebar in place. Boulders are slag and concrete. Rebar ~30mm dia <2.5m long. Gravel includes pellets. MGR
							From 0.5m: More like demolition than trial pitting.
	2.20 - 2.50	B					
	3.00	ES					
				4.50			MADE GROUND: Firm to stiff grey and reddish grey v.sandy gravelly CLAY with low boulder content. Boulders are slag. Numerous pieces of rebar, 30mm diameter up to 1.5m long. Rare yellow brick. Some clay is yellowish brown. MGR
				5.00			End of pit at 5.00 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPI05**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457146.00 - 524794.00 Level:	Date 02/02/2017
Location: SSI Redcar		Dimensions (m): 4.8 × 2.9 Depth 4.20	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Grass over; loose orangeish brown slightly clayey SAND with occasional fine to medium gravel. Pockets of firm sandy CLAY <80x50x50mm. MGR
							From 0.3m: Sulphur odour.
				0.60			MADE GROUND: Medium dense grey gravelly SAND with medium cobble and medium boulder content of slag. Gravel is fine to coarse, angular to subangular of slag and clinker and abundant rounded iron ore pellets. Gravel includes abundant rounded iron ore pellets. Boulders up to 600x300x300mm, rare metal waste. MGR
							From 0.6m: Dark purplish grey, possible iron ore.
							From 1.2m: Reddish grey, iron ore rich.
	1.40	ES					
							From 2.4m: Reddish grey, iron ore rich.
				2.70			MADE GROUND: Medium dense dark grey gravelly SAND with medium cobble & low boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker, red & yellow brick fragments and rounded pellets. Cobbles are slag & red/yellow brick. Boulders are slag. Refractory brick content 5-10% of total volume. MGR
	3.00 - 3.30	B					
	3.50	ES					
							From 4.0m: Groundwater settled after 10 mins at 4.0m.
				4.20			End of pit at 4.20 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPI06**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456966.00 - 524885.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 1.00	Date 26/01/2017 Scale 1:25
Client:	Homes and Communities Agency		Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Grass over; soft brown sandy CLAY with occasional fine to medium gravels and numerous rootlets. MGR
							MADE GROUND: Medium dense brownish grey gravelly SAND with low boulder & low cobble content. Gravel is fine to coarse, rounded to subrounded of slag, pellets (iron ore), clinker and red/yellow brick. Boulders are slag. Cobbles are slag & brick frags. Lots of debris: rebar up to 1m long ~30mm diameter. Tin sheeting, cable trays, yellow brick ~10% of total volume. MGR
				1.00			End of pit at 1.00 m
	3.50	ES					

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPI07**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457002.00 - 524869.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.30	4 × 2.5
Client:	Homes and Communities Agency		

Date: 25/01/2017

Scale: 1:25

Logged: TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30			MADE GROUND: Grass over soft to firm orangeish brown sandy CLAY with occasional fine to medium gravels. MGR
	1.50	ES					MADE GROUND: Medium dense dark grey gravelly SAND with medium cobble content and rare boulders. Gravel is fine to coarse, angular to subangular of slag, clinker, occasional red/yellow brick. Cobbles are mostly slag, occasional red/yellow brick frags. Boulders are slag, Wood fragments, iron wire, cable casing, rebar noted. Wood is partially decomposed without creosote. MGR *From 0.3m: Very dense. Excavation slowed.* *From 0.3m: Light grey, ~5-10% yellow brick.* *From 0.3m: Cable casing is yellow plastic with inner aluminium core removed.* *From 0.5m: On south side of pit, reinforced concrete approx 300mm thick with wire ~20mm diameter. Noted by excavation controller and cleared to proceed.*
							From 2m: Boulder of concrete, 1000x400x400mm.
	2.70 - 3.00	B					
				4.30			End of pit at 4.30 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPI08**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457051.00 - 524834.00 Level:	Date 25/01/2017
Location: SSI Redcar		Dimensions (m): 4.1 x 2, Depth 4.40	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	ES		0.40			MADE GROUND: Grass over; firm orangeish brown very sandy CLAY with rare fine to medium gravels. Clay is reworked, low plasticity, red brick frag and piece of rusted metal recovered. MGR
							MADE GROUND: Loose dark grey gravelly SAND with medium cobble and low boulder content. Gravel is fine to coarse, subangular of slag, clinker, lesser yellow brick frags. Cobbles are mostly slag, lesser clinker and yellow/ red brick. Boulders are slag. Silica bricks noted. MGR
							From 0.4m: Very dense layer approximately 0.3m thick compacted slag.
							From 0.6m: Eastern face of pit: concrete, not reinforced, approximately 0.2m thick.
	1.80 - 2.10	B					
	3.00	ES					
							From 3.5m: Numerous pieces of timber. Partially decomposed. No Creosote noted.
							From 4.0m: Clayey locally very clayey. Low cobble content.
				4.40			End of pit at 4.40 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPI09**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457104.00 - 524831.00 Level:	Date 25/01/2017
Location: SSI Redcar		Dimensions (m): 3.6 x 1.8 Depth 3.90	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20	ES					MADE GROUND: Grass over soft to firm brown slightly sandy CLAY with occasional fine to medium gravel and rare subangular cobbles. MGR
				0.40			MADE GROUND: Medium dense becoming loose grey gravelly SAND with low to medium cobble content and low boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker and rare brick. Cobbles and boulders are slag. MGR *From 0.4m: Sharp contact with layer below.* *From 0.5m: Very dense.* *From 1.0m: Boulder of slag with white and ferrous stain ~500x500x300mm.*
				1.50			MADE GROUND: Loose dark grey gravelly SAND with low cobble content and rare boulders. Gravel is fine to medium, rarely coarse, subangular of slag, clinker and red/yellow brick. Cobbles are slag and fragments/rarely intact yellow refractory brick. Boulders are slag. Yellow bricks are approximately 5% of the total volume. MGR *From 2.4m: Approximately 10% yellow refractory brick.*
	2.50 - 2.80	B					
	3.00	ES					
				3.90			End of pit at 3.90 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPI10**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457151.00 - 524811.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.80	Date 02/02/2017 Scale 1:25
Client:	Homes and Communities Agency		Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Grass over; loose yellowish brown clayey SAND with occasional fine to medium gravel and occasional pockets of firm sandy clay (<60x30x30mm). MGR
				0.80			MADE GROUND: Very dense grey gravelly SAND with medium cobble and medium boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker, red iron ore, yellow brick frags, pellets. Cobbles are slag, brick frags and red iron ore. Boulders are mostly slag occasionally red iron ore. Occasional layers approximately 150mm thick of high red ore content. MGR
	1.50	ES					*From 0.8m: Purplish grey, ore rich.*
							From 0.8m: Very dense material, very slow excavation.
	2.70 - 3.00	B					
				3.80			End of pit at 3.80 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPI11**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456976.00 - 524916.00 Level:	Date 26/01/2017
Location: SSI Redcar		Dimensions (m): Depth 1.40 — 5 × 2.2	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
							MADE GROUND: Grass over; Loose orangeish brown clayey SAND with occasional fine to medium gravels. MGR
				0.50			MADE GROUND: Loose dark grey/black gravelly SAND with low cobble content and medium boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker, red/yellow brick frags. Cobbles are slag, concrete, red/yellow brick. Abundant waste including cable tray, rebar, assorted steelwork, red/yellow brick, lead and tin sheeting. Boulders of slag up to 750x600x400mm. MGR
	1.00	ES					
				1.40			End of pit at 1.40 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPI12**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457018.00 - 524899.00 Level:	Date 26/01/2017
Location: SSI Redcar		Dimensions (m): Depth 4.60	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Grass over; loose orangeish brown clayey SAND with rare fine to medium gravels. With numerous rootlets and roots. MGR
				0.40			
	0.60	ES					MADE GROUND: Loose dark grey slightly gravelly SAND with low cobble content and low boulder content. Yellow bricks (look like building, not refractory) abundant throughout - approx 10% total. Volume of cobbles & gravels are SA of slag and red/yellow brick. Boulders are slag. Lots of tin sheet, rebar, metalwork throughout. MGR *From 0.5m: Sulphur odour.* *From 0.7m: Approx 70% yellow brick.*
							From 2.0m: Hydrocarbon odour, creosote?
							From 2.2m: Light grey
				2.40			MADE GROUND: Orangeish brown clayey SAND (as above.) No roots. MGR
	2.70 - 3.00	B					
				3.00			MADE GROUND: Medium dense dark grey gravelly SAND with low cobble content. Gravel is slag and clinker. Cobbles are slag and yellow brick. Wood frags, some soaked in creosote. HC odour. MGR *From 3.0m: Occasional frags of timber partially decomposed.* *From 3.5m: Slightly gravelly.*
	3.80	ES					
				4.60			End of pit at 4.60 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPI13**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457064.00 - 524886.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 0.90	4.6 × 2.2
Client:	Homes and Communities Agency		Logged TL

Date 31/01/2017

Scale 1:25

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.40			MADE GROUND: Grass over; firm orangeish brown sandy CLAY with occasional fine gravels and rootlets. MGR
	0.70	ES		0.90			MADE GROUND: Medium dense dark grey gravelly SAND with rebar, metalwork, wood, red and yellow brick, slate (roofing), low cobble content. Gravel is fine to medium, rarely course, angular to rounded of pellets (round) slag. Red/yellow brick. Concrete base at 0.9m unable to break out. Covers full length and width of pit, hole aborted. MGR End of pit at 0.90 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPI14**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457127.00 - 524870.00 Level:	Date 31/01/2017
Location: SSI Redcar		Dimensions (m): 4.7 × 2.1 Depth 0.70	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
							MADE GROUND: Grass over; firm orangeish brown slightly sandy CLAY with rare fine to medium gravels and rootlets throughout. MGR
	0.60	ES		0.50			MADE GROUND: Medium dense dark grey gravelly SAND with low cobble content and rare boulders. Metalwork, gravel is fine to coarse, angular to subangular of slag, red/yellow brick frags, pellets. Cobbles and boulders are slag, concrete frags and red/ yellow bricks. Concrete base at 0.7m, full length and width covered, unable to break out, hole abandoned. MGR
				0.70			End of pit at 0.70 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPI15**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457165.00 - 524853.00 Level:	Date 02/02/2017
Location: SSI Redcar		Dimensions (m): Depth 5.00	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Grass over; firm brownish grey slightly gravelly sandy CLAY. Gravel is fine to medium, subangular . Numerous rootlets. MGR
				0.60			
	0.80	ES					MADE GROUND: Dense dark grey gravelly SAND with low to medium cobble content and low boulder content. With occasional partially decomposed timber frags. Gravel is fine to medium, subagular to angular of slag, clinker, cement. Cobbles are slag and clinker. Boulders are slag up to 300x200x300mm. Waste includes cables <20mm and rebar <20mm. Rare red brick. MGR *From 0.6m: Dark purplish grey high iron ore content. Approx 10% red brick frags.*
	1.50 - 1.80	B					
	2.00	ES					
				2.50			MADE GROUND: Medium dense yellowish brown and grey slightly gravelly SAND. Gravel is fine to coarse, angular to subangular of slag rare red brick frags. Rare cobbles of slag. MGR
	4.00 - 4.30	B					
				5.00			End of pit at 5.00 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPI16**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457077.00 - 524924.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.40	5.6 × 2.7
Client:	Homes and Communities Agency		

Date 01/02/2017

Scale 1:25

Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.70	ES					
	3.20 - 3.50	B					
	4.00	ES					

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPI17**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457104.00 - 524910.00 Level:	Date 01/02/2017
Location: SSI Redcar		Dimensions (m): 4.3 × 2.4 Depth 1.10	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	ES		0.40			MADE GROUND: Grass over; medium dense brown slightly gravelly clayey SAND with occasional cobbles and numerous rootlets. Gravel is fine to medium, subangular of mixed lithologies. Cobbles are slag. Locally sandy CLAY. MGR
	0.60 - 0.90	B					MADE GROUND: Medium dense dark grey gravelly SAND with low cobble content and low boulder content. Gravel is fine to coarse, angular to subangular of slag, red/yellow brick, concrete, pellets. Cobbles are slag, yellow/red brick, concrete. Boulders are brick, concrete, slag. Waste in pit includes metalwork, rebar, cable tray, conveyor rollers. Conveyor belts, misc. Rubber waste. Concrete base at 1.1m. Hole terminated. MGR
	1.00	ES		1.10			*From 0.8m: Polythene sheet, waste.*
							End of pit at 1.10 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPI18**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457181.00 - 524904.00 Level:	Date 03/02/2017
Location:	SSI Redcar		Dimensions (m): Depth 1.50	Scale 1:25
Client:	Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
							MADE GROUND: Firm yellowish brown slightly gravelly sandy CLAY with rare subangular cobbles. Gravel is fine to coarse, angular to subangular with abundant rootlets. MGR
				0.50			MADE GROUND: Medium dense, locally loose grey gravelly SAND with low to medium cobble content and low boulder content with occasional timber fragments and metal waste. Gravel is fine to coarse, angular to subangular of slag, clinker and yellow brick fragments. Boulders are slag, rarely intact brick. Gravel includes iron ore pellets. MGR
				1.50			End of pit at 1.50 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPI19**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457007.00 - 525014.00 Level:
Location:	SSI Redcar		Dimensions (m): Depth 4.20
Client:	Homes and Communities Agency		

Date: 08/02/2017

Scale: 1:25

Logged: LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Grass over dark brown slightly gravelly silty SAND with frequent rootlets. Gravel is fine to coarse subrounded to subangular of slag. Occasional gravel size red brick fragments. MGR
	1.00	ES					MADE GROUND: Grey whitish grey slightly sandy to sandy GRAVEL with abundant cobbles and frequent boulders. Rare large boulders (up to 0.8m). Gravel is fine to coarse subrounded to subangular of whitish slag, slag, possibly some clinker. Cobbles and boulders subrounded of whitish grey slag, slag. Occasional brick fragments (gravel - small cobble sized) both yellow (refractory) and red. Frequent bricks from around 2m, both whole and broken, mostly broken, from gravel size to cobble size - 65% refractory, 35% red. Rare scrap metal fragments, wood fragments. N.B, between 1-2m occasional cobble size lumps of grey white speckled material, crumbles easily. It was suggested it is refractory brick being affected by water. MGR
	3.40 - 3.70	B					
▼				3.90			MADE GROUND: Yellow slightly gravelly SAND. Gravel is fine to coarse difficult to describe gravel due to material being mixed. MGR
				4.20			End of pit at 4.20 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPI20**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457048.00 - 524998.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.00	3.9 × 2.2
Client:	Homes and Communities Agency		

Date 08/02/2017

Scale 1:25

Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	1.00	ES					MADE GROUND: Medium dense dark grey SAND & GRAVEL with medium cobble and low boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker, rare brick fragments. Cobbles are slag, lesser clinker and brick fragments. Boulders are slag. Rare intact refractory brick. Occasional bands approximately 150mm thick, light grey, white mineralisation on slag (possible ash). MGR *Slight sulfur odour* *Gravelly sand*
▼				4.00			End of pit at 4.00 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPI21**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No.: 678079	Co-ords: 457099.00 - 524978.00 Level:	Date: 06/02/2017
Location:	SSI Redcar	Dimensions (m): Depth 3.60	5.1 × 2.5	Scale: 1:25
Client:	Homes and Communities Agency			Logged: LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Grass over dark brown gravelly silty SAND with frequent rootlets. Gravel is fine to coarse of slag, possibly sandstone. TPS
	0.90	ES					MADE GROUND: Dark grey sandy GRAVEL with occasional cobbles and coke boulders. Sand is medium to coarse. Gravel is fine to coarse subrounded to subangular of slag, clinker. Cobbles and boulders of slag. Occasional brick, both broken and whole, bricks are red, silica, refractory with similar proportions. Occasional wood fragments. Some white staining on slag. MGR
	1.90 - 2.10	B					*TP Terminated at 3.6m due to groundwater*
▼				3.60			End of pit at 3.60 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPI22**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457151.00 - 524957.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.00	Date 06/02/2017
Client:	Homes and Communities Agency		Scale 1:25 Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	1.00	ES					MADE GROUND: Grass over medium dense dark grey gravelly SAND with low to medium cobble content. Gravel is angular to subangular fine to coarse of slag, yellow brick (silica and refractory) fragments, clinker and concrete fragments. Occasional tile fragments. MGR *Some light grey ash.* *Very dense*
				1.40			
	1.60	ES					MADE GROUND: Loose yellow fine to medium SAND with rare rounded to angular, fine to coarse gravel. MGR *200mm dia clayware pipe*
▼				4.00			End of pit at 4.00 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPI23**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456960.00 - 525078.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.80	4.9 × 2.3
Client:	Homes and Communities Agency		

Date: 08/02/2017

Scale: 1:25

Logged: TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Medium dense dark grey gravelly SAND with medium cobble and low boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker, occasional brick and burnt lime. Boulders are of slag. Locally very gravelly. MGR
				1.90			MADE GROUND: Medium dense brownish grey very gravelly SAND with numerous pockets (up to 100x100x100mm) of firm brownish grey clay. Low to medium cobble content and low boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker, rare brick fragments. Cobbles are slag rarely clinker and brick fragments. Boulders are slag, rare intact yellow brick. Some wood fragments and clayware tile/pipe. MGR *Very clayey on east edge of pit.*
▼	2.20 2.30 - 2.60	ES B					
				3.80			End of pit at 3.80 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPI24**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457013.00 - 525050.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.80	5.5 × 2.2
Client:	Homes and Communities Agency		

Date 08/02/2017

Scale 1:25

Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			TOPSOIL: Grass over dark brown sandy SILT. TPS
							MADE GROUND: Medium dense brownish grey gravelly SAND with low to medium cobble and low boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker and occasional brick fragments. Cobbles are slag, clinker, occasional yellow brick fragments. Boulders are slag. MGR *Light grey (slag mineralisation?). Intact red brick wall in east of pit.*
	1.50	ES					
				2.40			
	2.60	ES					MADE GROUND: Medium dense dark grey gravelly SAND with low cobble and low boulder content and occasional intact yellow and red brick. Gravel and cobbles are mostly slag, rarely clinker and brick fragments. Boulders are slag. MGR
▼				3.80			End of pit at 3.80 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPI25**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457064.00 - 525039.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.80	4.4 × 2.2
Client:	Homes and Communities Agency		

Date: 09/02/2017

Scale: 1:25

Logged: LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Grass over dark brown slightly gravelly silty SAND. Gravel is fine to coarse subrounded to subangular of slag. TPS
							MADE GROUND: Grey slightly sandy to sandy GRAVEL with abundant cobbles, frequent boulders and rare large boulders. Gravel is fine to coarse subrounded to subangular of slag/whitish slag. Cobbles and boulders of slag/whitish slag. Some whitish staining. Light grey in colour between 0.2-0.6m. Orangish red in colour between 0.4-0.6m. Rare yellow and red brick fragments (gravel - small cobble size). More sandy, frequent cobbles and occasional boulders towards base. Rare wood fragments 200mm long. MGR
	1.50	ES					
	2.70 - 3.00	B					
▼	3.70	ES		3.70 3.80			MADE GROUND: Yellow slightly gravelly SAND . Gravel is fine to coarse of slag(?). Frequent bricks, mostly broken (red, refractory, silica) at the bottom of the trial pit. Rare tiny shell fragments. Pocket of dark grey/black slightly sandy silt. Beach odour. MGR *TP Terminated at 3.8m due to groundwater* End of pit at 3.80 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPI26** Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457115.00 - 525020.00 Level:	Date 06/02/2017
Location: SSI Redcar		Dimensions (m): 4.3 × 2.6 Depth 4.70	Scale 1:25
Client: Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Grass over dark brown slightly sandy slightly gravelly silt with frequent rootlets. TPS
							MADE GROUND: Dark grey very sandy GRAVEL with frequent cobbles and occasional boulders. Gravel is fine to coarse subrounded to subangular of slag, clinker. Cobbles and boulders of slag. Frequent bricks both whole and broken of silica, red and refractory. Most bricks are yellow, occasional wood fragments. MGR
	2.60	ES					
				2.80			MADE GROUND: Light brown/grey slightly gravelly SAND. Gravel is fine to coarse subrounded to subangular of sandstone or slag. Occasional shell fragments, rare ceramic fragments, occasional large wood fragments, damp. MGR
▼							*TP Terminated at 4.7m due to reaching limit of excavator*
	4.50 - 4.70	B					
				4.70			End of pit at 4.70 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPI27**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457150.00 - 525012.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.00	3.6 × 2.6
Client:	Homes and Communities Agency		

Date 09/02/2017

Scale 1:25

Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.70 - 1.00	B					MADE GROUND: Grass over loose to medium dense and dark grey gravelly SAND with low cobble and low boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker, brick and rare burnt lime. Cobbles are of slag, clinker, brick fragments and rare burnt lime. Boulders are slag rarely clinker and intact/ large brick fragments. Occasional yellow refractory bricks in upper meter. MGR
							800x300x300mm concrete beam in north face,
	1.30	ES					*Below 1.1 light grey ashy coloured sand*
				2.00			End of pit at 2.00 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPI28**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456978.00 - 525119.00 Level:	Date 08/02/2017
Location:	SSI Redcar	Dimensions (m): 4.1 x 3		Scale 1:25
Client:	Homes and Communities Agency	Depth 4.10		Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Grass over dark brown slightly gravelly silty sand with frequent rootlets. Gravel is fine to coarse. Subrounded to subangular of slag. TPS
							MADE GROUND: Dark grey sandy GRAVEL with abundant cobbles and frequent boulders. Gravel is fine to coarse subrounded to subangular of slag, whitish slag, possibly some clinker. Cobbles and boulders of slag, whitish slag. Rare large boulders. Occasional bricks, broken, mostly gravel sized (red, refractory). From 3m frequent cobbles and occasional boulders, more sandy. Rare pockets of clay. MGR
	3.50	ES					
▼				3.90			MADE GROUND: Dark grey sandy GRAVEL with abundant cobbles and frequent boulders. Gravel is fine to coarse subrounded to subangular of slag, whitish slag, possibly some clinker. Cobbles and boulders of slag, whitish slag. Rare large boulders. Frequent bricks at base, broken, mostly gravel sized (red, refractory). Rare pockets of clay. Occasional wood fragments up to 0.5m in length. Rare scrap metal fragments. Solid metal bar 1.5m long at the base of pit. MGR
				4.10			*TP Terminated at 4.1m due to groundwater* End of pit at 4.10 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPI29**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457016.00 - 525115.00 Level:	Date 08/02/2017
Location:	SSI Redcar	Dimensions (m): Depth 3.60	5 / 2.6	Scale 1:25
Client:	Homes and Communities Agency			Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Grass over dark brown slightly gravelly silty SAND with frequent rootlets. Gravel is fine to coarse subrounded to subangular of slag. Rare gravel-size red brick fragments TPS
	0.60	ES		0.80			MADE GROUND: Dark brown very gravelly SAND with frequent cobbles and occasional boulders. Gravel is fine to coarse subrounded to subangular of slag, possibly some clinker. Cobbles and boulders are subrounded of slag. Rare gravel-cobble size brick fragments (red, refractory). Some bright red material, possibly an ore in the excavator end of trial pit. Has coloured the soli and slag around it. MGR
				1.60			MADE GROUND: Greyish white slightly sandy GRAVEL with abundant cobbles of frequent boulders. Gravel is fine to coarse subrounded to subangular of whitish slag, slag. Cobbles and boulders of whitish slag, slag. Rare gravel-cobble size brick fragments (refractory, red) >5%. MGR
▼							MADE GROUND: Dark brown slightly sandy GRAVEL with abundant cobbles and frequent boulders. Gravel is fine to coarse subrounded to subangular of slag, some whitish slag. Cobbles and boulders of slag, some whitish slag. Some pieces of slag have holes in it. Rare gravel-cobble size brick fragments, mostly red, some refractory (total <5%) MGR
				3.60			End of pit at 3.60 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPI30**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457093.00 - 525078.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.40	3.7 × 2.7
Client:	Homes and Communities Agency		

Date 26/04/2017

Scale 1:25

Logged JNB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			TOPSOIL TPS
	1.00 - 1.50	ES					MADE GROUND: Medium dense grey very gravelly SAND with medium cobble and low boulder content of slag, red and refractory brick. Gravel is fine to coarse, angular to subangular of slag, red and refractory brick. MGR
				2.30			MADE GROUND: Loose yellowish brown slightly gravelly SAND. MGR
				2.40			End of pit at 2.40 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPI31**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457127.00 - 525059.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.00	4.3 × 2.7
Client:	Homes and Communities Agency		

Date: 07/02/2017

Scale: 1:25

Logged: LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30	ES		0.20			MADE GROUND: Grass over dark brown slightly sandy slightly gravelly silt with frequent rootlets. Gravel is fine to coarse of slag. TPS
							MADE GROUND: Dark grey very sandy GRAVEL with occasional cobbles and boulders. Sand is fine to coarse. Gravel is fine to coarse subrounded to subangular of slag, some clinker. Cobbles and boulders of slag. Occasional scrap metal fragments up to 0.5m, occasional bricks, mostly brown with red, refractory. Rare tile fragments. MGR
	1.30	ES		1.10			MADE GROUND: Light grey slightly sandy to sandy GRAVEL. Gravel is fine to coarse subrounded to subangular of slag. Slag is whitish grey in colour (lime and dolomite mix suggested). Rare wood fragments. MGR
				1.60			MADE GROUND: Dark grey very sandy GRAVEL with occasional cobbles and boulders. Sand is fine to coarse. Gravel is fine to coarse subrounded to subangular of slag, some clinker. Cobbles and boulders of slag. Occasional scrap metal fragments up to 0.5m, occasional bricks, mostly brown with red, refractory. Rare tile fragments. MGR
▼				2.70			MADE GROUND: Light brown/grey slightly gravelly SAND. Gravel is fine to coarse of slag. Occasional brick, mostly whole of red and refractory. Some Gravel sized red brick fragments. Rare ceramic fragments. MGR *TP Terminated at 4m due to groundwater*
				4.00			End of pit at 4.00 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPI32**

Sheet 1 of 1

Project Name: Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457168.00 - 525051.00 Level:	Date 09/02/2017
Location: SSI Redcar		Dimensions (m): 4.4 × 3.6 Depth 2.10	Scale 1:25
Client: Homes and Communities Agency			Logged TL

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.10			TOPSOIL: Dark brown sandy gravelly silt. TPS *Roots/rootlets*
	0.80	ES					MADE GROUND: Very dense grey and brownish grey sandy GRAVEL AND COBBLES with medium to high boulder content. Gravel is fine to coarse, angular to subangular of mostly slag with clinker. Cobbles are slag, rare red brick fragments. Boulders are slag up to 600x500x500mm. Numerous fragments of pig iron. 30mm thick up to 1000x800mm. Locally dark grey/black. MGR *Large section of dark brickwork, not in-situ, north face of pit.* *1000x800x800mm piece of pig iron (possible bottom of ladle)*
	1.40	ES					*Yellow sand on east wall of pit.*
	1.70 - 2.00	B					
				2.10			End of pit at 2.10 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPI33**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 456991.00 - 525165.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.70	Date 07/02/2017 Scale 1:25
Client:	Homes and Communities Agency		Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Grass over slightly gravelly very sandy SILT with frequent rootlets. Gravel is fine to coarse of slag. TPS
				1.00			MADE GROUND: Whitish grey slightly sandy GRAVEL with frequent cobbles and occasional boulders. Gravel is fine to coarse subrounded to subangular of whitish slag (white mineral ingrow), rare clinker. Rare bricks, both broken and whole (red, refractory). Broken; gravel-cobble sized. MGR
	2.80	ES					MADE GROUND: Dark greyish brown SAND AND GRAVEL with frequent cobbles and occasional boulders. Gravel is fine to coarse subrounded to subangular of slag, rare clinker?. Cobbles and boulders of slag (whitish), less cobbly towards base. Rare refractory and red brick fragments (gravel-cobble sized). Solid slag at the bottom of the trial pit. MGR
	3.30 - 3.60	B					*TP Terminated at 3.7m due to groundwater*
▼				3.70			End of pit at 3.70 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No **TPI34**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457040.00 - 525151.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 3.80	4.5 × 2.5
Client:	Homes and Communities Agency		

Date 07/02/2017

Scale 1:25

Logged TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.05			TOPSOIL: Grass and dark brown silt. TPS
							MADE GROUND: Medium dense dark grey very gravelly SAND with low to medium cobble content and low boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker, brick fragments and concrete. Boulders are slag. Ref content 5-10%. MGR
							Dense compacted slag
							Up to 20% refractory brick, fragments and intact.
▼				3.80			End of pit at 3.80 m

1 2 3 4 5

Remarks:

Stability:

AGS

Trial Pit Log

Trialpit No: **TPI35**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457093.00 - 525126.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 2.40	4.6 × 2.6
Client:	Homes and Communities Agency		

Date: 07/02/2017

Scale: 1:25

Logged: LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Grass over dark brown slightly gravelly sandy silt with frequent rootlets. Gravel is fine to coarse of slag. TPS
				1.00			MADE GROUND: Dark grey very gravelly SAND with occasional cobbles and rare boulders. Sand is fine to coarse. Gravel is fine to coarse subrounded to subangular of slag, clinker. Cobbles and boulders of slag. Rare bricks mostly broken red and refractory. MGR
	1.40 - 1.60 1.50	B ES					MADE GROUND: whitish grey slightly sandy gravel with occasional cobbles. Gravel is fine to coarse subrounded to subangular of slag (white mineral ingrow). MGR
				1.90			MADE GROUND: Greyish yellow slightly gravelly SAND. Gravel is fine to coarse subrounded to subangular of slag. Rare gravel-cobble sized broken brick fragments (red and refractory). MGR
				2.40			*TP Terminated at 2.4m due to suspected services.* End of pit at 2.40 m

Remarks:

Stability:

Trial Pit Log

Trialpit No: **TPI36**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457144.00 - 525106.00 Level:
Location:	SSI Redcar	Dimensions (m): Depth 4.20	4.6 × 2.6
Client:	Homes and Communities Agency		

Date: 07/02/2017

Scale: 1:25

Logged: TL

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND: Grass over medium dense dark grey gravelly SAND with low to medium cobble and low boulder content. Gravel is fine to coarse, angular to subangular of slag, clinker, brick and burnt lime. Cobbles are slag, clinker and brick. Abundant white straining on slag pieces. MGR
							Strong sulfur odour noted
							Railways sleeper in east wall
	1.50	ES					
	2.00 - 2.40	LB					
				2.40			MADE GROUND: Loose greyish yellow slightly gravelly SAND with occasional shells. Gravel is rounded, fine to coarse of mixed lithologies. Occasional horizontal dark grey bands ~50mm thick. Occasional interbeds of light grey sandy gravel dipping west. (POSSIBLE NATURAL) MGR
	3.50	ES					
▼				4.20			End of pit at 4.20 m

1 2 3 4 5

Remarks:

Stability:

Trial Pit Log

Trialpit No **TPI37**

Sheet 1 of 1

Project Name:	Redcar DVA Initial Ground Investigation	Project No. 678079	Co-ords: 457186.00 - 525092.00 Level:
Location:	SSI Redcar	Dimensions (m): 4.6 × 2.7	Scale 1:25
Client:	Homes and Communities Agency	Depth 4.20	Logged LK

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Grass over dark brown slightly gravelly silty sand with frequent rootlets and rare cobbles. Gravel is fine to coarse subrounded to subangular of slag. TPS
	1.00	ES		1.20			MADE GROUND: Greyish brown gravelly SAND with occasional cobbles and boulders. Gravel is fine to coarse subrounded to subangular of slag, possibly some clinker. Occasional bricks, mostly broken gravel - cobble size (70% red, 30% refractory) total <5%. Rare gravel size pieces of white weak material (looks like shale). Patches of orangish red material. Patches of light yellow sand, yellow sand, black gravelly sand around the pipes. 2 cast iron pipes @0.6m (possibly waste). Rare roof tiles/slate. Red brick wall with a coating on the right side looking at excavator, from around 0.8m to the bottom of the trial pit, dipping slightly away from excavator. MGR
				2.20			MADE GROUND: Whitish grey slightly sandy GRAVEL with frequent cobbles and rare boulders. Gravel is fine to coarse subrounded to subangular of whitish slag, slag. Cobbles and boulders of whitish slag, slag. Reddish on the left side looking at the excavator, more sandy. MGR
				2.90			MADE GROUND: Layer of abundant silica, red and refractory bricks on the left hand side looking at excavator 50/50 broken/whole MGR
▼				4.20			MADE GROUND: Greyish yellow slightly gravelly SAND. Sand is fine to coarse subangular to subrounded of slag. Occasional gravel size brick fragments (red and possibly refractory. Rare glass fragments, occasional small shell fragments. MGR *TP Terminated at 2.4m due to groundwater* End of pit at 4.20 m

Remarks:

Stability:

Chemical laboratory results

Certificate of Analysis

Certificate Number 16-86621-1

02-Feb-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 16-86621-1

Client Reference SLS1015

Order No CH-1332

Contract Title Redcar Site

Description 2 Soil samples, 1 Leachate sample.

Date Received Tuesday, December 13, 2016

Date Started Tuesday, December 13, 2016

Date Completed Thursday, February 2, 2017

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

Notes **This report supersedes 16-86621. Extra testing.**

Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 16-86621-1
Client Ref SLS1015
Contract Title Redcar Site

Sample ID	Other ID	Depth	Lab No	Completed	Matrix Description
TP29	3	1.50-1.70	1099050	02-Feb-17	Grey brown clayey, gravelly SAND
TP04	1	0.00-0.10	1099051	02-Feb-17	Brown clayey, gravelly GRAVEL (sample matrix outside MCERTS scope of accreditation)

Summary of Chemical Analysis
Soil Samples

Our Ref 16-86621-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1099050	1099051
			Sample ID	TP29	TP04
			Depth	1.50-1.70	0.00-0.10
			Other ID	3	1
			Sample Type	ES	ES
			Sampling Date	09-Dec-16	09-Dec-16
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Metals					
Antimony	DETSC 2301*	1	mg/kg	4.0	
Arsenic	DETSC 2301#	0.2	mg/kg	5.5	
Barium	DETSC 2301#	1.5	mg/kg	190	
Beryllium	DETSC 2301#	0.2	mg/kg	2.0	
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	8.2	
Cadmium	DETSC 2301#	0.1	mg/kg	1.3	
Chromium	DETSC 2301#	0.15	mg/kg	440	
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	
Copper	DETSC 2301#	0.2	mg/kg	23	
Lead	DETSC 2301#	0.3	mg/kg	16	
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	
Molybdenum	DETSC 2301#	0.4	mg/kg	2.7	
Nickel	DETSC 2301#	1	mg/kg	9.5	
Vanadium	DETSC 2301	0.8	mg/kg	910	
Zinc	DETSC 2301#	1	mg/kg	66	
Inorganics					
pH	DETSC 2008#			8.1	9.7
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.1	
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	< 0.2	
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6	
Organic matter	DETSC 2002#	0.1	%	0.5	
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1200	< 10
Sulphur as S, Total	DETSC 2320	0.01	%		< 0.01
Sulphate as SO4, Total	DETSC 2321#	0.01	%		0.55
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 16-86621-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1099050	1099051
			Sample ID	TP29	TP04
			Depth	1.50-1.70	0.00-0.10
			Other ID	3	1
			Sample Type	ES	ES
			Sampling Date	09-Dec-16	09-Dec-16
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	
PAHs					
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.05	
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.08	
Pyrene	DETSC 3303#	0.03	mg/kg	0.08	
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.03	
Chrysene	DETSC 3303	0.03	mg/kg	0.06	
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.05	
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.35	
PCBs					
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01	
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01	
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01	
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01	
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01	
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01	
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01	
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01	
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	

Summary of Chemical Analysis
Soil VOC Samples

Our Ref 16-86621-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1099050
Sample ID	TP29
Depth	1.50-1.70
Other ID	3
Sample Type	ES
Sampling Date	09-Dec-16
Sampling Time	n/s

Test	Method	LOD	Units	
VOCs				
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC Samples

Our Ref 16-86621-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1099050
Sample ID	TP29
Depth	1.50-1.70
Other ID	3
Sample Type	ES
Sampling Date	09-Dec-16
Sampling Time	n/s

Test	Method	LOD	Units	
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	0.02
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	0.02
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 16-86621-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1099052
Sample ID	TP29
Depth	1.50-1.70
Other ID	3
Sample Type	ES
Sampling Date	09-Dec-16
Sampling Time	n/s

Test	Method	LOD	Units	
Preparation				
Leachate 10:1	DETS 036*			Y
Metals				
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	< 0.16
Boron	DETSC 2123	100	ug/l	190
Boron, Dissolved	DETSC 2306*	12	ug/l	14
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	2.5
Copper, Dissolved	DETSC 2306	0.4	ug/l	< 0.4
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25
Zinc, Dissolved	DETSC 2306	1.3	ug/l	< 1.3
Inorganics				
pH	DETSC 2008			8.9

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 16-86621-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1099050	TP29 3 1.50-1.70	SOIL	NAD	none	Keith Wilson

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 16-86621-1
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1099050	TP29 1.50-1.70 SOIL	09/12/16	GJ 1L, GJ 250ml x2		
1099051	TP04 0.00-0.10 SOIL	09/12/16	GJ 1L, GJ 250ml x2		
1099052	TP29 1.50-1.70 LEACHATE	09/12/16	GJ 1L, GJ 250ml x2		

Key: G-Glass J-Jar

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

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Certificate of Analysis

Certificate Number 16-87182-1

02-Feb-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 16-87182-1

Client Reference SLS1015

Order No CH-1332

Contract Title Redcar Site

Description 5 Soil samples, 3 Leachate samples.

Date Received Monday, December 19, 2016

Date Started Monday, December 19, 2016

Date Completed Thursday, February 2, 2017

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

Notes **This report supersedes 16-87182. Extra testing.**
Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 16-87182-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1102232	1102233	1102234	1102235	1102236
			Sample ID	TP28	TP42	TP42	TP34	TP26
			Depth	0.50	0.40	3.90	0.30	0.80
			Other ID	2	1	5	1	1
			Sample Type	ES	ES	ES	ES	ES
			Sampling Date	12-Dec-16	12-Dec-16	12-Dec-16	13-Dec-16	13-Dec-16
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
Asbestos Quantification	DETSC 1102	0		N		Y		
Metals								
Antimony	DETSC 2301*	1	mg/kg	3.7		2.8		< 1.0
Arsenic	DETSC 2301#	0.2	mg/kg	19		21	10	10
Barium	DETSC 2301#	1.5	mg/kg	310		310		160
Beryllium	DETSC 2301#	0.2	mg/kg	5.6		2.6		6.6
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	6.0		3.7	4.3	5.1
Cadmium	DETSC 2301#	0.1	mg/kg	0.5		0.4	0.3	1.4
Chromium	DETSC 2301#	0.15	mg/kg	120		69	73	29
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0				
Copper	DETSC 2301#	0.2	mg/kg	52		84	42	15
Lead	DETSC 2301#	0.3	mg/kg	100		49	38	86
Mercury	DETSC 2325#	0.05	mg/kg	0.11		0.15	< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	1.6		5.6		0.7
Nickel	DETSC 2301#	1	mg/kg	17		42	11	6.7
Vanadium	DETSC 2301	0.8	mg/kg	360		150		92
Zinc	DETSC 2301#	1	mg/kg	160		150	130	1200
Inorganics								
pH	DETSC 2008#			11.1	10.9	8.7	10.6	10.6
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.1		0.2	< 0.1	0.2
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	< 0.2		0.2	< 0.2	0.2
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6		< 0.6	< 0.6	< 0.6
Organic matter	DETSC 2002#	0.1	%	0.7		2.3	1.0	< 0.1
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	750	560	1400	1000	1400
Sulphur as S, Total	DETSC 2320	0.01	%		0.33			
Sulphate as SO4, Total	DETSC 2321#	0.01	%		0.44			
Petroleum Hydrocarbons								
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5		< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	5.6		< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	18		6.4	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	62		50	22	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	86		57	23	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9		< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	1.4		5.0	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	5.4		16	< 0.6	< 0.6

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 16-87182-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1102232	1102233	1102234	1102235	1102236
			Sample ID	TP28	TP42	TP42	TP34	TP26
			Depth	0.50	0.40	3.90	0.30	0.80
			Other ID	2	1	5	1	1
			Sample Type	ES	ES	ES	ES	ES
			Sampling Date	12-Dec-16	12-Dec-16	12-Dec-16	13-Dec-16	13-Dec-16
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	22		56	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	29		78	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	120		130	23	< 10
PAHs								
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03		< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	0.05		< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03		0.05	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03		0.05	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.20		0.28	0.04	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	0.05		0.05	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.53		0.44	0.12	0.03
Pyrene	DETSC 3303#	0.03	mg/kg	0.65		0.41	0.10	< 0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.34		0.18	0.07	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	0.40		0.19	0.06	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.50		0.25	0.10	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.19		0.10	0.04	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.28		0.18	0.06	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.18		0.08	0.04	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	0.05		< 0.03	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.20		0.11	0.04	< 0.03
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.2		< 0.1	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	0.3		< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	3.6		2.4	0.67	< 0.10
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6		< 1.6	< 1.6	< 1.6
PCBs								
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01		< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01		< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01		< 0.01

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Summary of Chemical Analysis
Soil Samples

Our Ref 16-87182-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1102232	1102233	1102234	1102235	1102236
			Sample ID	TP28	TP42	TP42	TP34	TP26
			Depth	0.50	0.40	3.90	0.30	0.80
			Other ID	2	1	5	1	1
			Sample Type	ES	ES	ES	ES	ES
			Sampling Date	12-Dec-16	12-Dec-16	12-Dec-16	13-Dec-16	13-Dec-16
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01		< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01		< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01		< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01		< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01		< 0.01
Phenols								
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3		< 0.3	< 0.3	0.4

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 16-87182-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1102232	1102234	1102235
			Sample ID	TP28	TP42	TP34
			Depth	0.50	3.90	0.30
			Other ID	2	5	1
			Sample Type	ES	ES	ES
			Sampling Date	12-Dec-16	12-Dec-16	13-Dec-16
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
VOCs						
Vinyl Chloride	DETSC 3431	0.01	mg/kg		< 0.01	
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg		< 0.01	
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg		< 0.01	
1,1-dichloroethane	DETSC 3431	0.01	mg/kg		< 0.01	
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg		< 0.01	
2,2-dichloropropane	DETSC 3431	0.01	mg/kg		< 0.01	
Bromochloromethane	DETSC 3431	0.01	mg/kg		< 0.01	
Chloroform	DETSC 3431	0.01	mg/kg		< 0.01	
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg		< 0.01	
1,1-dichloropropene	DETSC 3431	0.01	mg/kg		< 0.01	
Carbon tetrachloride	DETSC 3431	0.01	mg/kg		< 0.01	
Benzene	DETSC 3431	0.01	mg/kg		< 0.01	
1,2-dichloroethane	DETSC 3431	0.01	mg/kg		< 0.01	
Trichloroethylene	DETSC 3431	0.01	mg/kg		< 0.01	
1,2-dichloropropane	DETSC 3431	0.01	mg/kg		< 0.01	
Dibromomethane	DETSC 3431	0.01	mg/kg		< 0.01	
Bromodichloromethane	DETSC 3431	0.01	mg/kg		< 0.01	
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg		< 0.01	
Toluene	DETSC 3431	0.01	mg/kg		0.04	
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg		< 0.01	
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg		< 0.01	
Tetrachloroethylene	DETSC 3431	0.01	mg/kg		< 0.01	
1,3-dichloropropane	DETSC 3431	0.01	mg/kg		< 0.01	
Dibromochloromethane	DETSC 3431	0.01	mg/kg		< 0.01	
1,2-dibromoethane	DETSC 3431	0.01	mg/kg		< 0.01	
Chlorobenzene	DETSC 3431	0.01	mg/kg		< 0.01	
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg		< 0.01	
Ethylbenzene	DETSC 3431	0.01	mg/kg		< 0.01	
m+p-Xylene	DETSC 3431	0.01	mg/kg		< 0.01	
o-Xylene	DETSC 3431	0.01	mg/kg		< 0.01	
Styrene	DETSC 3431*	0.01	mg/kg		< 0.01	
Bromoform	DETSC 3431	0.01	mg/kg		< 0.01	
Isopropylbenzene	DETSC 3431	0.01	mg/kg		< 0.01	
Bromobenzene	DETSC 3431	0.01	mg/kg		< 0.01	
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg		< 0.01	
n-propylbenzene	DETSC 3431	0.01	mg/kg		< 0.01	
2-chlorotoluene	DETSC 3431	0.01	mg/kg		< 0.01	
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg		< 0.01	
4-chlorotoluene	DETSC 3431	0.01	mg/kg		< 0.01	
Tert-butylbenzene	DETSC 3431	0.01	mg/kg		< 0.01	
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg		< 0.01	

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 16-87182-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1102232	1102234	1102235
			Sample ID	TP28	TP42	TP34
			Depth	0.50	3.90	0.30
			Other ID	2	5	1
			Sample Type	ES	ES	ES
			Sampling Date	12-Dec-16	12-Dec-16	13-Dec-16
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
sec-butylbenzene	DETSC 3431	0.01	mg/kg		< 0.01	
p-isopropyltoluene	DETSC 3431	0.01	mg/kg		< 0.01	
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg		< 0.01	
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg		< 0.01	
n-butylbenzene	DETSC 3431	0.01	mg/kg		< 0.01	
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg		< 0.01	
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg		< 0.01	
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg		< 0.01	
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg		< 0.01	
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg		< 0.01	
MTBE	DETSC 3431*	0.01	mg/kg		< 0.01	
SVOCs						
Phenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 16-87182-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1102232	1102234	1102235
			Sample ID	TP28	TP42	TP34
			Depth	0.50	3.90	0.30
			Other ID	2	5	1
			Sample Type	ES	ES	ES
			Sampling Date	12-Dec-16	12-Dec-16	13-Dec-16
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 16-87182-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1102237	1102238	1102239
			Sample ID	TP28	TP42	TP26
			Depth	0.50	3.90	0.80
			Other ID	2	5	1
			Sample Type	ES	ES	ES
			Sampling Date	12-Dec-16	12-Dec-16	13-Dec-16
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Preparation						
Leachate 10:1	DETS 036*			Y	Y	Y
Metals						
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	1.3	3.1	0.66
Barium, Dissolved	DETSC 2306	0.26	ug/l	40	75	120
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1	< 0.1
Boron, Dissolved	DETSC 2306*	12	ug/l	18	12	26
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	0.26	< 0.25	< 0.25
Copper, Dissolved	DETSC 2306	0.4	ug/l	< 0.4	0.6	< 0.4
Iron, Dissolved	DETSC 2306	5.5	ug/l	< 5.5	14	< 5.5
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	< 0.09	< 0.09
Manganese, Dissolved	DETSC 2306	0.22	ug/l	0.49	2.5	6.4
Mercury, Dissolved	DETSC 2306	0.01	ug/l	0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.51	0.60	0.92
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	5.1	15	1.4
Zinc, Dissolved	DETSC 2306	1.3	ug/l	< 1.3	< 1.3	2.9
Inorganics						
pH	DETSC 2008			8.3	8.6	6.9
Cyanide, Total	DETSC 2130	40	ug/l	< 40	< 40	< 40
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	0.19	0.13	
PAHs						
Naphthalene	DETSC 3304	0.01	ug/l	< 0.01	0.05	< 0.01
Acenaphthylene	DETSC 3304	0.01	ug/l	< 0.01	0.01	< 0.01
Acenaphthene	DETSC 3304	0.01	ug/l	< 0.01	0.05	< 0.01
Fluorene	DETSC 3304	0.01	ug/l	< 0.01	0.03	< 0.01
Phenanthrene	DETSC 3304	0.01	ug/l	< 0.01	0.05	< 0.01
Anthracene	DETSC 3304	0.01	ug/l	< 0.01	0.01	< 0.01
Fluoranthene	DETSC 3304	0.01	ug/l	0.03	0.07	< 0.01
Pyrene	DETSC 3304	0.01	ug/l	0.04	0.07	0.01
Benzo(a)anthracene	DETSC 3304	0.01	ug/l	0.02	0.03	0.01
Chrysene	DETSC 3304	0.01	ug/l	0.02	0.03	0.01
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	0.03	0.05	0.01
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	0.02	0.03	0.01
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	0.02	0.03	< 0.01
Indeno(1,2,3-c,d)pyrene	DETSC 3304*	0.01	ug/l	0.04	0.04	0.02
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	0.02	0.02	0.02
Benzo(g,h,i)perylene	DETSC 3304*	0.01	ug/l	0.04	0.05	0.02
PAH Total	DETSC 3304	0.04	ug/l	0.26	0.62	0.12
Phenols						
Phenol	*	0.5	ug/l	< 0.50	< 0.50	< 0.50

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 16-87182-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1102232	TP28 2 0.50	SOIL	NAD	none	Michael Kay
1102234	TP42 5 3.90	SOIL	Crocidolite	Small bundle of Crocidolite	Michael Kay
1102235	TP34 1 0.30	SOIL	NAD	none	Michael Kay
1102236	TP26 1 0.80	SOIL	NAD	none	Michael Kay

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.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 16-87182-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1102234
Sample ID	TP42
Depth	3.90
Other ID	5
Sample Type	SOIL
Sampling Date	12-Dec-16
Sampling Time	

Test	Method	Units	
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**< 0.001**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	<0.001
Quantification by PCOM (c)	DETSC 1102	Mass %	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na
Breakdown of Gravimetric Analysis (a)			
Mass of Sample		g	38.63
ACMs present*		type	
Mass of ACM in sample		g	
% ACM by mass		%	
% asbestos in ACM		%	
% asbestos in sample		%	
Breakdown of Detailed Gravimetric Analysis (b)			
% Amphibole bundles in sample		Mass %	na
% Chrysotile bundles in sample		Mass %	<0.001
Breakdown of PCOM Analysis (c)			
% Amphibole fibres in sample		Mass %	na
% Chrysotile fibres in sample		Mass %	na
Breakdown of Potentially Respirable Fibre Analysis (d)			
Amphibole fibres		Fibres/g	na
Chrysotile fibres		Fibres/g	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Information in Support of the Analytical Results

Our Ref 16-87182-1
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1102232	TP28 0.50 SOIL	12/12/16	GJ 1L, GJ 250ml, GJ 60ml		
1102233	TP42 0.40 SOIL	12/12/16	GJ 1L, GJ 250ml, GJ 60ml		
1102234	TP42 3.90 SOIL	12/12/16	GJ 1L, GJ 250ml, GJ 60ml		
1102235	TP34 0.30 SOIL	13/12/16	GJ 250ml, GJ 60ml, PT 1L		
1102236	TP26 0.80 SOIL	13/12/16	GJ 250ml, GJ 60ml, PT 1L		
1102237	TP28 0.50 LEACHATE	12/12/16	GJ 1L, GJ 250ml, GJ 60ml		
1102238	TP42 3.90 LEACHATE	12/12/16	GJ 1L, GJ 250ml, GJ 60ml		
1102239	TP26 0.80 LEACHATE	13/12/16	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass J-Jar P-Plastic 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

Certificate of Analysis

Certificate Number 16-87341-1

02-Feb-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 16-87341-1

Client Reference SLS1015

Order No (not supplied)

Contract Title Redcar Site

Description 9 Soil samples, 6 Leachate samples.

Date Received Tuesday, December 20, 2016

Date Started Tuesday, December 20, 2016

Date Completed Thursday, February 2, 2017

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

Notes **This report supersedes 16-87341. Extra testing.**
Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 16-87341-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1103209	1103210	1103211	1103212	1103213	1103214	1103215
			Sample ID	TP25	TP40	TP39	TP39	TP31	TP22	TP22
			Depth	0.30	2.60	0.30	2.00	0.60	0.30	2.30
			Other ID	1	2	2	3	1	1	3
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	14-Dec-16	14-Dec-16	14-Dec-16	14-Dec-16	15-Dec-16	15-Dec-16	15-Dec-16
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Asbestos Quantification	DETSC 1102	0		N					N	Y
Metals										
Antimony	DETSC 2301*	1	mg/kg	< 1.0				7.5		
Arsenic	DETSC 2301#	0.2	mg/kg	9.1	7.0	11	0.3	17	11	6.6
Barium	DETSC 2301#	1.5	mg/kg	300				260		
Beryllium	DETSC 2301#	0.2	mg/kg	7.2				2.0		
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	2.8	5.1	6.3	5.0	6.7	4.2	4.4
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1	< 0.1	0.4	< 0.1	1.7	0.3	< 0.1
Chromium	DETSC 2301#	0.15	mg/kg	37	29	610	1.1	640	41	25
Chromium, Hexavalent	DETSC 2204*	1	mg/kg			< 1.0		< 1.0		
Copper	DETSC 2301#	0.2	mg/kg	11	8.2	56	0.5	58	17	7.1
Lead	DETSC 2301#	0.3	mg/kg	7.8	7.1	72	< 0.3	49	24	6.4
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	0.6				5.4		
Nickel	DETSC 2301#	1	mg/kg	6.2	5.4	13	< 1.0	26	5.2	2.7
Vanadium	DETSC 2301	0.8	mg/kg	130				130		
Zinc	DETSC 2301#	1	mg/kg	37	32	210	1.6	170	67	18
Inorganics										
pH	DETSC 2008#			10.7	10.8	10.9	10.8	8.3	10.9	11.8
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	0.2	< 0.1	0.4	< 0.1	0.2	12
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	0.2
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	11
Thiocyanate	DETSC 2130#	0.6	mg/kg	0.6	1.3	< 0.6		< 0.6	< 0.6	0.7
Organic matter	DETSC 2002#	0.1	%	0.8	0.7	0.3	0.5	0.5	0.8	1.1
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1400	1400	1400	1300	1400	1400	990
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	3.8	2.0	1.8	1.9	1.8
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	3.0	2.3	< 1.2	< 1.2	2.6
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	2.7	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	4.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 16-87341-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1103209	1103210	1103211	1103212	1103213	1103214	1103215
			Sample ID	TP25	TP40	TP39	TP39	TP31	TP22	TP22
			Depth	0.30	2.60	0.30	2.00	0.60	0.30	2.30
			Other ID	1	2	2	3	1	1	3
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	14-Dec-16	14-Dec-16	14-Dec-16	14-Dec-16	15-Dec-16	15-Dec-16	15-Dec-16
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	10
PAHs										
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	< 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	0.09	< 0.03	0.05	< 0.03	0.13	< 0.03	0.20
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	0.15	0.06	0.10	< 0.03	0.21	0.04	0.32
Pyrene	DETSC 3303#	0.03	mg/kg	0.12	0.07	0.08	< 0.03	0.23	0.04	0.36
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.07	0.03	0.04	< 0.03	0.10	< 0.03	0.14
Chrysene	DETSC 3303	0.03	mg/kg	0.15	0.06	0.09	< 0.03	0.24	0.03	0.22
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.10	< 0.03	0.07	< 0.03	0.14	< 0.03	0.15
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.03	< 0.03	0.03	< 0.03	0.04	< 0.03	0.05
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	0.03	< 0.03	0.06
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.06
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	0.06
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.71	0.21	0.46	< 0.10	1.1	0.12	1.6
PCBs										
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg					< 0.01		
PCB 52	DETSC 3401#	0.01	mg/kg					< 0.01		
PCB 101	DETSC 3401#	0.01	mg/kg					< 0.01		
PCB 118	DETSC 3401#	0.01	mg/kg					< 0.01		
PCB 153	DETSC 3401#	0.01	mg/kg					< 0.01		
PCB 138	DETSC 3401#	0.01	mg/kg					< 0.01		
PCB 180	DETSC 3401#	0.01	mg/kg					< 0.01		
PCB 7 Total	DETSC 3401#	0.01	mg/kg					< 0.01		
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 16-87341-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1103216	1103217
			Sample ID	TP37	TP37
			Depth	0.40	2.10
			Other ID	1	2
			Sample Type	ES	ES
			Sampling Date	16-Dec-16	16-Dec-16
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Asbestos Quantification	DETSC 1102	0			N
Metals					
Antimony	DETSC 2301*	1	mg/kg		< 1.0
Arsenic	DETSC 2301#	0.2	mg/kg		8.5
Barium	DETSC 2301#	1.5	mg/kg		310
Beryllium	DETSC 2301#	0.2	mg/kg		7.0
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg		1.9
Cadmium	DETSC 2301#	0.1	mg/kg		0.2
Chromium	DETSC 2301#	0.15	mg/kg		39
Chromium, Hexavalent	DETSC 2204*	1	mg/kg		
Copper	DETSC 2301#	0.2	mg/kg		20
Lead	DETSC 2301#	0.3	mg/kg		18
Mercury	DETSC 2325#	0.05	mg/kg		< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg		0.7
Nickel	DETSC 2301#	1	mg/kg		6.3
Vanadium	DETSC 2301	0.8	mg/kg		130
Zinc	DETSC 2301#	1	mg/kg		58
Inorganics					
pH	DETSC 2008#				10.7
Cyanide, Total	DETSC 2130#	0.1	mg/kg		1.6
Cyanide, Free	DETSC 2130#	0.1	mg/kg		< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg		1.6
Thiocyanate	DETSC 2130#	0.6	mg/kg		< 0.6
Organic matter	DETSC 2002#	0.1	%		0.8
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l		1100
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg		< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg		< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg		< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg		1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg		7.0
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg		31
Aliphatic C5-C35	DETSC 3072*	10	mg/kg		39
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg		< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg		< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg		< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg		< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg		4.3
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg		14
Aromatic C5-C35	DETSC 3072*	10	mg/kg		18

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 16-87341-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1103216	1103217
			Sample ID	TP37	TP37
			Depth	0.40	2.10
			Other ID	1	2
			Sample Type	ES	ES
			Sampling Date	16-Dec-16	16-Dec-16
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg		57
PAHs					
Naphthalene	DETSC 3303#	0.03	mg/kg	0.54	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.38	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	0.25	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	2.0	0.39
Anthracene	DETSC 3303	0.03	mg/kg	0.35	0.06
Fluoranthene	DETSC 3303#	0.03	mg/kg	1.8	0.49
Pyrene	DETSC 3303#	0.03	mg/kg	1.7	0.47
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.42	0.16
Chrysene	DETSC 3303	0.03	mg/kg	0.56	0.23
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.45	0.18
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.16	0.07
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.30	0.09
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.16	0.07
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	0.18	0.07
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	9.3	2.3
PCBs					
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg		< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg		< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg		< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg		< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg		< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg		< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg		< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg		< 0.01
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg		< 0.3

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 16-87341-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1103209	1103211	1103213	1103214	1103217
			Sample ID	TP25	TP39	TP31	TP22	TP37
			Depth	0.30	0.30	0.60	0.30	2.10
			Other ID	1	2	1	1	2
			Sample Type	ES	ES	ES	ES	ES
			Sampling Date	14-Dec-16	14-Dec-16	15-Dec-16	15-Dec-16	16-Dec-16
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
VOCs								
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	0.01		< 0.01		< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01		< 0.01		< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 16-87341-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1103209	1103211	1103213	1103214	1103217
			Sample ID	TP25	TP39	TP31	TP22	TP37
			Depth	0.30	0.30	0.60	0.30	2.10
			Other ID	1	2	1	1	2
			Sample Type	ES	ES	ES	ES	ES
			Sampling Date	14-Dec-16	14-Dec-16	15-Dec-16	15-Dec-16	16-Dec-16
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	0.01		< 0.01		< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01		< 0.01		< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	0.03		< 0.01		< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	0.04		< 0.01		< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	0.03		< 0.01		< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01		< 0.01		< 0.01
SVOCs								
Phenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 16-87341-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1103209	1103211	1103213	1103214	1103217
			Sample ID	TP25	TP39	TP31	TP22	TP37
			Depth	0.30	0.30	0.60	0.30	2.10
			Other ID	1	2	1	1	2
			Sample Type	ES	ES	ES	ES	ES
			Sampling Date	14-Dec-16	14-Dec-16	15-Dec-16	15-Dec-16	16-Dec-16
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 16-87341-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1103218	1103219	1103220	1103221	1103222	1103223
			Sample ID	TP25	TP39	TP39	TP31	TP22	TP37
			Depth	0.30	0.30	2.00	0.60	2.30	2.10
			Other ID	1	2	3	1	3	2
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	14-Dec-16	14-Dec-16	14-Dec-16	15-Dec-16	15-Dec-16	16-Dec-16
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Preparation									
Leachate 10:1	DETS 036*			Y	Y	Y	Y	Y	Y
Metals									
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.81	0.59	0.81	0.25	0.68	4.9
Barium, Dissolved	DETSC 2306	0.26	ug/l	74	100	61	48	31	59
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron, Dissolved	DETSC 2306*	12	ug/l	63	14	30	< 12	14	25
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25	< 0.25	< 0.25	5.0	7.3	< 0.25
Copper, Dissolved	DETSC 2306	0.4	ug/l	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Iron, Dissolved	DETSC 2306	5.5	ug/l	11	< 5.5	5.8	7.7	< 5.5	6.7
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
Manganese, Dissolved	DETSC 2306	0.22	ug/l	1.0	0.61	1.5	0.27	3.4	2.5
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	0.7	0.6	< 0.5	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	2.0	0.59	0.61	< 0.25	0.30	0.27
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	8.3	3.7	3.8	2.8	11	8.2
Zinc, Dissolved	DETSC 2306	1.3	ug/l	3.0	4.4	9.2	< 1.3	2.7	4.6
Inorganics									
pH	DETSC 2008			8.2	8.5	9.9	9.1	10.8	10.7
Cyanide, Total	DETSC 2130	40	ug/l	< 40	< 40	< 40	< 40	< 40	< 40
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	0.039	0.026	0.060	0.11	0.029	0.056
Chloride	DETSC 2055	0.1	mg/l	0.51	0.46	0.71	0.54	1.1	1.6
PAHs									
Naphthalene	DETSC 3304	0.01	ug/l	0.03	0.03	0.04	0.03	0.05	0.06
Acenaphthylene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01
Acenaphthene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	0.02	0.14	0.12	0.05
Fluorene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	0.09	0.04	0.02
Phenanthrene	DETSC 3304	0.01	ug/l	0.05	0.02	0.02	0.19	0.72	0.23
Anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	0.06	0.09	0.04
Fluoranthene	DETSC 3304	0.01	ug/l	0.07	0.02	0.02	0.14	0.55	0.38
Pyrene	DETSC 3304	0.01	ug/l	0.06	0.03	0.03	0.11	0.44	0.37
Benzo(a)anthracene	DETSC 3304	0.01	ug/l	0.03	< 0.01	0.01	0.03	0.13	0.18
Chrysene	DETSC 3304	0.01	ug/l	0.06	0.02	0.01	0.05	0.16	0.27
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	0.06	0.02	0.01	0.05	0.18	0.31
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	0.02	0.01	< 0.01	0.02	0.06	0.12
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	0.01	< 0.01	< 0.01	0.02	0.08	0.18
Indeno(1,2,3-c,d)pyrene	DETSC 3304*	0.01	ug/l	0.02	< 0.01	< 0.01	0.03	0.10	0.18
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	0.02	0.04
Benzo(g,h,i)perylene	DETSC 3304*	0.01	ug/l	0.04	0.01	0.01	0.05	0.13	0.23
PAH Total	DETSC 3304	0.04	ug/l	0.44	0.15	0.18	1.0	2.9	2.7

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 16-87341-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1103218	1103219	1103220	1103221	1103222	1103223
			Sample ID	TP25	TP39	TP39	TP31	TP22	TP37
			Depth	0.30	0.30	2.00	0.60	2.30	2.10
			Other ID	1	2	3	1	3	2
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	14-Dec-16	14-Dec-16	14-Dec-16	15-Dec-16	15-Dec-16	16-Dec-16
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Phenols									
Phenol	*	0.5	ug/l	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 16-87341-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1103209	TP25 1 0.30	SOIL	NAD	none	Michael Kay
1103210	TP40 2 2.60	SOIL	NAD	none	Michael Kay
1103211	TP39 2 0.30	SOIL	NAD	none	Michael Kay
1103212	TP39 3 2.00	SOIL	NAD	none	Michael Kay
1103213	TP31 1 0.60	SOIL	NAD	none	Michael Kay
1103214	TP22 1 0.30	SOIL	NAD	none	Michael Kay
1103215	TP22 3 2.30	SOIL	Amosite	Small bundle of Amosite	Michael Kay
1103217	TP37 2 2.10	SOIL	NAD	none	Michael Kay

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.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 16-87341-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1103215
Sample ID	TP22
Depth	2.30
Other ID	3
Sample Type	SOIL
Sampling Date	15-Dec-16
Sampling Time	

Test	Method	Units	
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**< 0.001**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	<0.001
Quantification by PCOM (c)	DETSC 1102	Mass %	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na
Breakdown of Gravimetric Analysis (a)			
Mass of Sample		g	1087.06
ACMs present*		type	
Mass of ACM in sample		g	
% ACM by mass		%	
% asbestos in ACM		%	
% asbestos in sample		%	
Breakdown of Detailed Gravimetric Analysis (b)			
% Amphibole bundles in sample		Mass %	<0.001
% Chrysotile bundles in sample		Mass %	na
Breakdown of PCOM Analysis (c)			
% Amphibole fibres in sample		Mass %	na
% Chrysotile fibres in sample		Mass %	na
Breakdown of Potentially Respirable Fibre Analysis (d)			
Amphibole fibres		Fibres/g	na
Chrysotile fibres		Fibres/g	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Information in Support of the Analytical Results

Our Ref 16-87341-1
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1103209	TP25 0.30 SOIL	14/12/16	GJ 250ml x2, GV, PT 1L		
1103210	TP40 2.60 SOIL	14/12/16	GJ 250ml x2, GV, PT 1L		
1103211	TP39 0.30 SOIL	14/12/16	GJ 250ml x2, GV, PT 1L		
1103212	TP39 2.00 SOIL	14/12/16	GJ 250ml x2, GV, PT 1L		
1103213	TP31 0.60 SOIL	15/12/16	GJ 250ml x2, GV, PT 1L		
1103214	TP22 0.30 SOIL	15/12/16	GJ 250ml x2, GV, PT 1L		
1103215	TP22 2.30 SOIL	15/12/16	GJ 250ml x2, GV, PT 1L		
1103216	TP37 0.40 SOIL	16/12/16	GJ 250ml x2, GV, PT 1L		
1103217	TP37 2.10 SOIL	16/12/16	GJ 250ml x2, GV, PT 1L		
1103218	TP25 0.30 LEACHATE	14/12/16	GJ 250ml x2, GV, PT 1L		
1103219	TP39 0.30 LEACHATE	14/12/16	GJ 250ml x2, GV, PT 1L		
1103220	TP39 2.00 LEACHATE	14/12/16	GJ 250ml x2, GV, PT 1L		
1103221	TP31 0.60 LEACHATE	15/12/16	GJ 250ml x2, GV, PT 1L		
1103222	TP22 2.30 LEACHATE	15/12/16	GJ 250ml x2, GV, PT 1L		
1103223	TP37 2.10 LEACHATE	16/12/16	GJ 250ml x2, GV, PT 1L		

Key: G-Glass P-Plastic J-Jar V-Vial 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

Certificate of Analysis

Certificate Number 17-88864-2

28-Feb-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-88864-2

Client Reference SLS1015

Order No CH-1332

Contract Title Redcar Site

Description 12 Soil samples, 11 Leachate samples.

Date Received 17-Jan-17

Date Started 17-Jan-17

Date Completed 28-Feb-17

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

Notes **This report supersedes 17-88864-1. Testing amended.**
Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

mCERTS
THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 17-88864-2
Client Ref SLS1015
Contract Title Redcar Site

Sample ID	Other ID	Depth	Lab No	Completed	Matrix Description
TP20	2	1.3	1111041	06/02/2017	Dark brown gravelly, sandy CLAY
TP15	1	0.45	1111042	06/02/2017	Brown gravelly, sandy CLAY
TP14	1	0.8	1111043	06/02/2017	Brown gravelly, sandy CLAY
TP14	4	2.3	1111044	06/02/2017	Brown sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TP09	2	3.1	1111045	06/02/2017	Brown white gravelly, sandy CLAY
TP17	1	2.1	1111046	06/02/2017	Brown gravelly, sandy CLAY
TP12	1	1.8	1111047	06/02/2017	Brown gravelly, sandy CLAY
TP01	1	0.6	1111048	06/02/2017	Brown gravelly, sandy CLAY
TP06	1	0.7	1111049	06/02/2017	Brown gravelly, sandy CLAY
TP06	3	2	1111050	06/02/2017	Brown gravelly, sandy CLAY
TP06	4	3.7	1111051	06/02/2017	Brown gravelly, sandy CLAY
TP04A	1	1.1	1111052	06/02/2017	Brown gravelly, sandy CLAY

Summary of Chemical Analysis
Soil Samples

Our Ref 17-88864-2
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1111041	1111042	1111043	1111044	1111045	1111046
			Sample ID	TP20	TP15	TP14	TP14	TP09	TP17
			Depth	1.30	0.45	0.80	2.30	3.10	2.10
			Other ID	2	1	1	4	2	1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	09/01/17	10/01/17	10/01/17	10/01/17	10/01/17	11/01/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Asbestos Quantification	DETSC 1102	0			N	N		N	
Metals									
Antimony	DETSC 2301*	1	mg/kg			3.0	< 1.0		
Arsenic	DETSC 2301#	0.2	mg/kg	16	36	150	47	11	6.7
Barium	DETSC 2301#	1.5	mg/kg			340	440		
Beryllium	DETSC 2301#	0.2	mg/kg			3.9	7.4		
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	3.9	4.7	3.6	2.5	3.5	2.5
Cadmium	DETSC 2301#	0.1	mg/kg	1.7	0.6	0.9	0.5	0.9	0.4
Chromium	DETSC 2301#	0.15	mg/kg	210	110	160	44	25	500
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0			< 1.0
Copper	DETSC 2301#	0.2	mg/kg	68	28	27	15	16	23
Lead	DETSC 2301#	0.3	mg/kg	190	75	130	43	30	32
Mercury	DETSC 2325#	0.05	mg/kg	0.15	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg			6.9	2.0		
Nickel	DETSC 2301#	1	mg/kg	19	10	33	9.1	10	8.6
Vanadium	DETSC 2301	0.8	mg/kg			530	150		
Zinc	DETSC 2301#	1	mg/kg	380	230	410	210	110	95
Inorganics									
pH	DETSC 2008#			11.3	10.8	10.6	10.8	12.6	12.5
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.4	< 0.1	< 0.1	0.7	3.3	1.3
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.1	0.5	< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	0.4	< 0.2	< 0.2	0.6	2.9	1.2
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Organic matter	DETSC 2002#	0.1	%	0.6	1.0	0.5	0.7	0.6	0.4
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	260	550	1500	1400	88	1000
Sulphur as S, Total	DETSC 2320	0.01	%						
Sulphate as SO4, Total	DETSC 2321#	0.01	%						
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	13	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	45	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	59	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	1.2	< 0.5	< 0.5	1.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	14	< 0.6	< 0.6	7.4	< 0.6	< 0.6

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-88864-2
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1111041	1111042	1111043	1111044	1111045	1111046
			Sample ID	TP20	TP15	TP14	TP14	TP09	TP17
			Depth	1.30	0.45	0.80	2.30	3.10	2.10
			Other ID	2	1	1	4	2	1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	09/01/17	10/01/17	10/01/17	10/01/17	10/01/17	11/01/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	53	< 1.4	< 1.4	4.6	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	68	< 10	< 10	14	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	130	< 10	< 10	14	< 10	< 10
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	0.05	< 0.03	< 0.03	0.10	< 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	0.15	< 0.03	< 0.03	0.14	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	0.12	< 0.03	< 0.03	0.10	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	1.2	0.08	0.30	0.56	0.26	0.34
Anthracene	DETSC 3303	0.03	mg/kg	0.26	< 0.03	< 0.03	0.10	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	2.0	0.20	0.70	0.47	0.41	0.60
Pyrene	DETSC 3303#	0.03	mg/kg	1.8	0.21	0.64	0.37	0.37	0.61
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.81	0.12	0.43	0.10	0.22	0.33
Chrysene	DETSC 3303	0.03	mg/kg	0.73	0.12	0.54	0.11	0.33	0.48
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.90	0.13	0.63	0.07	0.29	0.42
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.37	0.06	0.25	< 0.03	0.09	0.16
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.55	0.07	0.29	0.05	0.10	0.17
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.34	0.06	0.19	< 0.03	0.10	0.13
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	0.09	< 0.03	0.07	< 0.03	< 0.03	0.06
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.34	0.04	0.19	< 0.03	0.08	0.12
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	9.8	1.1	4.2	2.2	2.3	3.4
PCBs									
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01					
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01					
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01					
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01					
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01					
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01					
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01					
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01					
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-88864-2
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1111047	1111048	1111049	1111050	1111051	1111052
			Sample ID	TP12	TP01	TP06	TP06	TP06	TP04A
			Depth	1.80	0.60	0.70	2.00	3.70	1.10
			Other ID	1	1	1	3	4	1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	11/01/17	11/01/17	12/01/17	12/01/17	12/01/17	12/01/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Asbestos Quantification	DETSC 1102	0		N	N		N	Y	
Metals									
Antimony	DETSC 2301*	1	mg/kg	< 1.0	3.6	13			2.3
Arsenic	DETSC 2301#	0.2	mg/kg	14	210	4.1	14	51	280
Barium	DETSC 2301#	1.5	mg/kg	200	200	120			160
Beryllium	DETSC 2301#	0.2	mg/kg	6.9	3.2	0.7			4.6
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	1.4	2.9	1.9	3.5	2.4	3.4
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	7.9	0.2	0.6	1.2	3.4
Chromium	DETSC 2301#	0.15	mg/kg	57	160	1200	460	380	52
Chromium, Hexavalent	DETSC 2204*	1	mg/kg		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	11	39	42	62	49	27
Lead	DETSC 2301#	0.3	mg/kg	21	390	29	53	75	280
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	1.2	8.5	5.9			10
Nickel	DETSC 2301#	1	mg/kg	6.9	79	12	22	22	48
Vanadium	DETSC 2301	0.8	mg/kg	150	500	470			170
Zinc	DETSC 2301#	1	mg/kg	120	7200	70	400	560	1700
Inorganics									
pH	DETSC 2008#			12.4	10.2	12.4	11.5	11.8	10.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.3	0.1	0.1	0.6	0.3	0.2
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	< 0.2	< 0.2	< 0.2	0.6	0.3	0.2
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6	< 0.6	1.7	< 0.6	< 0.6	< 0.6
Organic matter	DETSC 2002#	0.1	%	0.3	0.7	0.2	1.4	0.6	< 0.1
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1300	1500	750	540	870	1500
Sulphur as S, Total	DETSC 2320	0.01	%		1.7	0.21			
Sulphate as SO4, Total	DETSC 2321#	0.01	%		5.3	0.54			
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	6.1
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	4.1	24
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	30
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	1.1	1.2
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	0.7	< 0.6	< 0.6	6.4	11

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-88864-2
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1111047	1111048	1111049	1111050	1111051	1111052
			Sample ID	TP12	TP01	TP06	TP06	TP06	TP04A
			Depth	1.80	0.60	0.70	2.00	3.70	1.10
			Other ID	1	1	1	3	4	1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	11/01/17	11/01/17	12/01/17	12/01/17	12/01/17	12/01/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	18	30
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	26	42
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	30	73
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	0.28	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	0.53	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	0.12	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	1.5	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.04	< 0.03	0.37	0.06	4.1	0.29
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	0.04	< 0.03	4.7	0.06
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.07	0.04	0.68	0.10	4.0	0.71
Pyrene	DETSC 3303#	0.03	mg/kg	0.06	0.04	0.67	0.06	3.1	0.65
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.04	0.03	0.37	0.04	1.4	0.38
Chrysene	DETSC 3303	0.03	mg/kg	0.06	0.03	0.56	0.05	1.2	0.45
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.04	< 0.03	0.61	0.05	1.3	0.61
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.24	< 0.03	0.49	0.23
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.20	< 0.03	0.90	0.35
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.21	< 0.03	0.47	0.26
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.07	< 0.03	0.13	0.07
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.24	< 0.03	0.46	0.29
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.31	0.15	4.3	0.37	25	4.4
PCBs									
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01			
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01			
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01			
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01			
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01			
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01			
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01			
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01			
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-88864-2
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1111041	1111043	1111044	1111046	1111047	1111051	1111052
			Sample ID	TP20	TP14	TP14	TP17	TP12	TP06	TP04A
			Depth	1.30	0.80	2.30	2.10	1.80	3.70	1.10
			Other ID	2	1	4	1	1	4	1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	09/01/17	10/01/17	10/01/17	11/01/17	11/01/17	12/01/17	12/01/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
VOCs										
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	0.01	< 0.01		< 0.01	0.01	0.01	0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-88864-2
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1111041	1111043	1111044	1111046	1111047	1111051	1111052
			Sample ID	TP20	TP14	TP14	TP17	TP12	TP06	TP04A
			Depth	1.30	0.80	2.30	2.10	1.80	3.70	1.10
			Other ID	2	1	4	1	1	4	1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	09/01/17	10/01/17	10/01/17	11/01/17	11/01/17	12/01/17	12/01/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
SVOCs										
Phenol	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	0.2	
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	0.2	< 0.1	0.5	
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-88864-2
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1111041	1111043	1111044	1111046	1111047	1111051	1111052
			Sample ID	TP20	TP14	TP14	TP17	TP12	TP06	TP04A
			Depth	1.30	0.80	2.30	2.10	1.80	3.70	1.10
			Other ID	2	1	4	1	1	4	1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	09/01/17	10/01/17	10/01/17	11/01/17	11/01/17	12/01/17	12/01/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	0.6	

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-88864-2
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1111053	1111054	1111055	1111056	1111057	1111058	1111059
			Sample ID	TP20	TP15	TP14	TP14	TP17	TP12	TP01
			Depth	1.30	0.45	0.80	2.30	2.10	1.80	0.60
			Other ID	2	1	1	4	1	1	1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	09/01/17	10/01/17	10/01/17	10/01/17	11/01/17	11/01/17	11/01/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Preparation										
Leachate 10:1	DETS 036*			Y	Y	Y	Y	Y	Y	Y
Metals										
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	1.9	1.1	5.1	0.23	2.7	1.8	2.2
Barium, Dissolved	DETSC 2306	0.26	ug/l		7.5	13	7.3	18		
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l		< 0.1	< 0.1	< 0.1	< 0.1		
Boron	DETSC 2123	100	ug/l	110	< 100	< 100	< 100	< 100	< 100	< 100
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	0.56	< 0.03	< 0.03	0.05
Chromium, Dissolved	DETSC 2306	0.25	ug/l	1.2	< 0.25	< 0.25	0.41	< 0.25	< 0.25	< 0.25
Copper, Dissolved	DETSC 2306	0.4	ug/l	0.5	< 0.4	0.5	2.0	< 0.4	< 0.4	< 0.4
Iron, Dissolved	DETSC 2306	5.5	ug/l		< 5.5	5.9	< 5.5	< 5.5		
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	< 0.09	< 0.09	0.18	< 0.09	< 0.09	< 0.09
Manganese, Dissolved	DETSC 2306	0.22	ug/l		0.44	1.3	< 0.22	1.6		
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.26	< 0.25	< 0.25	5.3	1.1	0.29	< 0.25
Vanadium, Dissolved	DETSC 2306	0.6	ug/l		1.9	2.2	7.8	< 0.6		
Zinc, Dissolved	DETSC 2306	1.3	ug/l	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	1.6	7.2
Inorganics										
pH	DETSC 2008			9.7	8.4	7.7	11.9	8.1	7.6	7.0
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l		0.055	0.069	0.056	0.024		
Chloride	DETSC 2055	0.1	mg/l		1.9	1.2	1.7	1.7		

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-88864-2
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1111060	1111061	1111062	1117385
			Sample ID	TP06	TP06	TP04A	TP06
			Depth	2.00	3.70	1.10	0.70
			Other ID	3	4	1	1
			Sample Type	ES	ES	ES	ES
			Sampling Date	12/01/17	12/01/17	12/01/17	12/01/16
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Preparation							
Leachate 10:1	DETS 036*			Y	Y	Y	Y
Metals							
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.83	3.0	0.66	2.7
Barium, Dissolved	DETSC 2306	0.26	ug/l	32		10	45
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1		< 0.1	< 0.1
Boron	DETSC 2123	100	ug/l	< 100	< 100	< 100	< 100
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	0.08	< 0.03	0.14	0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25	< 0.25	16	0.25
Copper, Dissolved	DETSC 2306	0.4	ug/l	< 0.4	< 0.4	7.0	0.4
Iron, Dissolved	DETSC 2306	5.5	ug/l	< 5.5		10	34
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	< 0.09	0.26	< 0.09
Manganese, Dissolved	DETSC 2306	0.22	ug/l	12		< 0.22	1.7
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25	< 0.25	9.0	0.26
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	0.6		8.0	1.1
Zinc, Dissolved	DETSC 2306	1.3	ug/l	9.4	3.5	< 1.3	30
Inorganics							
pH	DETSC 2008			6.7	6.7	12.0	7.1
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	0.027		0.036	< 0.015
Chloride	DETSC 2055	0.1	mg/l	1.5		2.9	2.2

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-88864-2
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1111041	TP20 2 1.30	SOIL	NAD	none	Michael Kay
1111042	TP15 1 0.45	SOIL	NAD	none	Michael Kay
1111043	TP14 1 0.80	SOIL	NAD	none	Michael Kay
1111044	TP14 4 2.30	SOIL	NAD	none	Michael Kay
1111045	TP09 2 3.10	SOIL	NAD	none	Michael Kay
1111046	TP17 1 2.10	SOIL	NAD	none	Michael Kay
1111047	TP12 1 1.80	SOIL	NAD	none	Michael Kay
1111048	TP01 1 0.60	SOIL	NAD	none	Michael Kay
1111049	TP06 1 0.70	SOIL	NAD	none	Colin Patrick
1111050	TP06 3 2.00	SOIL	NAD	none	Michael Kay
1111051	TP06 4 3.70	SOIL	Chrysotile	Bundle of Chrysotile	Michael Kay
1111052	TP04A 1 1.10	SOIL	NAD	none	Michael Kay

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.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 17-88864-2
Client Ref SLS1015
Contract Title Redcar Site

		Lab No	1111051
		Sample ID	TP06
		Depth	3.70
		Other ID	4
		Sample Type	SOIL
		Sampling Date	12/01/17
		Sampling Time	
Test	**Method**	**Units**	
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**0.047**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	0.047
Quantification by PCOM (c)	DETSC 1102	Mass %	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na
Breakdown of Gravimetric Analysis (a)			
Mass of Sample		g	1304.58
ACMs present*		type	
Mass of ACM in sample		g	
% ACM by mass		%	
% asbestos in ACM		%	
% asbestos in sample		%	
Breakdown of Detailed Gravimetric Analysis (b)			
% Amphibole bundles in sample		Mass %	na
% Chrysotile bundles in sample		Mass %	0.047
Breakdown of PCOM Analysis (c)			
% Amphibole fibres in sample		Mass %	na
% Chrysotile fibres in sample		Mass %	na
Breakdown of Potentially Respirable Fibre Analysis (d)			
Amphibole fibres		Fibres/g	na
Chrysotile fibres		Fibres/g	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Information in Support of the Analytical Results

Our Ref 17-88864-2
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1111041	TP20 1.30 SOIL	09/01/17	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1111042	TP15 0.45 SOIL	10/01/17	GJ 250ml x2, GJ 60ml, PT 1L		
1111043	TP14 0.80 SOIL	10/01/17	GJ 250ml x2, GJ 60ml, PT 1L		
1111044	TP14 2.30 SOIL	10/01/17	GJ 250ml x2, GJ 60ml, PT 1L		
1111045	TP09 3.10 SOIL	10/01/17	GJ 250ml, GJ 60ml x3, PT 1L		
1111046	TP17 2.10 SOIL	11/01/17	GJ 250ml, GJ 60ml x3, PT 1L		
1111047	TP12 1.80 SOIL	11/01/17	GJ 60ml x5, PT 1L		
1111048	TP01 0.60 SOIL	11/01/17	GJ 250ml x2, GJ 60ml, PT 1L		
1111049	TP06 0.70 SOIL	12/01/17	GJ 250ml x2, GJ 60ml, PT 1L		
1111050	TP06 2.00 SOIL	12/01/17	GJ 250ml x2, GJ 60ml, PT 1L		
1111051	TP06 3.70 SOIL	12/01/17	GJ 250ml x2, GJ 60ml, PT 1L		
1111052	TP04A 1.10 SOIL	12/01/17	GJ 250ml x2, GJ 60ml, PT 1L		
1111053	TP20 1.30 LEACHATE	09/01/17	GJ 250ml, GJ 60ml, PT 1L		
1111054	TP15 0.45 LEACHATE	10/01/17	GJ 250ml x2, GJ 60ml, PT 1L		
1111055	TP14 0.80 LEACHATE	10/01/17	GJ 250ml x2, GJ 60ml, PT 1L		
1111056	TP14 2.30 LEACHATE	10/01/17	GJ 250ml x2, GJ 60ml, PT 1L		
1111057	TP17 2.10 LEACHATE	11/01/17	GJ 250ml, GJ 60ml x3, PT 1L		
1111058	TP12 1.80 LEACHATE	11/01/17	GJ 60ml x5, PT 1L		
1111059	TP01 0.60 LEACHATE	11/01/17	GJ 250ml x2, GJ 60ml, PT 1L		
1111060	TP06 2.00 LEACHATE	12/01/17	GJ 250ml x2, GJ 60ml, PT 1L		
1111061	TP06 3.70 LEACHATE	12/01/17	GJ 250ml x2, GJ 60ml, PT 1L		
1111062	TP04A 1.10 LEACHATE	12/01/17	GJ 250ml x2, GJ 60ml, PT 1L		
1117385	TP06 0.70 LEACHATE	12/01/16	GJ 1L (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

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Certificate of Analysis

Certificate Number 17-90043

06-Feb-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-90043

Client Reference SLS1015

Order No CH-1332

Contract Title Redcar Site

Description 11 Soil samples, 3 Leachate samples.

Date Received 30-Jan-17

Date Started 30-Jan-17

Date Completed 06-Feb-17

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

Notes Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

mCERTS
THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 17-90043
Client Ref SLS1015
Contract Title Redcar Site

Sample ID	Other ID	Depth	Lab No	Completed	Matrix Description
TPB12	1	0.3	1117386	06/02/2017	Dark grey clayey, sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TPB11	2	2	1117387	06/02/2017	Brown sandy, very gravelly CLAY
TPB09	1	0.3	1117388	06/02/2017	Brown sandy, very gravelly CLAY
TPB07	2	0.9	1117389	06/02/2017	Dark brown gravelly, sandy CLAY (Made ground - brick)
TPB07	4	2.5	1117390	06/02/2017	Brown gravelly, sandy CLAY
TPB08	1	0.3	1117391	06/02/2017	Dark grey clayey, sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TPB08	3	3	1117392	06/02/2017	Brown SAND
TPB02	2	2.6	1117393	06/02/2017	Brown gravelly, sandy CLAY
TPB04	1	0.5	1117394	06/02/2017	Brown clayey, sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TPB06	1	0.2	1117395	06/02/2017	Brown gravelly, sandy CLAY
TPB06	3	2.5	1117396	06/02/2017	Brown gravelly, sandy CLAY

Summary of Chemical Analysis
Soil Samples

Our Ref 17-90043
Client Ref SLS1015
Contract Title Redcar Site

	Lab No	1117386	1117387	1117388	1117389	1117390	1117391	1117392
	Sample ID	TPB12	TPB11	TPB09	TPB07	TPB07	TPB08	TPB08
	Depth	0.30	2.00	0.30	0.90	2.50	0.30	3.00
	Other ID	1	2	1	2	4	1	3
	Sample Type	ES	ES	ES	ES	ES	ES	ES
	Sampling Date	16/01/17	17/01/17	17/01/17	17/01/17	17/01/17	18/01/17	18/01/17
	Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
Metals								
Antimony	DETSC 2301*	1	mg/kg	1.4			5.6		1.2	
Arsenic	DETSC 2301#	0.2	mg/kg	13	73	23	20	7.8	12	6.7
Barium	DETSC 2301#	1.5	mg/kg	300			230		410	
Beryllium	DETSC 2301#	0.2	mg/kg	5.6			3.5		6.1	
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	5.3	4.4	5.2	2.7	0.9	5.5	0.6
Cadmium	DETSC 2301#	0.1	mg/kg	0.6	1.2	0.4	0.8	0.2	0.2	< 0.1
Chromium	DETSC 2301#	0.15	mg/kg	73	89	140	330	24	92	11
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0		< 1.0	< 1.0		< 1.0	
Copper	DETSC 2301#	0.2	mg/kg	33	24	25	41	10	31	7.0
Lead	DETSC 2301#	0.3	mg/kg	70	83	39	110	18	24	13
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05	0.22	< 0.05	< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	0.9			1.3		1.0	
Nickel	DETSC 2301#	1	mg/kg	7.8	26	9.8	12	8.9	8.3	4.8
Vanadium	DETSC 2301	0.8	mg/kg	250			800		290	
Zinc	DETSC 2301#	1	mg/kg	260	1200	120	190	43	70	25
Inorganics										
pH	DETSC 2008#			11.4	10.8	11.2	11.4	10.6	11.1	10.3
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.2	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1			< 0.1		< 0.1	
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	0.2			< 0.2		< 0.2	
Thiocyanate	DETSC 2130#	0.6	mg/kg	0.6			< 0.6		< 0.6	
Organic matter	DETSC 2002#	0.1	%	1.9	1.0	0.9	0.9	0.8	1.2	0.4
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	180	1500	980	500	280	1200	190
Sulphur as S, Total	DETSC 2320	0.01	%		0.85	0.60				
Sulphate as SO4, Total	DETSC 2321#	0.01	%		1.9	1.0				
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	3.9	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	4.3	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	1.0	0.7	< 0.6	< 0.6	< 0.6	2.4	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	2.8	< 1.4

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-90043
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1117386	1117387	1117388	1117389	1117390	1117391	1117392
			Sample ID	TPB12	TPB11	TPB09	TPB07	TPB07	TPB08	TPB08
			Depth	0.30	2.00	0.30	0.90	2.50	0.30	3.00
			Other ID	1	2	1	2	4	1	3
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	16/01/17	17/01/17	17/01/17	17/01/17	17/01/17	18/01/17	18/01/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	14	< 10
PAHs										
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.12	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.31	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.04	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.34	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.29	0.25	0.14	0.10	< 0.03	2.4	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	0.07	< 0.03	0.03	< 0.03	< 0.03	0.62	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	1.0	0.37	0.30	0.18	< 0.03	3.4	< 0.03
Pyrene	DETSC 3303#	0.03	mg/kg	0.78	0.31	0.24	0.12	< 0.03	2.8	< 0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.41	0.21	0.13	0.08	< 0.03	1.4	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	0.37	0.28	0.13	0.09	< 0.03	1.1	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.52	0.26	0.19	0.09	< 0.03	1.1	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.26	0.10	0.07	0.03	< 0.03	0.49	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.27	0.10	0.09	0.03	< 0.03	0.75	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.21	0.08	0.07	0.04	< 0.03	0.38	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	0.04	< 0.03	< 0.03	< 0.03	< 0.03	0.11	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.18	0.08	0.07	0.03	< 0.03	0.37	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	4.5	2.1	1.5	0.80	< 0.10	16	< 0.10
PCBs										
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01					< 0.01	
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01					< 0.01	
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01					< 0.01	
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01					< 0.01	
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01					< 0.01	
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01					< 0.01	
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01					< 0.01	
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01					< 0.01	
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-90043
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1117393	1117394	1117395	1117396
			Sample ID	TPB02	TPB04	TPB06	TPB06
			Depth	2.60	0.50	0.20	2.50
			Other ID	2	1	1	3
			Sample Type	ES	ES	ES	ES
			Sampling Date	19/01/17	19/01/17	19/01/17	19/01/17
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Metals							
Antimony	DETSC 2301*	1	mg/kg				< 1.0
Arsenic	DETSC 2301#	0.2	mg/kg		22		16
Barium	DETSC 2301#	1.5	mg/kg				230
Beryllium	DETSC 2301#	0.2	mg/kg				6.1
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg		5.1		4.5
Cadmium	DETSC 2301#	0.1	mg/kg		0.2		0.2
Chromium	DETSC 2301#	0.15	mg/kg		37		45
Chromium, Hexavalent	DETSC 2204*	1	mg/kg				< 1.0
Copper	DETSC 2301#	0.2	mg/kg		9.9		14
Lead	DETSC 2301#	0.3	mg/kg		38		21
Mercury	DETSC 2325#	0.05	mg/kg		< 0.05		< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg				0.9
Nickel	DETSC 2301#	1	mg/kg		11		7.3
Vanadium	DETSC 2301	0.8	mg/kg				180
Zinc	DETSC 2301#	1	mg/kg		100		140
Inorganics							
pH	DETSC 2008#			11.3	10.7	10.8	10.5
Cyanide, Total	DETSC 2130#	0.1	mg/kg		< 0.1		< 0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg				< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg				< 0.2
Thiocyanate	DETSC 2130#	0.6	mg/kg				< 0.6
Organic matter	DETSC 2002#	0.1	%		0.8		0.8
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	510	1600	1500	1600
Sulphur as S, Total	DETSC 2320	0.01	%	0.68		0.50	
Sulphate as SO4, Total	DETSC 2321#	0.01	%	1.4		0.93	
Petroleum Hydrocarbons							
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg		< 0.01		< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg		< 0.01		< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01		< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg		< 1.5		< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg		< 1.2		< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg		< 1.5		< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg		< 3.4		< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg		< 10		< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg		< 0.01		< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg		< 0.01		< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01		< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg		< 0.9		< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg		< 0.5		< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg		< 0.6		< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg		< 1.4		< 1.4

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-90043
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1117393	1117394	1117395	1117396
			Sample ID	TPB02	TPB04	TPB06	TPB06
			Depth	2.60	0.50	0.20	2.50
			Other ID	2	1	1	3
			Sample Type	ES	ES	ES	ES
			Sampling Date	19/01/17	19/01/17	19/01/17	19/01/17
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Aromatic C5-C35	DETSC 3072*	10	mg/kg		< 10		< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg		< 10		< 10
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		0.05		< 0.03
Anthracene	DETSC 3303	0.03	mg/kg		< 0.03		< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg		0.16		0.04
Pyrene	DETSC 3303#	0.03	mg/kg		0.12		0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg		0.08		0.03
Chrysene	DETSC 3303	0.03	mg/kg		0.11		0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg		0.09		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		0.63		0.18
PCBs							
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg				< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg				< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg				< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg				< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg				< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg				< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg				< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg				< 0.01
Phenols							
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg		< 0.3		< 0.3

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-90043
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1117391
Sample ID	TPB08
Depth	0.30
Other ID	1
Sample Type	ES
Sampling Date	18/01/17
Sampling Time	n/s

Test	Method	LOD	Units	
VOCs				
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-90043
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1117391
Sample ID	TPB08
Depth	0.30
Other ID	1
Sample Type	ES
Sampling Date	18/01/17
Sampling Time	n/s

Test	Method	LOD	Units	
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01
SVOCs				
Phenol	DETSC 3433	0.1	mg/kg	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-90043
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1117391
Sample ID	TPB08
Depth	0.30
Other ID	1
Sample Type	ES
Sampling Date	18/01/17
Sampling Time	n/s

Test	Method	LOD	Units	
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	0.2

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-90043
Client Ref SLS1015
Contract Title Redcar Site

	Lab No	1117397	1117398	1117399
	Sample ID	TPB12	TPB08	TPB06
	Depth	0.30	0.30	2.50
	Other ID	1	1	3
	Sample Type	ES	ES	ES
	Sampling Date	16/01/17	18/01/17	19/01/17
	Sampling Time	n/s	n/s	n/s

Test	Method	LOD	Units			
Preparation						
Leachate 10:1	DETS 036*			Y	Y	Y
Metals						
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	2.8	1.8	0.96
Barium, Dissolved	DETSC 2306	0.26	ug/l	14	39	51
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	0.2	< 0.1
Boron	DETSC 2123	100	ug/l	< 100	< 100	< 100
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	0.08	0.20	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	0.91	1.9	< 0.25
Copper, Dissolved	DETSC 2306	0.4	ug/l	1.7	2.3	0.7
Iron, Dissolved	DETSC 2306	5.5	ug/l	22	11	< 5.5
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.60	1.3	< 0.09
Manganese, Dissolved	DETSC 2306	0.22	ug/l	7.7	11	3.3
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	0.9	2.0	0.6
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.83	1.0	0.63
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	14	16	2.6
Zinc, Dissolved	DETSC 2306	1.3	ug/l	4.6	5.1	31
Inorganics						
pH	DETSC 2008			9.0	7.2	9.1
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	< 0.015	< 0.015	< 0.015

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-90043
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1117386	TPB12 1 0.30	SOIL	NAD	none	D Wilkinson
1117387	TPB11 2 2.00	SOIL	NAD	none	D Wilkinson
1117388	TPB09 1 0.30	SOIL	NAD	none	D Wilkinson
1117389	TPB07 2 0.90	SOIL	NAD	none	D Wilkinson
1117390	TPB07 4 2.50	SOIL	NAD	none	D Wilkinson
1117391	TPB08 1 0.30	SOIL	NAD	none	D Wilkinson
1117392	TPB08 3 3.00	SOIL	NAD	none	D Wilkinson
1117394	TPB04 1 0.50	SOIL	NAD	none	D Wilkinson
1117396	TPB06 3 2.50	SOIL	NAD	none	D Wilkinson

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 17-90043
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1117386	TPB12 0.30 SOIL	16/01/17	GJ 250ml x2, PT 500ml x2	pH + Conductivity (7 days)	
1117387	TPB11 2.00 SOIL	17/01/17	GJ 250ml x2, PT 500ml x2	pH + Conductivity (7 days)	
1117388	TPB09 0.30 SOIL	17/01/17	GJ 250ml x2, PT 500ml x2	pH + Conductivity (7 days)	
1117389	TPB07 0.90 SOIL	17/01/17	GJ 250ml x2, PT 500ml x2	pH + Conductivity (7 days)	
1117390	TPB07 2.50 SOIL	17/01/17	GJ 250ml x2, PT 500ml x2	pH + Conductivity (7 days)	
1117391	TPB08 0.30 SOIL	18/01/17	GJ 250ml x2, PT 500ml x2	pH + Conductivity (7 days)	
1117392	TPB08 3.00 SOIL	18/01/17	GJ 250ml x2, PT 500ml x2	pH + Conductivity (7 days)	
1117393	TPB02 2.60 SOIL	19/01/17	GJ 250ml x2, GJ 60ml, PT 500ml x2	pH + Conductivity (7 days)	
1117394	TPB04 0.50 SOIL	19/01/17	GJ 250ml x2, GJ 60ml, PT 500ml x2	pH + Conductivity (7 days)	
1117395	TPB06 0.20 SOIL	19/01/17	GJ 250ml x2, GJ 60ml, PT 500ml x2	pH + Conductivity (7 days)	
1117396	TPB06 2.50 SOIL	19/01/17	GJ 250ml x2, GJ 60ml, PT 500ml x2	pH + Conductivity (7 days)	
1117397	TPB12 0.30 LEACHATE	16/01/17	GJ 250ml x2, PT 500ml x2		
1117398	TPB08 0.30 LEACHATE	18/01/17	GJ 250ml x2, PT 500ml x2		
1117399	TPB06 2.50 LEACHATE	19/01/17	GJ 250ml x2, GJ 60ml, PT 500ml x2		

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

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Certificate of Analysis

Certificate Number 17-90393-1

16-Feb-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-90393-1

Client Reference SLS1015

Order No CH-1332

Contract Title Redcar Site

Description 13 Soil samples, 4 Leachate samples.

Date Received 02-Feb-17

Date Started 02-Feb-17

Date Completed 16-Feb-17

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

Notes **This report supersedes 17-90393, Extra Testing**

Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

mCERTS
THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 17-90393-1
Client Ref SLS1015
Contract Title Redcar Site

Sample ID	Other ID	Depth	Lab No	Completed	Matrix Description
TPB05	1	0.7	1119385	09/02/2017	Dark brown clayey, gravelly SAND
TPB03	1	0.4	1119386	09/02/2017	Dark brown clayey, gravelly SAND
TPB03	2	2.6	1119387	09/02/2017	Dark grey clayey, sandy GRAVEL (Made ground - metal, concrete) (sample matrix outside MCERTS scope of accreditation)
TPB01	1	0.3	1119388	09/02/2017	Dark brown clayey, gravelly SAND
TPB01	3	4	1119389	09/02/2017	Light brown gravelly SAND
TPI09	1	0.2	1119390	09/02/2017	Dark brown sandy CLAY including odd rootlets
TPI09	3	3	1119391	09/02/2017	Dark brown clayey, gravelly SAND including odd rootlets (Possible made ground - brick)
TPI08	1	0.2	1119392	09/02/2017	Brown gravelly, very sandy CLAY including odd rootlets
TPI08	3	3	1119393	09/02/2017	Grey clayey, gravelly SAND
TPI07	1	1.3	1119394	09/02/2017	Dark brown clayey, gravelly SAND (Possible made ground - brick)
TPI12	1	0.6	1119395	09/02/2017	Brown clayey, gravelly SAND (Made ground - brick)
TPI12	3	3.8	1119396	09/02/2017	Dark brown clayey, gravelly SAND
TPI11	1	1	1119397	09/02/2017	Brown clayey, gravelly SAND (Made ground - brick)

Summary of Chemical Analysis
Soil Samples

Our Ref 17-90393-1
Client Ref SLS1015
Contract Title Redcar Site

				Lab No	1119385	1119386	1119387	1119388	1119389	1119390	1119391
				Sample ID	TPB05	TPB03	TPB03	TPB01	TPB01	TPI09	TPI09
				Depth	0.70	0.40	2.60	0.30	4.00	0.20	3.00
				Other ID	1	1	2	1	3	1	3
				Sample Type	ES	ES	ES	ES	ES	ES	ES
				Sampling Date	23/01/17	23/01/17	23/01/17	23/01/17	23/01/17	25/01/17	25/01/17
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**								
Asbestos Quantification	DETSC 1102	0			N		N	N		Y
Metals											
Antimony	DETSC 2301*	1	mg/kg		1.8		3.7			13
Arsenic	DETSC 2301#	0.2	mg/kg		23		12	8.8		16
Barium	DETSC 2301#	1.5	mg/kg		340		110			630
Beryllium	DETSC 2301#	0.2	mg/kg		4.3		0.7			3.2
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg		7.3		2.1	2.9		6.6
Cadmium	DETSC 2301#	0.1	mg/kg		0.6		0.8	0.2		2.0
Chromium	DETSC 2301#	0.15	mg/kg		110		35	30		240
Chromium, Hexavalent	DETSC 2204*	1	mg/kg		< 1.0		< 1.0			< 1.0
Copper	DETSC 2301#	0.2	mg/kg		35		32	10		97
Lead	DETSC 2301#	0.3	mg/kg		74		38	19		290
Mercury	DETSC 2325#	0.05	mg/kg		< 0.05		< 0.05	< 0.05		0.08
Molybdenum	DETSC 2301#	0.4	mg/kg		1.9		3.2			2.7
Nickel	DETSC 2301#	1	mg/kg		16		37	6.4		18
Vanadium	DETSC 2301	0.8	mg/kg		340		58			450
Zinc	DETSC 2301#	1	mg/kg		350		100	51		560
Inorganics											
pH	DETSC 2008#			10.3	10.5	10.6	10.5	10.5	8.4	10.6
Cyanide, Total	DETSC 2130#	0.1	mg/kg		0.2		0.1	< 0.1		0.3
Cyanide, Free	DETSC 2130#	0.1	mg/kg		< 0.1		< 0.1			< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg		0.2		< 0.2			0.3
Thiocyanate	DETSC 2130#	0.6	mg/kg		< 0.6		< 0.6			< 0.6
Organic matter	DETSC 2002#	0.1	%		0.7		2.0	0.3		1.3
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1500	1300	1400	230	1100	31	1000
Sulphur as S, Total	DETSC 2320	0.01	%	0.76	0.45	0.80			0.03	
Sulphate as SO4, Total	DETSC 2321#	0.01	%	1.4	0.71	1.1			0.06	
Petroleum Hydrocarbons											
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg		< 0.01		< 0.01	< 0.01		< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg		< 0.01		< 0.01	< 0.01		< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01		< 0.01	< 0.01		< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg		< 1.5		< 1.5	< 1.5		< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg		< 1.2		< 1.2	< 1.2		< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg		< 1.5		< 1.5	< 1.5		6.7
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg		18		< 3.4	< 3.4		46
Aliphatic C5-C35	DETSC 3072*	10	mg/kg		18		< 10	< 10		52
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg		< 0.01		< 0.01	< 0.01		< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg		< 0.01		< 0.01	< 0.01		< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01		< 0.01	< 0.01		< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg		< 0.9		< 0.9	< 0.9		< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg		< 0.5		< 0.5	< 0.5		2.9
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg		< 0.6		< 0.6	< 0.6		29

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-90393-1
Client Ref SLS1015
Contract Title Redcar Site

				Lab No	1119385	1119386	1119387	1119388	1119389	1119390	1119391
				Sample ID	TPB05	TPB03	TPB03	TPB01	TPB01	TPI09	TPI09
				Depth	0.70	0.40	2.60	0.30	4.00	0.20	3.00
				Other ID	1	1	2	1	3	1	3
				Sample Type	ES	ES	ES	ES	ES	ES	ES
				Sampling Date	23/01/17	23/01/17	23/01/17	23/01/17	23/01/17	25/01/17	25/01/17
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**								
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg		< 1.4		< 1.4	< 1.4		110
Aromatic C5-C35	DETSC 3072*	10	mg/kg		< 10		< 10	< 10		140
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg		18		< 10	< 10		190
PAHs											
Naphthalene	DETSC 3303#	0.03	mg/kg		< 0.03		0.10	< 0.03		0.08
Acenaphthylene	DETSC 3303#	0.03	mg/kg		< 0.03		< 0.03	< 0.03		0.06
Acenaphthene	DETSC 3303#	0.03	mg/kg		< 0.03		< 0.03	< 0.03		0.62
Fluorene	DETSC 3303	0.03	mg/kg		< 0.03		< 0.03	< 0.03		0.42
Phenanthrene	DETSC 3303#	0.03	mg/kg		0.20		0.26	< 0.03		3.7
Anthracene	DETSC 3303	0.03	mg/kg		< 0.03		0.03	< 0.03		0.73
Fluoranthene	DETSC 3303#	0.03	mg/kg		0.33		0.16	< 0.03		6.2
Pyrene	DETSC 3303#	0.03	mg/kg		0.25		0.11	< 0.03		6.4
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg		0.18		0.09	< 0.03		2.9
Chrysene	DETSC 3303	0.03	mg/kg		0.20		0.10	< 0.03		2.6
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg		0.23		0.12	< 0.03		3.5
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg		0.10		0.04	< 0.03		1.5
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg		0.14		0.06	< 0.03		2.3
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg		0.10		0.04	< 0.03		1.3
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg		< 0.03		< 0.03	< 0.03		0.40
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg		0.09		0.04	< 0.03		1.5
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg		1.8		1.2	< 0.10		34
PCBs											
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg		< 0.01		< 0.01			< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg		< 0.01		< 0.01			< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg		< 0.01		< 0.01			< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg		< 0.01		< 0.01			< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg		< 0.01		< 0.01			< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg		< 0.01		< 0.01			< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg		< 0.01		< 0.01			< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg		< 0.01		< 0.01			< 0.01
Phenols											
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg		< 0.3		< 0.3	0.9		< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-90393-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1119392	1119393	1119394	1119395	1119396	1119397
			Sample ID	TPI08	TPI08	TPI07	TPI12	TPI12	TPI11
			Depth	0.20	3.00	1.30	0.60	3.80	1.00
			Other ID	1	3	1	1	3	1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	25/01/17	25/01/17	n/s	n/s	n/s	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Asbestos Quantification	DETSC 1102	0		N		Y		N	Y
Metals									
Antimony	DETSC 2301*	1	mg/kg	< 1.0		9.5		3.7	
Arsenic	DETSC 2301#	0.2	mg/kg	5.3		16		26	10
Barium	DETSC 2301#	1.5	mg/kg	93		390		270	
Beryllium	DETSC 2301#	0.2	mg/kg	0.8		1.1		1.7	
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	1.1		4.4		3.5	3.3
Cadmium	DETSC 2301#	0.1	mg/kg	0.2		1.9		0.8	0.3
Chromium	DETSC 2301#	0.15	mg/kg	19		550		200	57
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0		< 1.0		< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	17		130		41	23
Lead	DETSC 2301#	0.3	mg/kg	19		200		52	24
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05		0.98		0.13	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	0.9		4.0		2.9	
Nickel	DETSC 2301#	1	mg/kg	15		19		18	16
Vanadium	DETSC 2301	0.8	mg/kg	48		1400		870	
Zinc	DETSC 2301#	1	mg/kg	60		1200		300	180
Inorganics									
pH	DETSC 2008#			10.4	10.9	11.9	11.4	11.7	11.1
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1		12		0.9	0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1		0.3		< 0.1	
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	< 0.2		12		0.9	
Thiocyanate	DETSC 2130#	0.6	mg/kg	1.3		0.8		< 0.6	
Organic matter	DETSC 2002#	0.1	%	1.4		1.9		1.2	1.4
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	15	26	94	460	630	320
Sulphur as S, Total	DETSC 2320	0.01	%		0.26		0.09		0.18
Sulphate as SO4, Total	DETSC 2321#	0.01	%		0.37		0.29		0.48
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01		< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01		< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01		< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5		< 1.5		< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2		< 1.2		2.9	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5		< 1.5		13	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4		< 3.4		39	47
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10		< 10		55	49
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01		< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01		< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01		< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9		< 0.9		< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5		< 0.5		< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6		< 0.6		< 0.6	< 0.6

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-90393-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1119392	1119393	1119394	1119395	1119396	1119397
			Sample ID	TPI08	TPI08	TPI07	TPI12	TPI12	TPI11
			Depth	0.20	3.00	1.30	0.60	3.80	1.00
			Other ID	1	3	1	1	3	1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	25/01/17	25/01/17	n/s	n/s	n/s	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4		< 1.4		< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10		< 10		< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10		< 10		55	49
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03		0.20		0.08	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03		0.06		0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03		0.18		1.1	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03		0.15		1.4	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03		2.1		11	0.11
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03		0.55		1.8	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03		3.1		6.0	0.24
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03		2.9		4.0	0.18
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03		0.99		1.3	0.09
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03		1.1		1.1	0.10
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03		1.1		1.1	0.13
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03		0.41		0.39	0.05
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03		0.64		0.61	0.07
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03		0.34		0.29	0.05
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03		0.12		0.10	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03		0.41		0.36	0.06
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10		14		30	1.1
PCBs									
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01		< 0.01	
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01		< 0.01	
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01		< 0.01	
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01		< 0.01	
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01		< 0.01	
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01		< 0.01	
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01		< 0.01	
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01		< 0.01	
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3		< 0.3		< 0.3	< 0.3

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-90393-1
Client Ref SLS1015
Contract Title Redcar Site

	Lab No	1119398	1119399	1119400	1119401
	Sample ID	TPB01	TPI09	TPI08	TPI12
	Depth	0.30	3.00	0.20	3.80
	Other ID	1	3	1	3
	Sample Type	ES	ES	ES	ES
	Sampling Date	23/01/17	25/01/17	25/01/17	n/s
	Sampling Time	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
Preparation							
Leachate 10:1	DETS 036*			Y	Y	Y	Y
Metals							
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	4.8	1.5	0.43	1.4
Barium, Dissolved	DETSC 2306	0.26	ug/l	6.9	37	2.4	18
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Boron	DETSC 2123	100	ug/l	< 100	< 100	< 100	< 100
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	0.35	1.5	< 0.25	3.4
Copper, Dissolved	DETSC 2306	0.4	ug/l	1.2	0.5	0.8	1.3
Iron, Dissolved	DETSC 2306	5.5	ug/l	97	< 5.5	600	15
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.12	< 0.09	0.36	0.12
Manganese, Dissolved	DETSC 2306	0.22	ug/l	1.2	0.42	5.1	0.38
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	6.5	0.88	< 0.25	0.72
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	10	18	1.7	12
Zinc, Dissolved	DETSC 2306	1.3	ug/l	< 1.3	< 1.3	2.0	< 1.3
Inorganics							
pH	DETSC 2008			8.4	9.5	8.0	10.5
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	< 0.015	< 0.015	< 0.015	< 0.015
Chloride	DETSC 2055	0.1	mg/l	3.8	0.79	1.1	1.6

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-90393-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1119386	TPB03 1 0.40	SOIL	NAD	none	Michael Kay
1119388	TPB01 1 0.30	SOIL	NAD	none	Michael Kay
1119389	TPB01 3 4.00	SOIL	NAD	none	Michael Kay
1119391	TPI09 3 3.00	SOIL	Amosite Chrysotile	Amosite and Chrysotile present in microscopic fibrous asbestos debris	Michael Kay
1119392	TPI08 1 0.20	SOIL	NAD	none	Michael Kay
1119394	TPI07 1 1.30	SOIL	Chrysotile	Small bundles of Chrysotile	Michael Kay
1119396	TPI12 3 3.80	SOIL	NAD	none	Michael Kay
1119397	TPI11 1 1.00	SOIL	Amosite Chrysotile	Small bundles of Chrysotile and Amosite	Michael Kay

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.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 17-90393-1
Client Ref SLS1015
Contract Title Redcar Site

		Lab No	1119391	1119394	1119397
		Sample ID	TPI09	TPI07	TPI11
		Depth	3.00	1.30	1.00
		Other ID	3	1	1
		Sample Type	SOIL	SOIL	SOIL
		Sampling Date	25/01/17	n/s	n/s
		Sampling Time			
Test	**Method**	**Units**			
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**0.019**	**< 0.001**	**0.002**
Gravimetric Quantification (a)	DETSC 1102	Mass %	0.019	na	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	na	<0.001	0.002
Quantification by PCOM (c)	DETSC 1102	Mass %	na	na	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na	na	na
Breakdown of Gravimetric Analysis (a)					
Mass of Sample		g	973.76	1043.18	1042.46
ACMs present*		type	LFAD		
Mass of ACM in sample		g	0.21		
% ACM by mass		%	0.02		
% asbestos in ACM		%	85.00		
% asbestos in sample		%	0.02		
Breakdown of Detailed Gravimetric Analysis (b)					
% Amphibole bundles in sample		Mass %	na	na	<0.001
% Chrysotile bundles in sample		Mass %	na	<0.001	0.001
Breakdown of PCOM Analysis (c)					
% Amphibole fibres in sample		Mass %	na	na	na
% Chrysotile fibres in sample		Mass %	na	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)					
Amphibole fibres		Fibres/g	na	na	na
Chrysotile fibres		Fibres/g	na	na	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Information in Support of the Analytical Results

Our Ref 17-90393-1
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1119385	TPB05 0.70 SOIL	23/01/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1119386	TPB03 0.40 SOIL	23/01/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1119387	TPB03 2.60 SOIL	23/01/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1119388	TPB01 0.30 SOIL	23/01/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1119389	TPB01 4.00 SOIL	23/01/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1119390	TPI09 0.20 SOIL	25/01/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1119391	TPI09 3.00 SOIL	25/01/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1119392	TPI08 0.20 SOIL	25/01/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1119393	TPI08 3.00 SOIL	25/01/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1119394	TPI07 1.30 SOIL		GJ 250ml x2, GV, PB 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), PCB (30 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days)	
1119395	TPI12 0.60 SOIL		GJ 250ml x2, GV, PB 1L	Sample date not supplied, Anions 2:1 (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP Prep (365 days), pH + Conductivity (7 days)	
1119396	TPI12 3.80 SOIL		GJ 250ml, GV, PB 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), PCB (30 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days)	
1119397	TPI11 1.00 SOIL		GJ 250ml, GV, PB 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days)	
1119398	TPB01 0.30 LEACHATE	23/01/17	GJ 250ml x2, GJ 60ml, PT 1L		
1119399	TPI09 3.00 LEACHATE	25/01/17	GJ 250ml x2, GJ 60ml, PT 1L		
1119400	TPI08 0.20 LEACHATE	25/01/17	GJ 250ml x2, GJ 60ml, PT 1L		
1119401	TPI12 3.80 LEACHATE		GJ 250ml, GV, PB 1L	Sample date not supplied	

Information in Support of the Analytical Results

Our Ref 17-90393-1
Client Ref SLS1015
Contract Redcar Site

Key: G-Glass P-Plastic J-Jar T-Tub B-Bottle V-Vial

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

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Certificate of Analysis

Certificate Number 17-91173-1

28-Feb-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-91173-1

Client Reference SSI REDCAR

Order No (not supplied)

Contract Title SSI REDCAR

Description 12 Soil samples, 5 Leachate samples.

Date Received 09-Feb-17

Date Started 09-Feb-17

Date Completed 28-Feb-17

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

Notes **This report supersedes 17-91173. Testing amended.**
Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 17-91173-1
Client Ref SSI REDCAR
Contract Title SSI REDCAR

			Lab No	1124110	1124111	1124112	1124113	1124114	1124115
			Sample ID	TPI04	TPI03	TPI03	TPI02	TPI02	TPI01
			Depth	3.00	0.30	4.00	0.20	4.00	0.80
			Other ID	2	1	4	1	3	1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	02/02/17	02/02/17	02/02/17	02/02/17	02/02/17	02/02/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Asbestos Quantification	DETSC 1102	0				Y			
Metals									
Antimony	DETSC 2301*	1	mg/kg	4.4	1.8	2.0		< 1.0	
Arsenic	DETSC 2301#	0.2	mg/kg	5.2	6.7	7.7	6.1	8.6	8.0
Barium	DETSC 2301#	1.5	mg/kg	160	180	210		340	
Beryllium	DETSC 2301#	0.2	mg/kg	0.5	1.0	1.6		1.7	
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	2.7	1.1	7.4	0.5	1.4	1.0
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.2	1.4	0.2	0.3	0.4
Chromium	DETSC 2301#	0.15	mg/kg	160	40	44	23	29	17
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0		< 1.0	
Copper	DETSC 2301#	0.2	mg/kg	23	25	100	17	22	27
Lead	DETSC 2301#	0.3	mg/kg	31	37	230	20	31	78
Magnesium Aqueous Extract	DETSC 2076*	10	mg/l				< 10		
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	0.08	< 0.05	< 0.05	0.12
Molybdenum	DETSC 2301#	0.4	mg/kg	1.7	1.3	1.3		0.6	
Nickel	DETSC 2301#	1	mg/kg	22	18	26	23	25	16
Vanadium	DETSC 2301	0.8	mg/kg	200	68	61		49	
Zinc	DETSC 2301#	1	mg/kg	170	100	180	51	87	220
Inorganics									
pH	DETSC 2008#			10.8	9.3	10.1	8.9	9.7	8.6
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.2	< 0.1	0.9	< 0.1	< 0.1	0.4
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1		< 0.1	
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6	< 0.6	< 0.6		< 0.6	
Organic matter	DETSC 2002#	0.1	%	1.1	1.4	3.3	1.2	2.3	3.8
Chloride Aqueous Extract	DETSC 2055	1	mg/l				8.3		
Nitrate Aqueous Extract as NO3	DETSC 2055	1	mg/l				< 1.0		
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	33	71	600	15	460	67
Sulphate, Total Potential as SO4	*	0.03	%				0.07		
Sulphur as S, Total	DETSC 2320	0.01	%				0.02		
Sulphate as SO4, Total	DETSC 2321#	0.01	%				0.04		
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	1.7	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	5.3	< 1.2	6.1	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	2.5	< 1.5	11	< 1.5	6.4	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	33	< 3.4	24	< 3.4	9.3	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	35	< 10	41	< 10	23	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-91173-1
Client Ref SSI REDCAR
Contract Title SSI REDCAR

			Lab No	1124110	1124111	1124112	1124113	1124114	1124115
			Sample ID	TPI04	TPI03	TPI03	TPI02	TPI02	TPI01
			Depth	3.00	0.30	4.00	0.20	4.00	0.80
			Other ID	2	1	4	1	3	1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	02/02/17	02/02/17	02/02/17	02/02/17	02/02/17	02/02/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	16
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	28
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	44
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	35	< 10	41	< 10	23	44
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	0.03	< 0.03	0.06	< 0.03	0.04	0.04
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.09
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.13	< 0.03	< 0.03	0.13
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	0.20	0.03	< 0.03	0.23
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.08	0.13	1.3	0.21	0.09	2.9
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	0.23	0.05	< 0.03	0.72
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.16	0.29	1.9	0.30	0.06	5.2
Pyrene	DETSC 3303#	0.03	mg/kg	0.15	0.23	1.3	0.23	0.07	4.2
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.07	0.10	0.57	0.09	< 0.03	1.8
Chrysene	DETSC 3303	0.03	mg/kg	0.07	0.08	0.47	0.08	< 0.03	1.5
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.09	0.10	0.46	0.12	< 0.03	1.6
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.03	0.03	0.20	0.05	< 0.03	0.55
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.06	0.06	0.25	0.09	< 0.03	1.1
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.03	0.15	0.12	< 0.03	0.42
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.04	0.03	< 0.03	0.11
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.16	0.13	< 0.03	0.47
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.74	1.1	7.3	1.5	0.26	21
PCBs									
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg			0.02		< 0.01	< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg			0.02		< 0.01	< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg			< 0.01		< 0.01	< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg			< 0.01		< 0.01	< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg			< 0.01		< 0.01	< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg			< 0.01		< 0.01	< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg			< 0.01		< 0.01	< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg			0.04		< 0.01	< 0.01
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-91173-1
Client Ref SSI REDCAR
Contract Title SSI REDCAR

			Lab No	1124116	1124117	1124118	1124119	1124120	1124121
			Sample ID	TPI13	TPI14	TPI17	TPI17	TPI16	TPI16
			Depth	0.70	0.60	0.20	1.00	0.70	4.00
			Other ID	1	1	1	3	1	3
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	02/02/17	02/02/17	02/02/17	02/02/17	02/02/17	02/02/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Asbestos Quantification	DETSC 1102	0							Y
Metals									
Antimony	DETSC 2301*	1	mg/kg	4.2				5.2	5.8
Arsenic	DETSC 2301#	0.2	mg/kg	4.6	5.0	9.3	4.4	20	11
Barium	DETSC 2301#	1.5	mg/kg	250				670	620
Beryllium	DETSC 2301#	0.2	mg/kg	0.6				1.5	1.8
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	2.0	1.8	1.1	2.1	7.6	3.5
Cadmium	DETSC 2301#	0.1	mg/kg	0.4	0.6	0.3	0.5	1.1	0.7
Chromium	DETSC 2301#	0.15	mg/kg	61	43	26	20	310	410
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0				< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	20	68	24	27	94	62
Lead	DETSC 2301#	0.3	mg/kg	28	43	49	30	81	71
Magnesium Aqueous Extract	DETSC 2076*	10	mg/l				< 10		
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	0.06	< 0.05	0.29	0.15
Molybdenum	DETSC 2301#	0.4	mg/kg	1.7				5.2	3.5
Nickel	DETSC 2301#	1	mg/kg	46	19	19	29	30	20
Vanadium	DETSC 2301	0.8	mg/kg	150				750	1500
Zinc	DETSC 2301#	1	mg/kg	190	440	130	400	370	220
Inorganics									
pH	DETSC 2008#			10.2	9.7	9.3	11.3	11.3	11.4
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.6	0.5
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1				< 0.1	< 0.1
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6				< 0.6	< 0.6
Organic matter	DETSC 2002#	0.1	%	1.1	1.4	2.6	1.6	1.5	1.8
Chloride Aqueous Extract	DETSC 2055	1	mg/l				9.7		
Nitrate Aqueous Extract as NO3	DETSC 2055	1	mg/l				1.3		
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	150	130	120	210	260	240
Sulphate, Total Potential as SO4	*	0.03	%				0.48		
Sulphur as S, Total	DETSC 2320	0.01	%				0.16		
Sulphate as SO4, Total	DETSC 2321#	0.01	%				0.55		
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	3.4	< 1.2	3.1	22	6.0
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	4.4	7.4	3.1	6.9	61	19
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	120	53	34	160	190	77
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	120	65	38	170	270	100
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-91173-1
Client Ref SSI REDCAR
Contract Title SSI REDCAR

			Lab No	1124116	1124117	1124118	1124119	1124120	1124121
			Sample ID	TPI13	TPI14	TPI17	TPI17	TPI16	TPI16
			Depth	0.70	0.60	0.20	1.00	0.70	4.00
			Other ID	1	1	1	3	1	3
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	02/02/17	02/02/17	02/02/17	02/02/17	02/02/17	02/02/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	0.9	< 0.5	8.6	1.6
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	1.6	< 0.6	3.6	< 0.6	35	12
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	58	19	60	9.1	100	43
Aromatic C5-C35	DETSC 3072*	10	mg/kg	60	19	65	< 10	150	56
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	180	84	100	170	420	160
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.05	0.48	0.06
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	0.08	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.36	< 0.03	< 0.03	< 0.03	0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	0.45	< 0.03	< 0.03	< 0.03	0.11	0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	2.1	0.04	0.17	0.08	0.72	0.32
Anthracene	DETSC 3303	0.03	mg/kg	0.24	< 0.03	0.04	< 0.03	0.27	0.08
Fluoranthene	DETSC 3303#	0.03	mg/kg	1.4	< 0.03	0.38	0.10	1.3	0.70
Pyrene	DETSC 3303#	0.03	mg/kg	0.90	0.04	0.31	0.10	1.3	0.67
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.21	< 0.03	0.15	0.03	0.73	0.28
Chrysene	DETSC 3303	0.03	mg/kg	0.16	< 0.03	0.12	0.06	0.63	0.29
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.10	< 0.03	0.16	0.08	0.94	0.33
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.05	< 0.03	0.33	0.11
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.05	< 0.03	0.10	0.03	0.59	0.18
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.05	< 0.03	0.30	0.08
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	0.09	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.05	0.03	0.34	0.09
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	6.0	< 0.10	1.6	0.57	8.2	3.2
PCBs									
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg					< 0.01	< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg					< 0.01	< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg					< 0.01	< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg					< 0.01	< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg					< 0.01	< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg					< 0.01	< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg					< 0.01	< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg					< 0.01	< 0.01
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

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Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-91173-1
Client Ref SSI REDCAR
Contract Title SSI REDCAR

			Lab No	1124112	1124121
			Sample ID	TPI03	TPI16
			Depth	4.00	4.00
			Other ID	4	3
			Sample Type	ES	ES
			Sampling Date	02/02/17	02/02/17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
VOCs					
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	0.01	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-91173-1
Client Ref SSI REDCAR
Contract Title SSI REDCAR

			Lab No	1124112	1124121
			Sample ID	TPI03	TPI16
			Depth	4.00	4.00
			Other ID	4	3
			Sample Type	ES	ES
			Sampling Date	02/02/17	02/02/17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
GCMS BroadScan (headspace)	DETSC 3431*			Y	Y
SVOCs					
Phenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-91173-1
Client Ref SSI REDCAR
Contract Title SSI REDCAR

			Lab No	1124112	1124121
			Sample ID	TPI03	TPI16
			Depth	4.00	4.00
			Other ID	4	3
			Sample Type	ES	ES
			Sampling Date	02/02/17	02/02/17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
VOC TICs					
none (TIC)	DETSC 3431*		mg/kg	None	None

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-91173-1
Client Ref SSI REDCAR
Contract Title SSI REDCAR

			Lab No	1124122	1124123	1124124	1124125	1124126
			Sample ID	TPI04	TPI02	TPI13	TPI16	TPI16
			Depth	3.00	4.00	0.70	0.70	4.00
			Other ID	2	3	1	1	3
			Sample Type	ES	ES	ES	ES	ES
			Sampling Date	02/02/17	02/02/17	02/02/17	02/02/17	02/02/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
Preparation								
NRA Leachate Preparation	DETS 036*			Y	Y	Y	Y	Y
Metals								
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.99	0.70	0.51	1.4	0.94
Barium, Dissolved	DETSC 2306	0.26	ug/l	10	17	14	13	12
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron	DETSC 2123	100	ug/l	< 100	< 100	< 100	< 100	< 100
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	0.93	< 0.25	0.38	1.4	2.8
Copper, Dissolved	DETSC 2306	0.4	ug/l	1.7	0.6	0.8	1.4	1.9
Iron, Dissolved	DETSC 2306	5.5	ug/l	23	7.1	95	12	< 5.5
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	< 0.09	0.16	< 0.09	< 0.09
Manganese, Dissolved	DETSC 2306	0.22	ug/l	0.48	4.4	35	1.0	0.37
Mercury, Dissolved	DETSC 2306	0.01	ug/l	0.06	0.03	0.05	0.03	0.04
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5	0.6	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.41	0.41	< 0.25	1.4	0.95
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	3.0	1.4	1.7	17	24
Zinc, Dissolved	DETSC 2306	1.3	ug/l	2.7	2.2	10	5.3	2.7
Inorganics								
pH	DETSC 2008			10.7	7.9	7.4	9.9	10.7
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	< 0.015	0.028	< 0.015	< 0.015	< 0.015

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-91173-1
Client Ref SSI REDCAR
Contract Title SSI REDCAR

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1124110	TPI04 2 3.00	SOIL	NAD	none	Colin Patrick
1124111	TPI03 1 0.30	SOIL	NAD	none	Colin Patrick
1124112	TPI03 4 4.00	SOIL	Amosite	bundle of Amosite fibres	Colin Patrick
1124113	TPI02 1 0.20	SOIL	NAD	none	Colin Patrick
1124114	TPI02 3 4.00	SOIL	NAD	none	Colin Patrick
1124115	TPI01 1 0.80	SOIL	NAD	none	Colin Patrick
1124116	TPI13 1 0.70	SOIL	NAD	none	Colin Patrick
1124117	TPI14 1 0.60	SOIL	NAD	none	Colin Patrick
1124118	TPI17 1 0.20	SOIL	NAD	none	Colin Patrick
1124119	TPI17 3 1.00	SOIL	NAD	none	Colin Patrick
1124120	TPI16 1 0.70	SOIL	NAD	none	Colin Patrick
1124121	TPI16 3 4.00	SOIL	Chrysotile	bundle of Chrysotile fibres	Colin Patrick

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.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 17-91173-1
Client Ref SSI REDCAR
Contract Title SSI REDCAR

		Lab No	1124112	1124121
		Sample ID	TPI03	TPI16
		Depth	4.00	4.00
		Other ID	4	3
		Sample Type	SOIL	SOIL
		Sampling Date	02/02/17	02/02/17
		Sampling Time		
Test	**Method**	**Units**		
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**0.011**	**0.023**
Gravimetric Quantification (a)	DETSC 1102	Mass %	0.010	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	<0.001	0.023
Quantification by PCOM (c)	DETSC 1102	Mass %	na	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na	na
Breakdown of Gravimetric Analysis (a)				
Mass of Sample		g	823.83	17.96
ACMs present*		type	LFAD	
Mass of ACM in sample		g	0.10	
% ACM by mass		%	0.01	
% asbestos in ACM		%	85.00	
% asbestos in sample		%	0.01	
Breakdown of Detailed Gravimetric Analysis (b)				
% Amphibole bundles in sample		Mass %	<0.001	na
% Chrysotile bundles in sample		Mass %	na	0.023
Breakdown of PCOM Analysis (c)				
% Amphibole fibres in sample		Mass %	na	na
% Chrysotile fibres in sample		Mass %	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)				
Amphibole fibres		Fibres/g	na	na
Chrysotile fibres		Fibres/g	na	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Information in Support of the Analytical Results

Our Ref 17-91173-1
Client Ref SSI REDCAR
Contract SSI REDCAR

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1124110	TPI04 3.00 SOIL	02/02/17	GJ 250ml, GJ 60ml, PT 1L		
1124111	TPI03 0.30 SOIL	02/02/17	GJ 250ml x2, GJ 60ml, PT 1L		
1124112	TPI03 4.00 SOIL	02/02/17	GJ 250ml x2, GJ 60ml, PT 1L		
1124113	TPI02 0.20 SOIL	02/02/17	GJ 250ml x2, GJ 60ml, PT 1L		
1124114	TPI02 4.00 SOIL	02/02/17	GJ 250ml x2, GJ 60ml, PT 1L		
1124115	TPI01 0.80 SOIL	02/02/17	GJ 250ml x2, PT 1L		
1124116	TPI13 0.70 SOIL	02/02/17	GJ 250ml x2, PT 1L		
1124117	TPI14 0.60 SOIL	02/02/17	GJ 250ml x2, PT 1L		
1124118	TPI17 0.20 SOIL	02/02/17	GJ 250ml x2, PT 1L		
1124119	TPI17 1.00 SOIL	02/02/17	GJ 250ml x2, PT 1L		
1124120	TPI16 0.70 SOIL	02/02/17	GJ 250ml x2, PT 1L		
1124121	TPI16 4.00 SOIL	02/02/17	GJ 250ml x2, PT 1L		
1124122	TPI04 3.00 LEACHATE	02/02/17	GJ 250ml, GJ 60ml, PT 1L		
1124123	TPI02 4.00 LEACHATE	02/02/17	GJ 250ml x2, GJ 60ml, PT 1L		
1124124	TPI13 0.70 LEACHATE	02/02/17	GJ 250ml x2, PT 1L		
1124125	TPI16 0.70 LEACHATE	02/02/17	GJ 250ml x2, PT 1L		
1124126	TPI16 4.00 LEACHATE	02/02/17	GJ 250ml x2, 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

Certificate of Analysis

Certificate Number 17-91184

22-Feb-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-91184

Client Reference SLS1015

Order No CH-1332

Contract Title REDCAR

Description 4 Soil samples, 2 Leachate samples.

Date Received 09-Feb-17

Date Started 09-Feb-17

Date Completed 22-Feb-17

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

Notes Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 17-91184
Client Ref SLS1015
Contract Title REDCAR

			Lab No	1124258	1124259	1124260	1124261
			Sample ID	TPI22	TPI34	TPI36	TPI36
			Depth	1.00	0.80	1.50	3.50
			Other ID	1	1	1	3
			Sample Type	ES	ES	ES	ES
			Sampling Date	n/s	n/s	n/s	n/s
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Asbestos Quantification	DETSC 1102	0		Y			
Metals							
Antimony	DETSC 2301*	1	mg/kg	2.8	9.8		< 1.0
Arsenic	DETSC 2301#	0.2	mg/kg	13			8.3
Barium	DETSC 2301#	1.5	mg/kg	360	380		17
Beryllium	DETSC 2301#	0.2	mg/kg	4.3	1.3		< 0.2
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	3.7			0.8
Cadmium	DETSC 2301#	0.1	mg/kg	0.8			< 0.1
Chromium	DETSC 2301#	0.15	mg/kg	140			7.7
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0		< 1.0
Copper	DETSC 2301#	0.2	mg/kg	76			28
Lead	DETSC 2301#	0.3	mg/kg	110			19
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05			< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	1.0	5.2		< 0.4
Nickel	DETSC 2301#	1	mg/kg	12			4.0
Vanadium	DETSC 2301	0.8	mg/kg	360	1000		29
Zinc	DETSC 2301#	1	mg/kg	570			82
Inorganics							
pH	DETSC 2008#			10.8	12.0	11.9	11.2
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.5			< 0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1			
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	0.5			
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6			
Organic matter	DETSC 2002#	0.1	%	1.7			0.3
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	660	370	150	110
Sulphur as S, Total	DETSC 2320	0.01	%		0.26	0.14	
Sulphate as SO4, Total	DETSC 2321#	0.01	%		0.74	0.24	
Petroleum Hydrocarbons							
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01			< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01			< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01			< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5			< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2			< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5			< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4			< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10			< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01			< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01			< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01			< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9			< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	0.5			< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	12			< 0.6

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-91184
Client Ref SLS1015
Contract Title REDCAR

			Lab No	1124258	1124259	1124260	1124261
			Sample ID	TPI22	TPI34	TPI36	TPI36
			Depth	1.00	0.80	1.50	3.50
			Other ID	1	1	1	3
			Sample Type	ES	ES	ES	ES
			Sampling Date	n/s	n/s	n/s	n/s
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	25			< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	37			< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	37			< 10
PAHs							
Naphthalene	DETSC 3303#	0.03	mg/kg	0.04			< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	0.06			< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.28			< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	0.23			< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	2.7			< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	0.67			< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	7.0			< 0.03
Pyrene	DETSC 3303#	0.03	mg/kg	7.0			< 0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	3.4			< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	2.8			< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	5.4			< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	2.2			< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	3.4			< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	1.3			< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	0.39			< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	1.5			< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	38			< 0.10
Phenols							
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3			< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil VOC Samples

Our Ref 17-91184
Client Ref SLS1015
Contract Title REDCAR

Lab No	1124258
Sample ID	TPI22
Depth	1.00
Other ID	1
Sample Type	ES
Sampling Date	n/s
Sampling Time	n/s

Test	Method	LOD	Units	
VOCs				
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC Samples

Our Ref 17-91184
Client Ref SLS1015
Contract Title REDCAR

Lab No	1124258
Sample ID	TPI22
Depth	1.00
Other ID	1
Sample Type	ES
Sampling Date	n/s
Sampling Time	n/s

Test	Method	LOD	Units	
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-91184
Client Ref SLS1015
Contract Title REDCAR

			Lab No	1124262	1124263
			Sample ID	TPI22	TPI36
			Depth	1.00	3.50
			Other ID	1	3
			Sample Type	ES	ES
			Sampling Date	n/s	n/s
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Preparation					
BS EN 12457 10:1	DETS 036*			Y	Y
Metals					
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	2.4	0.79
Barium, Dissolved	DETSC 2306	0.26	ug/l	6.7	13
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1
Boron	DETSC 2123	100	ug/l	< 100	220
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	0.60	< 0.25
Copper, Dissolved	DETSC 2306	0.4	ug/l	4.5	0.7
Iron, Dissolved	DETSC 2306	5.5	ug/l	12	24
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.20	< 0.09
Manganese, Dissolved	DETSC 2306	0.22	ug/l	2.3	2.8
Mercury, Dissolved	DETSC 2306	0.01	ug/l	0.06	0.04
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.64	< 0.25
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	20	0.9
Zinc, Dissolved	DETSC 2306	1.3	ug/l	3.8	2.8
Inorganics					
pH	DETSC 2008			9.1	8.4
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	0.078	0.14
Chloride	DETSC 2055	0.1	mg/l	6.4	3.5

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-91184
Client Ref SLS1015
Contract Title REDCAR

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1124258	TPI22 1 1.00	SOIL	Amosite	Small bundle of Amosite	Michael Kay
1124261	TPI36 3 3.50	SOIL	NAD	none	Michael Kay

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.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 17-91184
Client Ref SLS1015
Contract Title REDCAR

		Lab No	1124258
		Sample ID	TPI22
		Depth	1.00
		Other ID	1
		Sample Type	SOIL
		Sampling Date	n/s
		Sampling Time	
Test	**Method**	**Units**	
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**< 0.001**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	<0.001
Quantification by PCOM (c)	DETSC 1102	Mass %	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na
Breakdown of Gravimetric Analysis (a)			
Mass of Sample		g	759.09
ACMs present*		type	
Mass of ACM in sample		g	
% ACM by mass		%	
% asbestos in ACM		%	
% asbestos in sample		%	
Breakdown of Detailed Gravimetric Analysis (b)			
% Amphibole bundles in sample		Mass %	<0.001
% Chrysotile bundles in sample		Mass %	na
Breakdown of PCOM Analysis (c)			
% Amphibole fibres in sample		Mass %	na
% Chrysotile fibres in sample		Mass %	na
Breakdown of Potentially Respirable Fibre Analysis (d)			
Amphibole fibres		Fibres/g	na
Chrysotile fibres		Fibres/g	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Information in Support of the Analytical Results

Our Ref 17-91184
Client Ref SLS1015
Contract REDCAR

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1124258	TPI22 1.00 SOIL		GJ 250ml x2, GV, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days), VOC (14 days)	
1124259	TPI34 0.80 SOIL		GJ 250ml, GV, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Chromium, Hexavalent (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), pH + Conductivity (7 days)	
1124260	TPI36 1.50 SOIL		GJ 250ml x2, GV, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP Prep (365 days), pH + Conductivity (7 days)	
1124261	TPI36 3.50 SOIL		GJ 250ml x2, GV, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days)	
1124262	TPI22 1.00 LEACHATE		GJ 250ml x2, GV, PT 1L	Sample date not supplied	
1124263	TPI36 3.50 LEACHATE		GJ 250ml x2, GV, PT 1L	Sample date not supplied	

Key: G-Glass P-Plastic J-Jar V-Vial 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.

Information in Support of the Analytical Results

Our Ref 17-91184
Client Ref SLS1015
Contract REDCAR

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

Certificate of Analysis

Certificate Number 17-91559-1

28-Feb-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-91559-1

Client Reference SLS1015

Order No CH-1332

Contract Title Redcar Site

Description 14 Soil samples, 7 Leachate samples.

Date Received 13-Feb-17

Date Started 13-Feb-17

Date Completed 28-Feb-17

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

Notes **This report suprsedes 17-91559. Testing added.**
Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 17-91559-1
Client Ref SLS1015
Contract Title Redcar Site

Sample ID	Other ID	Depth	Lab No	Completed	Matrix Description
TPI 19	1	1	1126365	21/02/2017	Grey gravelly SAND (Made ground - brick, concrete)
TPI 21	1	0.9	1126366	21/02/2017	Dark grey sandy GRAVEL (Made ground - slag) (sample matrix outside MCERTS scope of accreditation)
TPI 23	1	2.2	1126367	21/02/2017	Grey gravelly SAND (Made ground - slag)
TPI 24	1	1.5	1126368	21/02/2017	Brown clayey, gravelly SAND including odd rootlets (Made ground - concrete)
TPI 25	3	3.7	1126369	21/02/2017	Dark grey clayey SAND including odd rootlets
TPI 26	1	2.6	1126370	21/02/2017	Dark grey very gravelly SAND including odd rootlets (Made ground - slag)
TPI 27	2	1.3	1126371	21/02/2017	Grey sandy GRAVEL (Made ground - slag) (sample matrix outside MCERTS scope of accreditation)
TPI 28	1	3.5	1126372	21/02/2017	Brown sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TPI 29	1	0.6	1126373	21/02/2017	Red gravelly SAND including odd rootlets
TPI 31	2	1.3	1126374	21/02/2017	Grey gravelly SAND (Made ground - slag)
TPI 32	1	1.4	1126375	21/02/2017	Dark brown clayey, gravelly SAND (Made ground - brick)
TPI 33	1	2.8	1126376	21/02/2017	Brown gravelly SAND (Possible made ground - slag)
TPI 35	1	1.5	1126377	21/02/2017	Dark grey sandy GRAVEL (Made ground - slag) (sample matrix outside MCERTS scope of accreditation)
TPI 37	1	1	1126378	21/02/2017	Dark brown gravelly SAND (Made ground - slag)

Summary of Chemical Analysis
Soil Samples

Our Ref 17-91559-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1126365	1126366	1126367	1126368	1126369	1126370
			Sample ID	TPI 19	TPI 21	TPI 23	TPI 24	TPI 25	TPI 26
			Depth	1.00	0.90	2.20	1.50	3.70	2.60
			Other ID	1	1	1	1	3	1
			Sample Type	E	E	E	E	E	E
			Sampling Date	n/s	n/s	n/s	08/02/17	09/02/17	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Metals									
Antimony	DETSC 2301*	1	mg/kg	1.4			7.0	< 1.0	11
Arsenic	DETSC 2301#	0.2	mg/kg	6.6		8.3	7.1	12	33
Barium	DETSC 2301#	1.5	mg/kg	110			350	79	510
Beryllium	DETSC 2301#	0.2	mg/kg	4.2			2.0	0.4	2.8
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	3.4		3.3	6.5	1.3	4.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.2		0.2	0.5	0.4	2.9
Chromium	DETSC 2301#	0.15	mg/kg	120		140	560	20	660
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0		< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	18		19	35	13	290
Lead	DETSC 2301#	0.3	mg/kg	22		25	53	73	580
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05		< 0.05	< 0.05	0.18	0.09
Molybdenum	DETSC 2301#	0.4	mg/kg	0.5			3.0	27	3.9
Nickel	DETSC 2301#	1	mg/kg	6.9		8.0	14	7.2	33
Vanadium	DETSC 2301	0.8	mg/kg	330			1500	51	1400
Zinc	DETSC 2301#	1	mg/kg	34		43	130	95	740
Inorganics									
pH	DETSC 2008#			8.5	9.4	9.5	12.1	10.3	11.9
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1		< 0.1	0.4	< 0.1	< 0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	< 0.2		< 0.2	0.4	< 0.2	< 0.2
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6		< 0.6	< 0.6	< 0.6	< 0.6
Organic matter	DETSC 2002#	0.1	%	0.4		0.5	0.6	1.1	1.7
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	520	140	610	91	260	100
Sulphur as S, Total	DETSC 2320	0.01	%		0.25				
Sulphate as SO4, Total	DETSC 2321#	0.01	%		0.24				
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	0.03		0.02	0.02	0.03	0.03
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	0.04		0.04	0.10	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5		< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2		< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5		< 1.5	< 1.5	< 1.5	2.7
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4		< 3.4	< 3.4	< 3.4	27
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10		< 10	< 10	< 10	30
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9		< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6		< 0.6	3.3	< 0.6	3.0
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4		< 1.4	16	< 1.4	25

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-91559-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1126365	1126366	1126367	1126368	1126369	1126370
			Sample ID	TPI 19	TPI 21	TPI 23	TPI 24	TPI 25	TPI 26
			Depth	1.00	0.90	2.20	1.50	3.70	2.60
			Other ID	1	1	1	1	3	1
			Sample Type	E	E	E	E	E	E
			Sampling Date	n/s	n/s	n/s	08/02/17	09/02/17	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10		< 10	20	< 10	28
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10		< 10	20	< 10	58
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03		< 0.03	0.06	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 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
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03		< 0.03	0.05	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.06		0.18	0.49	< 0.03	0.54
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03		< 0.03	0.10	< 0.03	0.17
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.16		0.50	0.74	< 0.03	1.1
Pyrene	DETSC 3303#	0.03	mg/kg	0.13		0.46	0.65	< 0.03	1.1
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.07		0.12	0.45	< 0.03	0.93
Chrysene	DETSC 3303	0.03	mg/kg	0.08		0.16	0.46	< 0.03	0.85
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.06		0.15	0.69	< 0.03	1.6
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03		0.05	0.18	< 0.03	0.61
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03		0.08	0.43	< 0.03	1.0
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.03		0.05	0.27	< 0.03	0.79
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03		< 0.03	0.08	< 0.03	0.15
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.03		0.05	0.30	< 0.03	0.79
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.61		1.8	5.0	< 0.10	9.6
PCBs									
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg						
PCB 52	DETSC 3401#	0.01	mg/kg						
PCB 101	DETSC 3401#	0.01	mg/kg						
PCB 118	DETSC 3401#	0.01	mg/kg						
PCB 153	DETSC 3401#	0.01	mg/kg						
PCB 138	DETSC 3401#	0.01	mg/kg						
PCB 180	DETSC 3401#	0.01	mg/kg						
PCB 7 Total	DETSC 3401#	0.01	mg/kg						
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3		< 0.3	< 0.3	< 0.3	< 0.3

Summary of Chemical Analysis
Soil Samples

Our Ref 17-91559-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1126371	1126372	1126373	1126374	1126375	1126376
			Sample ID	TPI 27	TPI 28	TPI 29	TPI 31	TPI 32	TPI 33
			Depth	1.30	3.50	0.60	1.30	1.40	2.80
			Other ID	2	1	1	2	1	1
			Sample Type	E	E	E	E	E	E
			Sampling Date	09/02/17	n/s	08/02/17	n/s	09/02/17	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Metals									
Antimony	DETSC 2301*	1	mg/kg	11		3.7	15	4.1	1.9
Arsenic	DETSC 2301#	0.2	mg/kg	8.5		350	8.9	9.5	13
Barium	DETSC 2301#	1.5	mg/kg	1200		280	880	620	320
Beryllium	DETSC 2301#	0.2	mg/kg	2.1		3.3	1.4	2.8	4.9
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	4.5		3.3	4.2	3.4	5.5
Cadmium	DETSC 2301#	0.1	mg/kg	1.0		1.7	3.8	0.2	0.8
Chromium	DETSC 2301#	0.15	mg/kg	970		160	1300	360	130
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	70		42	95	28	32
Lead	DETSC 2301#	0.3	mg/kg	110		190	54	23	100
Mercury	DETSC 2325#	0.05	mg/kg	0.19		< 0.05	0.08	< 0.05	0.08
Molybdenum	DETSC 2301#	0.4	mg/kg	6.0		15	8.3	3.3	1.0
Nickel	DETSC 2301#	1	mg/kg	20		94	24	8.2	9.7
Vanadium	DETSC 2301	0.8	mg/kg	2100		490	2700	880	330
Zinc	DETSC 2301#	1	mg/kg	150		740	150	57	410
Inorganics									
pH	DETSC 2008#			12.1	11.1	9.8	12.3	11.7	11.4
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	0.2
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6		< 0.6	< 0.6	< 0.6	< 0.6
Organic matter	DETSC 2002#	0.1	%	0.8		1.2	0.8	0.9	0.6
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	110	1300	1600	130	350	1300
Sulphur as S, Total	DETSC 2320	0.01	%		0.49				
Sulphate as SO4, Total	DETSC 2321#	0.01	%		0.92				
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	0.02		< 0.01	< 0.01	< 0.01	0.03
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	0.06		< 0.01	< 0.01	< 0.01	0.02
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5		< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2		< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5		< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4		< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10		< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9		< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	1.3		< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4		< 1.4	< 1.4	< 1.4	< 1.4

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-91559-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1126371	1126372	1126373	1126374	1126375	1126376
			Sample ID	TPI 27	TPI 28	TPI 29	TPI 31	TPI 32	TPI 33
			Depth	1.30	3.50	0.60	1.30	1.40	2.80
			Other ID	2	1	1	2	1	1
			Sample Type	E	E	E	E	E	E
			Sampling Date	09/02/17	n/s	08/02/17	n/s	09/02/17	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10		< 10	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10		< 10	< 10	< 10	< 10
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 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	0.05
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 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	0.08
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.26		0.05	0.27	< 0.03	0.47
Anthracene	DETSC 3303	0.03	mg/kg	0.07		< 0.03	0.04	< 0.03	0.11
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.77		0.07	0.63	0.07	0.54
Pyrene	DETSC 3303#	0.03	mg/kg	0.86		0.06	0.48	0.07	0.50
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03		0.04	0.22	0.06	0.30
Chrysene	DETSC 3303	0.03	mg/kg	0.39		0.05	0.20	0.06	0.26
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.68		0.07	0.19	0.11	0.33
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.19		< 0.03	0.07	0.04	0.12
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.32		< 0.03	0.11	0.06	0.19
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.25		< 0.03	0.09	0.03	0.12
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	0.06		< 0.03	< 0.03	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.27		< 0.03	0.09	0.04	0.12
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	4.1		0.34	2.4	0.53	3.2
PCBs									
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01					
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01					
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01					
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01					
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01					
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01					
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01					
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01					
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3		< 0.3	< 0.3	0.5	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-91559-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1126377	1126378
			Sample ID	TPI 35	TPI 37
			Depth	1.50	1.00
			Other ID	1	1
			Sample Type	E	E
			Sampling Date	n/s	09/02/17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Metals					
Antimony	DETSC 2301*	1	mg/kg	14	2.3
Arsenic	DETSC 2301#	0.2	mg/kg	4.2	26
Barium	DETSC 2301#	1.5	mg/kg	900	180
Beryllium	DETSC 2301#	0.2	mg/kg	0.8	2.8
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	4.9	2.4
Cadmium	DETSC 2301#	0.1	mg/kg	0.4	1.5
Chromium	DETSC 2301#	0.15	mg/kg	1300	77
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	54	150
Lead	DETSC 2301#	0.3	mg/kg	23	96
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.08
Molybdenum	DETSC 2301#	0.4	mg/kg	5.2	6.7
Nickel	DETSC 2301#	1	mg/kg	11	56
Vanadium	DETSC 2301	0.8	mg/kg	3000	340
Zinc	DETSC 2301#	1	mg/kg	53	360
Inorganics					
pH	DETSC 2008#			12.0	11.3
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	0.4
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	< 0.2	0.4
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6	< 0.6
Organic matter	DETSC 2002#	0.1	%	0.6	14
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	21	280
Sulphur as S, Total	DETSC 2320	0.01	%		
Sulphate as SO4, Total	DETSC 2321#	0.01	%		
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	0.04
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	0.04
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	0.02
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-91559-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1126377	1126378
			Sample ID	TPI 35	TPI 37
			Depth	1.50	1.00
			Other ID	1	1
			Sample Type	E	E
			Sampling Date	n/s	09/02/17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10
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	0.05
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.16
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.15
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	0.09
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	0.09
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	0.06
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.04
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	0.04
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10	0.67
PCBs					
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg		< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg		< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg		< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg		< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg		< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg		< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg		< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg		< 0.01
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-91559-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1126379	1126380	1126381	1126382	1126383	1126384	1126385
			Sample ID	TPI 19	TPI 24	TPI 25	TPI 27	TPI 29	TPI 35	TPI 37
			Depth	1.00	1.50	3.70	1.30	0.60	1.50	1.00
			Other ID	1	1	3	2	1	1	1
			Sample Type	E	E	E	E	E	E	E
			Sampling Date	n/s	08/02/17	09/02/17	09/02/17	08/02/17	n/s	09/02/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Preparation										
Leachate 10:1	DETS 036*			Y	Y	Y	Y	Y	Y	Y
Metals										
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.55	0.94	17	1.1	55	0.60	2.6
Barium, Dissolved	DETSC 2306	0.26	ug/l	77	43	9.6	22	36	42	13
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron	DETSC 2123	100	ug/l	< 100	< 100	< 100	< 100	< 100	< 100	< 100
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	0.42	< 0.03	0.04	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	0.26	6.7	< 0.25	12	0.72	9.6	0.41
Copper, Dissolved	DETSC 2306	0.4	ug/l	0.9	2.6	1.1	1.9	0.7	1.3	1.1
Iron, Dissolved	DETSC 2306	5.5	ug/l	14	< 5.5	38	< 5.5	< 5.5	< 5.5	68
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	< 0.09	2.4	< 0.09	< 0.09	< 0.09	1.3
Manganese, Dissolved	DETSC 2306	0.22	ug/l	0.72	0.34	7.4	0.41	8.6	0.31	5.5
Mercury, Dissolved	DETSC 2306	0.01	ug/l	0.01	0.01	0.03	0.04	0.01	0.09	0.02
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5	< 0.5	2.5	< 0.5	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.64	0.48	0.49	0.51	0.42	0.49	0.32
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	17	17	37	31	8.6	14	9.7
Zinc, Dissolved	DETSC 2306	1.3	ug/l	< 1.3	2.4	4.4	1.7	5.4	< 1.3	9.4
Inorganics										
pH	DETSC 2008			10.0	11.1	8.3	10.6	7.7	11.4	8.2
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	< 0.015	< 0.015	0.040	0.019	< 0.015	< 0.015	< 0.015

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-91559-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1126365	TPI 19 1 1.00	SOIL	NAD	none	Colin Patrick
1126367	TPI 23 1 2.20	SOIL	NAD	none	Colin Patrick
1126368	TPI 24 1 1.50	SOIL	NAD	none	Colin Patrick
1126369	TPI 25 3 3.70	SOIL	NAD	none	Colin Patrick
1126370	TPI 26 1 2.60	SOIL	NAD	none	Colin Patrick
1126371	TPI 27 2 1.30	SOIL	NAD	none	Colin Patrick
1126373	TPI 29 1 0.60	SOIL	NAD	none	Colin Patrick
1126374	TPI 31 2 1.30	SOIL	NAD	none	Colin Patrick
1126375	TPI 32 1 1.40	SOIL	NAD	none	Colin Patrick
1126376	TPI 33 1 2.80	SOIL	NAD	none	Colin Patrick
1126377	TPI 35 1 1.50	SOIL	NAD	none	Colin Patrick
1126378	TPI 37 1 1.00	SOIL	NAD	none	Colin Patrick

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 17-91559-1
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1126365	TPI 19 1.00 SOIL		GV, PT 1L, PT 500ml	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days)	
1126366	TPI 21 0.90 SOIL		GJ 250ml x2, GV, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Chromium, Hexavalent (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), pH + Conductivity (7 days)	
1126367	TPI 23 2.20 SOIL		GJ 250ml, GV, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days)	
1126368	TPI 24 1.50 SOIL	08/02/17	GJ 250ml, PT 1L		
1126369	TPI 25 3.70 SOIL	09/02/17	GJ 250ml x2, GJ 60ml, PT 1L		
1126370	TPI 26 2.60 SOIL		GJ 250ml x2, GV, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days)	
1126371	TPI 27 1.30 SOIL	09/02/17	GJ 250ml x2, GJ 60ml, PT 1L		
1126372	TPI 28 3.50 SOIL		GJ 250ml, GV, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Chromium, Hexavalent (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), pH + Conductivity (7 days)	
1126373	TPI 29 0.60 SOIL	08/02/17	GJ 250ml, GJ 60ml, PT 1L		

Information in Support of the Analytical Results

Our Ref 17-91559-1
Client Ref SLS1015
Contract Redcar Site

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1126374	TPI 31 1.30 SOIL		GJ 250ml x2, GV, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days)	
1126375	TPI 32 1.40 SOIL	09/02/17	GJ 250ml x2, GJ 60ml, PT 1L		
1126376	TPI 33 2.80 SOIL		GJ 250ml, GV, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days)	
1126377	TPI 35 1.50 SOIL		GJ 250ml, GV, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days)	
1126378	TPI 37 1.00 SOIL	09/02/17	GJ 250ml x2, GJ 60ml, PT 1L		
1126379	TPI 19 1.00 LEACHATE		GV, PT 1L, PT 500ml	Sample date not supplied	
1126380	TPI 24 1.50 LEACHATE	08/02/17	GJ 250ml, PT 1L		
1126381	TPI 25 3.70 LEACHATE	09/02/17	GJ 250ml x2, GJ 60ml, PT 1L		
1126382	TPI 27 1.30 LEACHATE	09/02/17	GJ 250ml x2, GJ 60ml, PT 1L		
1126383	TPI 29 0.60 LEACHATE	08/02/17	GJ 250ml, GJ 60ml, PT 1L		
1126384	TPI 35 1.50 LEACHATE		GJ 250ml, GV, PT 1L	Sample date not supplied	
1126385	TPI 37 1.00 LEACHATE	09/02/17	GJ 250ml x2, GJ 60ml, PT 1L		

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

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.

Information in Support of the Analytical Results

Our Ref 17-91559-1
Client Ref SLS1015
Contract Redcar Site

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

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Certificate of Analysis

Certificate Number 17-92379-1

15-Mar-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-92379-1

Client Reference SLS1015

Order No CH-1332

Contract Title Redcar Site

Description 21 Soil samples, 7 Leachate samples.

Date Received Tuesday, February 21, 2017

Date Started Tuesday, February 21, 2017

Date Completed Wednesday, March 15, 2017

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

Notes **This report supersedes 17-92379. Extra testing.**

Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 17-92379-1
Client Ref SLS1015
Contract Title Redcar Site

				Lab No	1131597	1131598	1131599	1131600	1131601	1131602	1131603
				Sample ID	TPH01	TPH02	TPH07	TPH07	TPH09	TPH10	TPH11
				Depth	1.20	0.70	0.50	2.00	0.40	1.50	1.70
				Other ID	1	1	1	2	1	1	1
				Sample Type	ES	ES	ES	ES	ES	ES	ES
				Sampling Date	13-Feb-17	14-Feb-17	n/s	n/s	14-Feb-17	14-Feb-17	n/s
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**								
Asbestos Quantification	DETSC 1102	0						Y			Y
Metals											
Antimony	DETSC 2301*	1	mg/kg	1.4		< 1.0	16	< 1.0	1.4	7.8
Arsenic	DETSC 2301#	0.2	mg/kg	9.1		1.8	84	8.6	11	19
Barium	DETSC 2301#	1.5	mg/kg	430		43	160	380	41	350
Beryllium	DETSC 2301#	0.2	mg/kg	4.2		< 0.2	0.8	5.7	< 0.2	1.3
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	5.1		3.5	3.5	2.8	1.5	4.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.4		0.6	0.7	0.2	0.3	0.6
Chromium	DETSC 2301#	0.15	mg/kg	92		12	160	100	51	470
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	26		8.4	670	18	26	70
Lead	DETSC 2301#	0.3	mg/kg	42		420	110	13	52	97
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05		< 0.05	0.07	< 0.05	< 0.05	0.10
Molybdenum	DETSC 2301#	0.4	mg/kg	1.2		2.8	36	1.3	1.7	4.2
Nickel	DETSC 2301#	1	mg/kg	7.8		6.7	220	5.4	12	32
Vanadium	DETSC 2301	0.8	mg/kg	240		19	110	170	79	1100
Zinc	DETSC 2301#	1	mg/kg	63		20	190	46	83	150
Inorganics											
pH	DETSC 2008#			11.7	11.6	13.0	12.9	12.9	12.1	12.5
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.2		0.3	2.1	0.2	< 0.1	0.3
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	< 0.2		0.3	2.1	0.2	< 0.2	0.3
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6		< 0.6	1.5	1.9	< 0.6	< 0.6
Organic matter	DETSC 2002#	0.1	%	1.4		0.8	7.6	1.1	1.1	2.3
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1200	1200	290	620	270	140	270
Sulphur as S, Total	DETSC 2320	0.01	%		0.31					
Sulphate as SO4, Total	DETSC 2321#	0.01	%		0.81					
Petroleum Hydrocarbons											
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5		< 1.5	7.2	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2		< 1.2	87	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5		< 1.5	520	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4		22	3000	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10		23	3600	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9		< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5		< 0.5	6.0	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6		< 0.6	44	< 0.6	< 0.6	3.1

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-92379-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1131597	1131598	1131599	1131600	1131601	1131602	1131603
			Sample ID	TPH01	TPH02	TPH07	TPH07	TPH09	TPH10	TPH11
			Depth	1.20	0.70	0.50	2.00	0.40	1.50	1.70
			Other ID	1	1	1	2	1	1	1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	13-Feb-17	14-Feb-17	n/s	n/s	14-Feb-17	14-Feb-17	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4		< 1.4	200	< 1.4	< 1.4	6.5
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10		< 10	250	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10		23	3800	< 10	< 10	< 10
PAHs										
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	0.3
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	7.7	< 0.1	< 0.1	0.2
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	0.6
Phenanthrene	DETSC 3301	0.1	mg/kg	0.3		< 0.1	5.5	< 0.1	< 0.1	1.6
Anthracene	DETSC 3301	0.1	mg/kg	0.2		< 0.1	< 0.1	< 0.1	< 0.1	0.4
Fluoranthene	DETSC 3301	0.1	mg/kg	0.4		< 0.1	4.9	< 0.1	< 0.1	3.7
Pyrene	DETSC 3301	0.1	mg/kg	0.3		< 0.1	5.5	< 0.1	0.1	3.8
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	5.7	< 0.1	< 0.1	2.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	3.3	< 0.1	< 0.1	1.7
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	1.2
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	0.7
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	1.7
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	0.9
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	0.9
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	1.3
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6		< 1.6	33	< 1.6	< 1.6	21
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-92379-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1131604	1131605	1131606	1131607	1131608	1131609	1131610
			Sample ID	TPH13	TPH14	TPH15	TPH15	TPH16	TPH17	TPH21
			Depth	0.50	2.00	1.40	3.00	2.20	1.50	1.60
			Other ID	1	1	1	2	3	1	1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	n/s	n/s	13-Feb-17	13-Feb-17	14-Feb-17	14-Feb-17	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Asbestos Quantification	DETSC 1102	0								
Metals										
Antimony	DETSC 2301*	1	mg/kg	8.3	1.9		< 1.0	3.1		4.7
Arsenic	DETSC 2301#	0.2	mg/kg	16	14		7.7	7.3		12
Barium	DETSC 2301#	1.5	mg/kg	230	250		120	270		350
Beryllium	DETSC 2301#	0.2	mg/kg	0.9	1.8		0.7	1.0		2.1
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	6.6	3.1		2.1	1.8		7.8
Cadmium	DETSC 2301#	0.1	mg/kg	0.7	0.6		0.3	0.4		1.0
Chromium	DETSC 2301#	0.15	mg/kg	660	130		21	220		370
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Copper	DETSC 2301#	0.2	mg/kg	44	39		60	34		38
Lead	DETSC 2301#	0.3	mg/kg	41	63		22	28		64
Mercury	DETSC 2325#	0.05	mg/kg	0.29	0.07		< 0.05	< 0.05		< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	5.2	1.0		1.3	1.8		2.8
Nickel	DETSC 2301#	1	mg/kg	21	18		25	27		20
Vanadium	DETSC 2301	0.8	mg/kg	1500	160		33	460		810
Zinc	DETSC 2301#	1	mg/kg	160	170		77	82		240
Inorganics										
pH	DETSC 2008#			12.3	11.6	12.0	11.9	11.5	11.9	11.6
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.2	0.2		9.5	0.2		0.3
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1		0.2	< 0.1		< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	< 0.2	< 0.2		9.3	0.2		0.3
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6	1.4		< 0.6	< 0.6		< 0.6
Organic matter	DETSC 2002#	0.1	%	1.2	1.3		1.8	1.5		0.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	800	530	850	69	320	270	1400
Sulphur as S, Total	DETSC 2320	0.01	%			0.26			0.08	
Sulphate as SO4, Total	DETSC 2321#	0.01	%			0.91			0.23	
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01		< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01		< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01		< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5		< 1.5	< 1.5		< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2		< 1.2	< 1.2		< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	13	< 1.5		< 1.5	< 1.5		< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	52	< 3.4		< 3.4	< 3.4		< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	65	< 10		< 10	< 10		< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01		< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01		< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01		< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9		< 0.9	< 0.9		< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5		< 0.5	< 0.5		< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6		< 0.6	< 0.6		5.8

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-92379-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1131604	1131605	1131606	1131607	1131608	1131609	1131610
			Sample ID	TPH13	TPH14	TPH15	TPH15	TPH16	TPH17	TPH21
			Depth	0.50	2.00	1.40	3.00	2.20	1.50	1.60
			Other ID	1	1	1	2	3	1	1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	n/s	n/s	13-Feb-17	13-Feb-17	14-Feb-17	14-Feb-17	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4		< 1.4	< 1.4		23
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10		< 10	< 10		29
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	65	< 10		< 10	< 10		29
PAHs										
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1		< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1		< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1		0.2
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1		0.4
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1		< 0.1	0.2		2.5
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1		0.6
Fluoranthene	DETSC 3301	0.1	mg/kg	0.2	< 0.1		< 0.1	0.3		5.7
Pyrene	DETSC 3301	0.1	mg/kg	0.3	< 0.1		< 0.1	0.2		5.3
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1		4.3
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1		4.0
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1		2.9
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1		1.9
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1		4.0
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1		2.4
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1		0.9
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1		2.7
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6		< 1.6	< 1.6		38
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3		< 0.3	< 0.3		< 0.3

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-92379-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1131611	1131612	1131613	1131614	1131615	1131616	1131617
			Sample ID	TPH23	TPH23	TPH24	TPH25	TPH27	TPH29	TPH33
			Depth	1.50	3.40	2.30	1.20	1.20	0.80	2.00
			Other ID	1	3	1	1	2	1	1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	14-Feb-17	14-Feb-17	14-Feb-17	15-Feb-17	n/s	13-Feb-17	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Asbestos Quantification	DETSC 1102	0								
Metals										
Antimony	DETSC 2301*	1	mg/kg		< 1.0		3.8	9.0	7.4	10
Arsenic	DETSC 2301#	0.2	mg/kg	8.8	7.1	12	77	6.1	8.9	15
Barium	DETSC 2301#	1.5	mg/kg		190		610	340	320	150
Beryllium	DETSC 2301#	0.2	mg/kg		1.6		1.2	1.2	0.6	0.7
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	1.5	1.9	2.1	3.2	4.9	3.1	5.1
Cadmium	DETSC 2301#	0.1	mg/kg	0.1	0.2	0.4	2.9	0.4	0.8	8.9
Chromium	DETSC 2301#	0.15	mg/kg	36	35	73	170	810	680	420
Chromium, Hexavalent	DETSC 2204*	1	mg/kg		< 1.0		< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	30	92	15	72	41	49	220
Lead	DETSC 2301#	0.3	mg/kg	22	20	51	59	45	71	500
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.24	< 0.05	0.10	0.11	< 0.05	0.11
Molybdenum	DETSC 2301#	0.4	mg/kg		0.8		10	3.4	4.7	8.1
Nickel	DETSC 2301#	1	mg/kg	30	22	8.4	70	19	13	43
Vanadium	DETSC 2301	0.8	mg/kg		62		420	2200	1400	1200
Zinc	DETSC 2301#	1	mg/kg	66	71	130	190	130	110	2100
Inorganics										
pH	DETSC 2008#			10.0	9.8	9.9	9.9	10.3	10.7	11.3
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.3	0.2	0.2	0.1	0.4	0.2	0.2
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	0.3	< 0.2	0.2	< 0.2	0.4	< 0.2	0.2
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	1.3
Organic matter	DETSC 2002#	0.1	%	1.4	1.7	1.7	0.9	0.5	1.5	1.1
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	160	310	290	390	600	180	210
Sulphur as S, Total	DETSC 2320	0.01	%							
Sulphate as SO4, Total	DETSC 2321#	0.01	%							
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	0.07	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	210	< 1.2	4.6	< 1.2	4.8
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	1100	< 1.5	26	< 1.5	41
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	740	< 3.4	73	< 3.4	190
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	2000	< 10	100	< 10	240
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	0.07	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	2.4	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	8.3	56	< 0.5	< 0.5	< 0.5	1.9
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	22	280	< 0.6	12	2.5	24

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-92379-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1131611	1131612	1131613	1131614	1131615	1131616	1131617
			Sample ID	TPH23	TPH23	TPH24	TPH25	TPH27	TPH29	TPH33
			Depth	1.50	3.40	2.30	1.20	1.20	0.80	2.00
			Other ID	1	3	1	1	2	1	1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	14-Feb-17	14-Feb-17	14-Feb-17	15-Feb-17	n/s	13-Feb-17	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	26	220	< 1.4	34	6.9	92
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	59	550	< 10	47	< 10	120
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	59	2600	< 10	150	< 10	360
PAHs										
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	0.3	3.0	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	12	11	< 0.1	< 0.1	< 0.1	0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	18	2.8	< 0.1	0.8	0.2	0.4
Phenanthrene	DETSC 3301	0.1	mg/kg	0.5	71	8.4	0.1	0.4	0.3	0.7
Anthracene	DETSC 3301	0.1	mg/kg	0.3	20	3.8	< 0.1	0.2	< 0.1	0.2
Fluoranthene	DETSC 3301	0.1	mg/kg	0.6	67	< 0.1	0.3	1.0	0.4	1.0
Pyrene	DETSC 3301	0.1	mg/kg	0.4	50	< 0.1	0.5	1.7	0.4	1.3
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	21	< 0.1	< 0.1	1.1	0.2	0.5
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	18	< 0.1	< 0.1	1.2	0.2	0.4
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	13	< 0.1	< 0.1	1.1	0.1	0.4
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	8.2	< 0.1	< 0.1	0.7	< 0.1	0.4
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	17	< 0.1	< 0.1	1.6	0.3	0.8
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	10	< 0.1	< 0.1	0.9	< 0.1	0.6
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	1.9	< 0.1	< 0.1	0.6	< 0.1	0.7
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	7.6	< 0.1	< 0.1	1.3	0.5	0.9
PAH Total	DETSC 3301	1.6	mg/kg	1.8	330	29	< 1.6	13	2.6	8.6
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-92379-1
Client Ref SLS1015
Contract Title Redcar Site

	Lab No	1131600	1131602	1131603	1131611	1131612	1131613
	Sample ID	TPH07	TPH10	TPH11	TPH23	TPH23	TPH24
	Depth	2.00	1.50	1.70	1.50	3.40	2.30
	Other ID	2	1	1	1	3	1
	Sample Type	ES	ES	ES	ES	ES	ES
	Sampling Date	n/s	14-Feb-17	n/s	14-Feb-17	14-Feb-17	14-Feb-17
	Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
VOCs							
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	0.01	0.01	0.01	< 0.01	0.01	0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

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Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-92379-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1131600	1131602	1131603	1131611	1131612	1131613
			Sample ID	TPH07	TPH10	TPH11	TPH23	TPH23	TPH24
			Depth	2.00	1.50	1.70	1.50	3.40	2.30
			Other ID	2	1	1	1	3	1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	n/s	14-Feb-17	n/s	14-Feb-17	14-Feb-17	14-Feb-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
SVOCs									
Phenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	0.2	< 0.1	< 0.1	< 0.1	0.1	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	1.0	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	0.2	< 0.1	< 0.1	< 0.1	1.1	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.7	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-92379-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1131600	1131602	1131603	1131611	1131612	1131613
			Sample ID	TPH07	TPH10	TPH11	TPH23	TPH23	TPH24
			Depth	2.00	1.50	1.70	1.50	3.40	2.30
			Other ID	2	1	1	1	3	1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	n/s	14-Feb-17	n/s	14-Feb-17	14-Feb-17	14-Feb-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.5	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-92379-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1131614	1131617
			Sample ID	TPH25	TPH33
			Depth	1.20	2.00
			Other ID	1	1
			Sample Type	ES	ES
			Sampling Date	15-Feb-17	n/s
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
VOCs					
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	0.01	0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-92379-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1131614	1131617
			Sample ID	TPH25	TPH33
			Depth	1.20	2.00
			Other ID	1	1
			Sample Type	ES	ES
			Sampling Date	15-Feb-17	n/s
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
SVOCs					
Phenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-92379-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1131614	1131617
			Sample ID	TPH25	TPH33
			Depth	1.20	2.00
			Other ID	1	1
			Sample Type	ES	ES
			Sampling Date	15-Feb-17	n/s
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-92379-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1131618	1131619	1131620	1131621	1131622	1131623	1131624
			Sample ID	TPH07	TPH10	TPH15	TPH23	TPH25	TPH27	TPH33
			Depth	2.00	1.50	3.00	3.40	1.20	1.20	2.00
			Other ID	2	1	2	3	1	2	1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	n/s	14-Feb-17	13-Feb-17	14-Feb-17	15-Feb-17	n/s	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Preparation										
Leachate 10:1	DETS 036*			Y	Y	Y	Y	Y	Y	Y
Metals										
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	6.4	1.7	1.7	1.7	3.5	8.0	1.3
Barium, Dissolved	DETSC 2306	0.26	ug/l	3.8	3.7	4.3	6.5	5.6	1.1	4.5
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron, Dissolved	DETSC 2306*	12	ug/l	< 12	< 12	60	< 12	32	26	34
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	< 0.03	0.06	0.04	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	0.28	< 0.25	3.4	2.0	0.89	1.0	7.0
Copper, Dissolved	DETSC 2306	0.4	ug/l	16	1.5	3.2	3.6	1.1	4.0	1.4
Iron, Dissolved	DETSC 2306	5.5	ug/l	26	51	14	14	21	30	6.3
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	0.31	< 0.09	< 0.09	0.49	0.97	0.16
Manganese, Dissolved	DETSC 2306	0.22	ug/l	< 0.22	3.7	0.63	0.40	3.4	2.3	0.43
Mercury, Dissolved	DETSC 2306	0.01	ug/l	0.02	< 0.01	0.01	0.01	0.02	0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	4.4	< 0.5	< 0.5	0.6	1.0	1.4	0.8
Selenium, Dissolved	DETSC 2306	0.25	ug/l	5.4	1.5	1.4	0.90	0.51	0.69	0.30
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	25	5.3	29	31	17	32	23
Zinc, Dissolved	DETSC 2306	1.3	ug/l	< 1.3	< 1.3	< 1.3	< 1.3	3.0	1.4	< 1.3
Inorganics										
pH	DETSC 2008			11.1	8.7	10.1	10.5	8.8	9.6	10.9
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015
Chloride	DETSC 2055	0.1	mg/l	4.0	3.9	3.0	3.3	3.2	3.4	3.8

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-92379-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1131597	TPH01 1 1.20	SOIL	NAD	none	Steven Lambert
1131599	TPH07 1 0.50	SOIL	NAD	none	Steven Lambert
1131600	TPH07 2 2.00	SOIL	Amosite	Amosite present as fibre bundle	Steven Lambert
1131601	TPH09 1 0.40	SOIL	NAD	none	Steven Lambert
1131602	TPH10 1 1.50	SOIL	NAD	none	Steven Lambert
1131603	TPH11 1 1.70	SOIL	Amosite	Amosite present as fibre bundle	Steven Lambert
1131604	TPH13 1 0.50	SOIL	NAD	none	Steven Lambert
1131605	TPH14 1 2.00	SOIL	NAD	none	Steven Lambert
1131607	TPH15 2 3.00	SOIL	NAD	none	Steven Lambert
1131608	TPH16 3 2.20	SOIL	NAD	none	Steven Lambert
1131610	TPH21 1 1.60	SOIL	NAD	none	Steven Lambert
1131611	TPH23 1 1.50	SOIL	NAD	none	Steven Lambert
1131612	TPH23 3 3.40	SOIL	NAD	none	Steven Lambert
1131613	TPH24 1 2.30	SOIL	NAD	none	Steven Lambert
1131614	TPH25 1 1.20	SOIL	NAD	none	Steven Lambert
1131615	TPH27 2 1.20	SOIL	NAD	none	Steven Lambert
1131616	TPH29 1 0.80	SOIL	NAD	none	Steven Lambert
1131617	TPH33 1 2.00	SOIL	NAD	none	Steven Lambert

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.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 17-92379-1
Client Ref SLS1015
Contract Title Redcar Site

		Lab No	1131600	1131603
		Sample ID	TPH07	TPH11
		Depth	2.00	1.70
		Other ID	2	1
		Sample Type	SOIL	SOIL
		Sampling Date	n/s	n/s
		Sampling Time		
Test	**Method**	**Units**		
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**< 0.001**	**< 0.001**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	<0.001	<0.001
Quantification by PCOM (c)	DETSC 1102	Mass %	na	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na	na
Breakdown of Gravimetric Analysis (a)				
Mass of Sample		g	1058.82	1441.54
ACMs present*		type		
Mass of ACM in sample		g		
% ACM by mass		%		
% asbestos in ACM		%		
% asbestos in sample		%		
Breakdown of Detailed Gravimetric Analysis (b)				
% Amphibole bundles in sample		Mass %	<0.001	<0.001
% Chrysotile bundles in sample		Mass %	na	na
Breakdown of PCOM Analysis (c)				
% Amphibole fibres in sample		Mass %	na	na
% Chrysotile fibres in sample		Mass %	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)				
Amphibole fibres		Fibres/g	na	na
Chrysotile fibres		Fibres/g	na	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Information in Support of the Analytical Results

Our Ref 17-92379-1
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1131597	TPH01 1.20 SOIL	13/02/17	GJ 250ml x2, GV, PT 1L	pH + Conductivity (7 days)	
1131598	TPH02 0.70 SOIL	14/02/17	GJ 250ml x2, GV, PT 1L		
1131599	TPH07 0.50 SOIL		GJ 250ml x2, GJ 60ml, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days)	
1131600	TPH07 2.00 SOIL		GJ 250ml x2, GJ 60ml, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days), SVOC (14 days)	
1131601	TPH09 0.40 SOIL	14/02/17	GJ 250ml x2, GV, PT 1L		
1131602	TPH10 1.50 SOIL	14/02/17	GJ 250ml x2, GV, PT 1L		
1131603	TPH11 1.70 SOIL		GJ 250ml x2, GJ 60ml, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days), SVOC (14 days)	

Information in Support of the Analytical Results

Our Ref 17-92379-1
Client Ref SLS1015
Contract Redcar Site

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1131604	TPH13 0.50 SOIL		GJ 250ml x2, GJ 60ml, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days)	
1131605	TPH14 2.00 SOIL		GJ 250ml x2, GJ 60ml, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days)	
1131606	TPH15 1.40 SOIL	13/02/17	GJ 250ml x2, GV, PT 1L	pH + Conductivity (7 days)	
1131607	TPH15 3.00 SOIL	13/02/17	GJ 250ml x2, GV, PT 1L	pH + Conductivity (7 days)	
1131608	TPH16 2.20 SOIL	14/02/17	GJ 250ml x2, GV, PT 1L		
1131609	TPH17 1.50 SOIL	14/02/17	GJ 250ml x2, GV, PT 1L		
1131610	TPH21 1.60 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days)	Aliphatics/Aromatics, BTEX, Naphthalene, PAH FID
1131611	TPH23 1.50 SOIL	14/02/17	GJ 250ml x2, GV, PT 1L		
1131612	TPH23 3.40 SOIL	14/02/17	GJ 250ml x2, GV, PT 1L		

Information in Support of the Analytical Results

Our Ref 17-92379-1
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1131613	TPH24 2.30 SOIL	14/02/17	GJ 250ml x2, GV, PT 1L		
1131614	TPH25 1.20 SOIL	15/02/17	GJ 250ml x2, GV, PT 1L		
1131615	TPH27 1.20 SOIL		GJ 250ml x2, GJ 60ml, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days)	
1131616	TPH29 0.80 SOIL	13/02/17	GJ 250ml x2, GV, PT 1L	pH + Conductivity (7 days)	
1131617	TPH33 2.00 SOIL		GJ 250ml x2, GJ 60ml, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days), SVOC (14 days)	
1131618	TPH07 2.00 LEACHATE		GJ 250ml x2, GJ 60ml, PT 1L	Sample date not supplied	
1131619	TPH10 1.50 LEACHATE	14/02/17	GJ 250ml x2, GV, PT 1L		
1131620	TPH15 3.00 LEACHATE	13/02/17	GJ 250ml x2, GV, PT 1L		
1131621	TPH23 3.40 LEACHATE	14/02/17	GJ 250ml x2, GV, PT 1L		
1131622	TPH25 1.20 LEACHATE	15/02/17	GJ 250ml x2, GV, PT 1L		
1131623	TPH27 1.20 LEACHATE		GJ 250ml x2, GJ 60ml, PT 1L	Sample date not supplied	
1131624	TPH33 2.00 LEACHATE		GJ 250ml x2, GJ 60ml, PT 1L	Sample date not supplied	

Key: G-Glass P-Plastic J-Jar V-Vial 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.

Information in Support of the Analytical Results

Our Ref 17-92379-1
Client Ref SLS1015
Contract Redcar Site

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

Certificate of Analysis

Certificate Number 17-93477-1

22-Mar-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-93477-1

Client Reference SLS1015

Order No CH-1332

Contract Title Redcar Site

Description 16 Soil samples, 6 Leachate samples.

Date Received 06-Mar-17

Date Started 06-Mar-17

Date Completed 22-Mar-17

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

Notes **This report supersedes 17-93477, Extra Testing**

Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 17-93477-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1138784	1138785	1138786	1138787	1138788	1138789	1138790
			Sample ID	TPE10	TPE10	TPE09	TPE02	TPE07	TPE05	TPE05
			Depth	0.10	2.40	2.50	0.30	3.90	0.50	1.70
			Other ID	1	2	2	1	2	1	3
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	20/02/17	20/02/17	20/02/17	21/02/17	21/02/17	20/02/17	20/02/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Asbestos Quantification	DETSC 1102	0								Y
Metals										
Antimony	DETSC 2301*	1	mg/kg	7.4		< 1.0				4.4
Arsenic	DETSC 2301#	0.2	mg/kg	11	37	5.3	7.8	3.9		66
Barium	DETSC 2301#	1.5	mg/kg	110		77				36
Beryllium	DETSC 2301#	0.2	mg/kg	0.3		< 0.2				3.2
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	2.1	12	1.2	2.4	0.6		21
Cadmium	DETSC 2301#	0.1	mg/kg	6.2	2.3	0.6	0.7	0.1		1.3
Chromium	DETSC 2301#	0.15	mg/kg	50	92	9.0	54	6.4		290
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0		< 1.0				< 1.0
Copper	DETSC 2301#	0.2	mg/kg	66	40	8.7	26	14		72
Lead	DETSC 2301#	0.3	mg/kg	570	210	69	40	14		38
Mercury	DETSC 2325#	0.05	mg/kg	0.08	< 0.05	< 0.05	< 0.05	< 0.05		< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	3.3		0.7				11
Nickel	DETSC 2301#	1	mg/kg	28	21	5.9	34	4.3		38
Vanadium	DETSC 2301	0.8	mg/kg	150		24				210
Zinc	DETSC 2301#	1	mg/kg	2400	790	240	170	40		160
Inorganics										
pH	DETSC 2008#			8.9	9.5	9.3	10.0	8.7	7.7	7.9
Cyanide, Total	DETSC 2130#	0.1	mg/kg	5.0	7.0	0.8	0.6	< 0.1		7.6
Cyanide, Free	DETSC 2130#	0.1	mg/kg	0.1		< 0.1				0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	4.9		0.8				7.4
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6		< 0.6				1.7
Organic matter	DETSC 2002#	0.1	%	1.9	1.7	0.5	1.8	0.4		1.6
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	120	1500	160	270	170	1300	1400
Sulphur as S, Total	DETSC 2320	0.01	%		0.36				0.18	
Sulphate as SO4, Total	DETSC 2321#	0.01	%		1.3				0.76	
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5		< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2		< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5		6.0
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4		31
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10		38
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9		< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6		< 0.6

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-93477-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1138784	1138785	1138786	1138787	1138788	1138789	1138790
			Sample ID	TPE10	TPE10	TPE09	TPE02	TPE07	TPE05	TPE05
			Depth	0.10	2.40	2.50	0.30	3.90	0.50	1.70
			Other ID	1	2	2	1	2	1	3
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	20/02/17	20/02/17	20/02/17	21/02/17	21/02/17	20/02/17	20/02/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4		2.8
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10		< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10		41
PAHs										
Naphthalene	DETSC 3303#	0.03	mg/kg	0.06	< 0.03	< 0.03	0.12	< 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
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03		< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.09	0.17	< 0.03	0.20	< 0.03		0.16
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	0.03	< 0.03	0.04	< 0.03		0.04
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.10	0.21	< 0.03	0.19	< 0.03		0.28
Pyrene	DETSC 3303#	0.03	mg/kg	0.08	0.16	< 0.03	0.14	< 0.03		0.25
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.03	0.07	< 0.03	0.08	< 0.03		0.10
Chrysene	DETSC 3303	0.03	mg/kg	0.05	0.08	< 0.03	0.10	< 0.03		0.12
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.07	< 0.03	0.08	< 0.03		0.12
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.03	< 0.03		0.06
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.03	< 0.03	0.04	< 0.03		0.07
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.04	< 0.03		0.06
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 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		0.06
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.41	0.82	< 0.10	1.1	< 0.10		1.3
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.4	< 0.3	0.5	0.7	0.4		< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-93477-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1138791	1138792	1138793	1138794	1138795	1138796	1138797
			Sample ID	TPE04	TPE01	TPE03	TPE03	TPE08	TPE15	TPE15
			Depth	1.00	0.40	1.50	3.00	0.40	0.20	1.20
			Other ID	1	1	1	2	1	1	2
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	20/02/17	21/02/17	22/02/17	22/02/17	22/02/17	24/02/17	24/02/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Asbestos Quantification	DETSC 1102	0								
Metals										
Antimony	DETSC 2301*	1	mg/kg		4.0			4.6		
Arsenic	DETSC 2301#	0.2	mg/kg	22	22	18		25	6.2	
Barium	DETSC 2301#	1.5	mg/kg		170			470		
Beryllium	DETSC 2301#	0.2	mg/kg		4.0			1.0		
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	4.6	9.4	6.2		1.7	21	
Cadmium	DETSC 2301#	0.1	mg/kg	0.6	0.6	0.8		3.6	0.6	
Chromium	DETSC 2301#	0.15	mg/kg	240	240	110		68	150	
Chromium, Hexavalent	DETSC 2204*	1	mg/kg		< 1.0			< 1.0		
Copper	DETSC 2301#	0.2	mg/kg	40	40	28		46	27	
Lead	DETSC 2301#	0.3	mg/kg	64	64	60		260	34	
Mercury	DETSC 2325#	0.05	mg/kg	0.09	0.09	0.07		0.12	< 0.05	
Molybdenum	DETSC 2301#	0.4	mg/kg		2.6			3.2		
Nickel	DETSC 2301#	1	mg/kg	22	22	12		27	19	
Vanadium	DETSC 2301	0.8	mg/kg		200			290		
Zinc	DETSC 2301#	1	mg/kg	170	170	190		950	130	
Inorganics										
pH	DETSC 2008#			11.1	11.3	11.0	10.0	1.3	11.2	11.2
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.3	1.6	0.4		5.1	1.3	
Cyanide, Free	DETSC 2130#	0.1	mg/kg		< 0.1			0.1		
Cyanide, Complex	DETSC 2130*	0.2	mg/kg		1.6			5.0		
Thiocyanate	DETSC 2130#	0.6	mg/kg		< 0.6			1.2		
Organic matter	DETSC 2002#	0.1	%	1.3	3.1	0.9		1.5	1.1	
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1400	740	1600	670	930	96	1500
Sulphur as S, Total	DETSC 2320	0.01	%				0.11			0.60
Sulphate as SO4, Total	DETSC 2321#	0.01	%				0.24			1.5
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5		< 1.5	< 1.5	
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2		< 1.2	< 1.2	
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5		< 1.5	< 1.5	
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4		< 3.4	< 3.4	
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10		< 10	< 10	
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9		< 0.9	< 0.9	
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6		< 0.6	< 0.6	

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-93477-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1138791	1138792	1138793	1138794	1138795	1138796	1138797
			Sample ID	TPE04	TPE01	TPE03	TPE03	TPE08	TPE15	TPE15
			Depth	1.00	0.40	1.50	3.00	0.40	0.20	1.20
			Other ID	1	1	1	2	1	1	2
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	20/02/17	21/02/17	22/02/17	22/02/17	22/02/17	24/02/17	24/02/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4		< 1.4	< 1.4	
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10		< 10	< 10	
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10		< 10	< 10	
PAHs										
Naphthalene	DETSC 3303#	0.03	mg/kg	0.08	0.11	< 0.03		0.05	0.22	
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	0.03	0.03		< 0.03	0.10	
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03		< 0.03	< 0.03	
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	0.03	0.04		< 0.03	0.11	
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.23	0.25	0.32		0.10	0.99	
Anthracene	DETSC 3303	0.03	mg/kg	0.05	0.06	0.06		< 0.03	0.21	
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.32	0.25	0.54		0.15	0.86	
Pyrene	DETSC 3303#	0.03	mg/kg	0.25	0.18	0.40		0.14	0.67	
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.15	0.13	0.20		0.07	0.30	
Chrysene	DETSC 3303	0.03	mg/kg	0.15	0.15	0.19		0.09	0.30	
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.17	0.14	0.23		0.09	0.29	
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.07	0.05	0.11		0.03	0.12	
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.10	0.07	0.13		0.05	0.20	
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.07	0.05	0.10		0.05	0.13	
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03		< 0.03	0.03	
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.08	0.05	0.09		0.05	0.13	
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	1.7	1.6	2.5		0.85	4.7	
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3		< 0.3	< 0.3	

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-93477-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1138798	1138799
			Sample ID	TPE14	TPE14
			Depth	0.30	3.20
			Other ID	1	2
			Sample Type	ES	ES
			Sampling Date	24/02/17	24/02/17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Asbestos Quantification	DETSC 1102	0			
Metals					
Antimony	DETSC 2301*	1	mg/kg	8.6	
Arsenic	DETSC 2301#	0.2	mg/kg	31	47
Barium	DETSC 2301#	1.5	mg/kg	270	
Beryllium	DETSC 2301#	0.2	mg/kg	0.9	
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	10	4.3
Cadmium	DETSC 2301#	0.1	mg/kg	18	0.8
Chromium	DETSC 2301#	0.15	mg/kg	72	96
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	
Copper	DETSC 2301#	0.2	mg/kg	110	20
Lead	DETSC 2301#	0.3	mg/kg	1000	77
Mercury	DETSC 2325#	0.05	mg/kg	0.34	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	3.9	
Nickel	DETSC 2301#	1	mg/kg	37	11
Vanadium	DETSC 2301	0.8	mg/kg	150	
Zinc	DETSC 2301#	1	mg/kg	4100	320
Inorganics					
pH	DETSC 2008#			9.1	10.1
Cyanide, Total	DETSC 2130#	0.1	mg/kg	60	1.5
Cyanide, Free	DETSC 2130#	0.1	mg/kg	0.4	
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	60	
Thiocyanate	DETSC 2130#	0.6	mg/kg	0.8	
Organic matter	DETSC 2002#	0.1	%	2.7	2.4
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	860	1600
Sulphur as S, Total	DETSC 2320	0.01	%		0.52
Sulphate as SO4, Total	DETSC 2321#	0.01	%		1.4
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-93477-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1138798	1138799
			Sample ID	TPE14	TPE14
			Depth	0.30	3.20
			Other ID	1	2
			Sample Type	ES	ES
			Sampling Date	24/02/17	24/02/17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10
PAHs					
Naphthalene	DETSC 3303#	0.03	mg/kg	0.19	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	0.05	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.13	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	0.06	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.16	0.06
Anthracene	DETSC 3303	0.03	mg/kg	0.07	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.11	0.06
Pyrene	DETSC 3303#	0.03	mg/kg	0.10	0.06
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	0.87	0.18
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-93477-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1138800	1138801	1138802	1138803	1138804	1138805
			Sample ID	TPE10	TPE09	TPE05	TPE01	TPE08	TPE14
			Depth	0.10	2.50	1.70	0.40	0.40	0.30
			Other ID	1	2	3	1	1	1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	20/02/17	20/02/17	20/02/17	21/02/17	22/02/17	24/02/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Preparation									
Leachate 10:1	DETS 036*			Y	Y	Y	Y	Y	Y
Metals									
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.51	< 0.16	1.8	2.0	2.4	1.3
Barium, Dissolved	DETSC 2306	0.26	ug/l	12	8.3	53	10	6.9	27
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron	DETSC 2123	100	ug/l	< 100	< 100	< 100	< 100	< 100	170
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	3.1	0.53	18	< 0.25	0.52	3.0
Copper, Dissolved	DETSC 2306	0.4	ug/l	1.0	0.6	1.4	1.0	0.7	0.7
Iron, Dissolved	DETSC 2306	5.5	ug/l	67	53	30	140	13	27
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.87	0.77	0.45	0.34	0.39	0.35
Manganese, Dissolved	DETSC 2306	0.22	ug/l	8.0	8.2	3.2	4.3	2.6	16
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	0.01	0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25	< 0.25	0.27	0.44	2.8	1.6
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	0.9	< 0.6	3.3	6.4	4.5	1.2
Zinc, Dissolved	DETSC 2306	1.3	ug/l	4.0	1.9	< 1.3	< 1.3	< 1.3	1.6
Inorganics									
pH	DETSC 2008			8.1	7.6	9.5	8.9	8.6	7.8
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015
Chloride	DETSC 2055	0.1	mg/l	3.0	2.1	4.6	2.1	3.8	4.4

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-93477-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1138784	TPE10 1 0.10	SOIL	NAD	none	Jeff Cruddas
1138785	TPE10 2 2.40	SOIL	NAD	none	Jeff Cruddas
1138786	TPE09 2 2.50	SOIL	NAD	none	Jeff Cruddas
1138787	TPE02 1 0.30	SOIL	NAD	none	Jeff Cruddas
1138788	TPE07 2 3.90	SOIL	NAD	none	Jeff Cruddas
1138790	TPE05 3 1.70	SOIL	Amosite	Amosite present as fibre bundles	Jeff Cruddas
1138791	TPE04 1 1.00	SOIL	NAD	none	Jeff Cruddas
1138792	TPE01 1 0.40	SOIL	NAD	none	Jeff Cruddas
1138793	TPE03 1 1.50	SOIL	NAD	none	Jeff Cruddas
1138795	TPE08 1 0.40	SOIL	NAD	none	Jeff Cruddas
1138796	TPE15 1 0.20	SOIL	NAD	none	Jeff Cruddas
1138798	TPE14 1 0.30	SOIL	NAD	none	Jeff Cruddas
1138799	TPE14 2 3.20	SOIL	NAD	none	Jeff Cruddas

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.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 17-93477-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1138790
Sample ID	TPE05
Depth	1.70
Other ID	3
Sample Type	SOIL
Sampling Date	20/02/17
Sampling Time	

Test	**Method**	**Units**	
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**< 0.001**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	<0.001
Quantification by PCOM (c)	DETSC 1102	Mass %	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na
Breakdown of Gravimetric Analysis (a)			
Mass of Sample		g	1082.27
ACMs present*		type	
Mass of ACM in sample		g	
% ACM by mass		%	
% asbestos in ACM		%	
% asbestos in sample		%	
Breakdown of Detailed Gravimetric Analysis (b)			
% Amphibole bundles in sample		Mass %	<0.001
% Chrysotile bundles in sample		Mass %	na
Breakdown of PCOM Analysis (c)			
% Amphibole fibres in sample		Mass %	na
% Chrysotile fibres in sample		Mass %	na
Breakdown of Potentially Respirable Fibre Analysis (d)			
Amphibole fibres		Fibres/g	na
Chrysotile fibres		Fibres/g	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Information in Support of the Analytical Results

Our Ref 17-93477-1
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1138784	TPE10 0.10 SOIL	20/02/17	GJ 250ml x2, GV, PT 1L	pH + Conductivity (7 days)	
1138785	TPE10 2.40 SOIL	20/02/17	GJ 250ml x2, GV, PT 1L	pH + Conductivity (7 days)	
1138786	TPE09 2.50 SOIL	20/02/17	GJ 250ml x2, GV, PT 1L	pH + Conductivity (7 days)	
1138787	TPE02 0.30 SOIL	21/02/17	GJ 250ml x2, GV, PT 1L	pH + Conductivity (7 days)	
1138788	TPE07 3.90 SOIL	21/02/17	GJ 250ml x2, GV, PT 1L	pH + Conductivity (7 days)	
1138789	TPE05 0.50 SOIL	20/02/17	GJ 250ml x2, GV, PT 1L	pH + Conductivity (7 days)	
1138790	TPE05 1.70 SOIL	20/02/17	GJ 250ml x2, GV, PT 1L	pH + Conductivity (7 days)	
1138791	TPE04 1.00 SOIL	20/02/17	GJ 250ml x2, GV, PT 1L	pH + Conductivity (7 days)	
1138792	TPE01 0.40 SOIL	21/02/17	GJ 250ml x2, GV, PT 1L	pH + Conductivity (7 days)	
1138793	TPE03 1.50 SOIL	22/02/17	GJ 250ml x2, GV, PT 1L	pH + Conductivity (7 days)	
1138794	TPE03 3.00 SOIL	22/02/17	GJ 250ml x2, GV, PT 1L	pH + Conductivity (7 days)	
1138795	TPE08 0.40 SOIL	22/02/17	GJ 250ml x2, GV, PT 1L	pH + Conductivity (7 days)	
1138796	TPE15 0.20 SOIL	24/02/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1138797	TPE15 1.20 SOIL	24/02/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1138798	TPE14 0.30 SOIL	24/02/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1138799	TPE14 3.20 SOIL	24/02/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1138800	TPE10 0.10 LEACHATE	20/02/17	GJ 250ml x2, GV, PT 1L		
1138801	TPE09 2.50 LEACHATE	20/02/17	GJ 250ml x2, GV, PT 1L		
1138802	TPE05 1.70 LEACHATE	20/02/17	GJ 250ml x2, GV, PT 1L		
1138803	TPE01 0.40 LEACHATE	21/02/17	GJ 250ml x2, GV, PT 1L		
1138804	TPE08 0.40 LEACHATE	22/02/17	GJ 250ml x2, GV, PT 1L		
1138805	TPE14 0.30 LEACHATE	24/02/17	GJ 250ml x2, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar V-Vial 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

Certificate of Analysis

Certificate Number 17-93766

20-Mar-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-93766

Client Reference SLS1015

Order No CH-1332

Contract Title Redcar Site

Description 7 Soil samples, 2 Leachate samples.

Date Received 08-Mar-17

Date Started 08-Mar-17

Date Completed 20-Mar-17

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

Notes Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 17-93766
Client Ref SLS1015
Contract Title Redcar Site

Test	Method	LOD	Units	Lab No	1140329	1140330	1140331	1140332	1140333	1140334	1140335
				Sample ID	TPE35	TPE35	TPE31	TPE30	TPE32	TPE32	TPE34
				Depth	2.00	3.00	1.20	3.30	2.80	3.50	3.50
				Other ID	E1	E2	E1	E1	E1	E2	E1
				Sample Type	ES	ES	ES	ES	ES	ES	ES
				Sampling Date	02/03/17	02/03/17	02/03/17	02/03/17	02/03/17	02/03/17	02/03/17
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Metals											
Antimony	DETSC 2301*	1	mg/kg			1.1	2.2		1.6		
Arsenic	DETSC 2301#	0.2	mg/kg		6.8	8.6	41	6.3	8.8	6.1	
Barium	DETSC 2301#	1.5	mg/kg			290	120		330		
Beryllium	DETSC 2301#	0.2	mg/kg			4.5	3.7		4.5		
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg		5.2	4.0	6.6	1.9	5.9	2.3	
Cadmium	DETSC 2301#	0.1	mg/kg		0.2	0.3	0.6	0.7	1.3	0.7	
Chromium	DETSC 2301#	0.15	mg/kg		46	110	72	400	32	480	
Chromium, Hexavalent	DETSC 2204*	1	mg/kg			< 1.0	< 1.0		< 1.0		
Copper	DETSC 2301#	0.2	mg/kg		16	11	25	44	22	27	
Lead	DETSC 2301#	0.3	mg/kg		30	21	41	42	160	78	
Mercury	DETSC 2325#	0.05	mg/kg		< 0.05	< 0.05	< 0.05	0.10	< 0.05	< 0.05	
Molybdenum	DETSC 2301#	0.4	mg/kg			1.6	1.6		1.0		
Nickel	DETSC 2301#	1	mg/kg		12	6.1	24	9.2	11	8.1	
Vanadium	DETSC 2301	0.8	mg/kg			250	260		150		
Zinc	DETSC 2301#	1	mg/kg		65	100	270	140	660	260	
Inorganics											
pH	DETSC 2008#				10.6	11.2	10.8	11.9	10.5	11.8	11.4
Cyanide, Total	DETSC 2130#	0.1	mg/kg		0.9	0.2	3.2	1.4	0.9	0.3	
Cyanide, Free	DETSC 2130#	0.1	mg/kg			< 0.1	0.2		< 0.1		
Cyanide, Complex	DETSC 2130*	0.2	mg/kg			0.2	3.1		0.9		
Thiocyanate	DETSC 2130#	0.6	mg/kg			< 0.6	< 0.6		< 0.6		
Organic matter	DETSC 2002#	0.1	%		1.2	0.4	0.7	0.7	0.6	0.1	
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l		1400	1600	1500	1200	1600	850	1500
Sulphur as S, Total	DETSC 2320	0.01	%		0.23			0.34			0.57
Sulphate as SO4, Total	DETSC 2321#	0.01	%		0.75			0.78			1.2
Petroleum Hydrocarbons											
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg		< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg		< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg		< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg		< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	
Aliphatic C5-C35	DETSC 3072*	10	mg/kg		< 10	< 10	< 10	< 10	< 10	< 10	
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg		< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg		< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg		< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-93766
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1140329	1140330	1140331	1140332	1140333	1140334	1140335
			Sample ID	TPE35	TPE35	TPE31	TPE30	TPE32	TPE32	TPE34
			Depth	2.00	3.00	1.20	3.30	2.80	3.50	3.50
			Other ID	E1	E2	E1	E1	E1	E2	E1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	02/03/17	02/03/17	02/03/17	02/03/17	02/03/17	02/03/17	02/03/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	
PAHs										
Naphthalene	DETSC 3303#	0.03	mg/kg	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	
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.08	0.14	0.38	0.08	0.08	< 0.03	
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	0.05	0.03	< 0.03	< 0.03	< 0.03	
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.06	0.26	0.61	0.11	0.19	< 0.03	
Pyrene	DETSC 3303#	0.03	mg/kg	0.05	0.19	0.46	0.10	0.14	< 0.03	
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	0.12	0.22	0.05	0.07	< 0.03	
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	0.12	0.31	0.08	0.12	< 0.03	
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.12	0.27	0.07	0.10	< 0.03	
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.06	0.11	< 0.03	0.03	< 0.03	
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.08	0.11	< 0.03	0.04	< 0.03	
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.06	0.10	< 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	
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	0.06	0.11	< 0.03	0.04	< 0.03	
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.21	1.3	2.8	0.49	0.85	< 0.10	
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.3	0.5	< 0.3	< 0.3	0.5	< 0.3	

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-93766
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1140336	1140337
			Sample ID	TPE35	TPE31
			Depth	3.00	1.20
			Other ID	E2	E1
			Sample Type	ES	ES
			Sampling Date	02/03/17	02/03/17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Preparation					
Leachate 10:1	DETS 036*			Y	Y
Metals					
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	1.2	0.31
Barium, Dissolved	DETSC 2306	0.26	ug/l	15	37
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1
Boron	DETSC 2123	100	ug/l	< 100	< 100
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25	0.46
Copper, Dissolved	DETSC 2306	0.4	ug/l	0.6	0.4
Iron, Dissolved	DETSC 2306	5.5	ug/l	< 5.5	< 5.5
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	< 0.09
Manganese, Dissolved	DETSC 2306	0.22	ug/l	1.3	4.6
Mercury, Dissolved	DETSC 2306	0.01	ug/l	0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	1.1	< 0.25
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	4.5	2.0
Zinc, Dissolved	DETSC 2306	1.3	ug/l	3.1	4.5
Inorganics					
pH	DETSC 2008			8.9	8.0
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	< 0.015	< 0.015
Chloride	DETSC 2055	0.1	mg/l	1.8	1.1

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-93766
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1140329	TPE35 E1 2.00	SOIL	NAD	none	D Wilkinson
1140330	TPE35 E2 3.00	SOIL	NAD	none	D Wilkinson
1140331	TPE31 E1 1.20	SOIL	NAD	none	D Wilkinson
1140332	TPE30 E1 3.30	SOIL	NAD	none	D Wilkinson
1140333	TPE32 E1 2.80	SOIL	NAD	none	D Wilkinson
1140334	TPE32 E2 3.50	SOIL	NAD	none	D Wilkinson

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 17-93766
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1140329	TPE35 2.00 SOIL	02/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1140330	TPE35 3.00 SOIL	02/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1140331	TPE31 1.20 SOIL	02/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1140332	TPE30 3.30 SOIL	02/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1140333	TPE32 2.80 SOIL	02/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1140334	TPE32 3.50 SOIL	02/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1140335	TPE34 3.50 SOIL	02/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1140336	TPE35 3.00 LEACHATE	02/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1140337	TPE31 1.20 LEACHATE	02/03/17	GJ 250ml x2, 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

Certificate of Analysis

Certificate Number 17-94108

24-Mar-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-94108

Client Reference SLS1015

Order No CH-1332

Contract Title Redcar Site

Description 21 Soil samples, 7 Leachate samples.

Date Received 11-Mar-17

Date Started 11-Mar-17

Date Completed 24-Mar-17

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

Notes Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 17-94108
Client Ref SLS1015
Contract Title Redcar Site

	Lab No	1142175	1142176	1142177	1142178	1142179	1142180
	Sample ID	TPE39	TPE40	TPE41	TPE42	TPE43	TPE44
	Depth	1.80	3.60	1.70	3.00-3.10	3.20	0.10
	Other ID	E1	E1	E1	E1	E2	E1
	Sample Type	ES	ES	ES	ES	ES	ES
	Sampling Date	06/03/17	06/03/17	06/03/17	06/03/17	06/03/17	06/03/17
	Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Metals							
Antimony	DETSC 2301*	1	mg/kg	< 1.0		< 1.0		< 1.0	
Arsenic	DETSC 2301#	0.2	mg/kg	17		12	37	7.2	3.6
Barium	DETSC 2301#	1.5	mg/kg	110		230		210	
Beryllium	DETSC 2301#	0.2	mg/kg	4.1		5.2		2.2	
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	6.0		5.3	5.4	4.4	0.5
Cadmium	DETSC 2301#	0.1	mg/kg	0.5		0.5	0.7	0.3	0.1
Chromium	DETSC 2301#	0.15	mg/kg	38		50	29	35	4.8
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0		< 1.0		< 1.0	
Copper	DETSC 2301#	0.2	mg/kg	8.2		13	15	15	7.0
Lead	DETSC 2301#	0.3	mg/kg	35		49	75	31	14
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	0.8		1.0		0.6	
Nickel	DETSC 2301#	1	mg/kg	6.9		7.9	9.5	5.7	2.9
Vanadium	DETSC 2301	0.8	mg/kg	110		170		92	
Zinc	DETSC 2301#	1	mg/kg	150		260	700	130	59
Inorganics									
pH	DETSC 2008#			10.3	11.1	10.6	10.7	10.5	8.9
Cyanide, Total	DETSC 2130#	0.1	mg/kg	2.7		0.5	0.4	0.2	< 0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1		< 0.1		< 0.1	
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	2.7		0.5		< 0.2	
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6		< 0.6		< 0.6	
Organic matter	DETSC 2002#	0.1	%	0.5		0.5	0.7	4.0	24
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1500	1600	1500	1700	1500	130
Sulphur as S, Total	DETSC 2320	0.01	%		0.65				
Sulphate as SO4, Total	DETSC 2321#	0.01	%		2.5				
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5		< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2		< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5		< 1.5	3.4	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4		< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10		< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9		< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5		< 0.5	0.9	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6		< 0.6	2.6	2.3	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4		< 1.4	< 1.4	3.6	< 1.4

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-94108
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1142175	1142176	1142177	1142178	1142179	1142180
			Sample ID	TPE39	TPE40	TPE41	TPE42	TPE43	TPE44
			Depth	1.80	3.60	1.70	3.00-3.10	3.20	0.10
			Other ID	E1	E1	E1	E1	E2	E1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	06/03/17	06/03/17	06/03/17	06/03/17	06/03/17	06/03/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10		< 10	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10		< 10	< 10	< 10	< 10
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03		0.03	< 0.03	< 0.03	0.05
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 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
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03		< 0.03	< 0.03	< 0.03	0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.06		0.08	0.05	0.04	0.17
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03		< 0.03	< 0.03	< 0.03	0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.07		0.09	0.14	0.06	0.15
Pyrene	DETSC 3303#	0.03	mg/kg	0.04		0.06	0.11	0.06	0.08
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.03		0.04	0.05	< 0.03	0.05
Chrysene	DETSC 3303	0.03	mg/kg	0.04		0.06	0.08	< 0.03	0.05
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.03		0.05	0.08	< 0.03	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03		< 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	0.04	< 0.03	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 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	0.04	< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.28		0.42	0.62	0.15	0.60
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3		< 0.3	< 0.3	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-94108
Client Ref SLS1015
Contract Title Redcar Site

	Lab No	1142181	1142182	1142183	1142184	1142185	1142186
	Sample ID	TPE44	TPE49	TPE50	TPE51	TPE52	TPE53
	Depth	4.20	3.40	4.00	2.00	0.90	2.50
	Other ID	E2	E2	E1	E1	E1	E1
	Sample Type	ES	ES	ES	ES	ES	ES
	Sampling Date	06/03/17	07/03/17	07/03/17	07/03/17	07/03/17	07/03/17
	Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Metals							
Antimony	DETSC 2301*	1	mg/kg	10	< 1.0			2.2	
Arsenic	DETSC 2301#	0.2	mg/kg	3.2	20		3.3	280	
Barium	DETSC 2301#	1.5	mg/kg	210	240			100	
Beryllium	DETSC 2301#	0.2	mg/kg	0.5	4.9			2.0	
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	19	4.1		6.4	2.8	
Cadmium	DETSC 2301#	0.1	mg/kg	0.6	0.4		0.4	0.2	
Chromium	DETSC 2301#	0.15	mg/kg	720	46		9.7	55	
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0			< 1.0	
Copper	DETSC 2301#	0.2	mg/kg	52	8.8		4.0	14	
Lead	DETSC 2301#	0.3	mg/kg	78	28		24	150	
Mercury	DETSC 2325#	0.05	mg/kg	0.10	< 0.05		< 0.05	0.05	
Molybdenum	DETSC 2301#	0.4	mg/kg	5.6	1.0			11	
Nickel	DETSC 2301#	1	mg/kg	12	9.2		2.9	32	
Vanadium	DETSC 2301	0.8	mg/kg	1400	150			160	
Zinc	DETSC 2301#	1	mg/kg	170	270		83	350	
Inorganics									
pH	DETSC 2008#			12.3	10.4	11.7	10.4	9.4	10.2
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.1	0.5		3.5	0.2	
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1			< 0.1	
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	< 0.2	0.5			< 0.2	
Thiocyanate	DETSC 2130#	0.6	mg/kg	0.7	< 0.6			< 0.6	
Organic matter	DETSC 2002#	0.1	%	1.0	1.1		0.1	0.7	
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	95	1600	480	1700	1700	1200
Sulphur as S, Total	DETSC 2320	0.01	%			0.34			0.23
Sulphate as SO4, Total	DETSC 2321#	0.01	%			0.96			0.92
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5		< 1.5	< 1.5	
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2		< 1.2	< 1.2	
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5		< 1.5	< 1.5	
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4		< 3.4	< 3.4	
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10		< 10	< 10	
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9		< 0.9	< 0.9	
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5		< 0.5	< 0.5	
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6		< 0.6	< 0.6	
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4		< 1.4	< 1.4	

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-94108
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1142181	1142182	1142183	1142184	1142185	1142186
			Sample ID	TPE44	TPE49	TPE50	TPE51	TPE52	TPE53
			Depth	4.20	3.40	4.00	2.00	0.90	2.50
			Other ID	E2	E2	E1	E1	E1	E1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	06/03/17	07/03/17	07/03/17	07/03/17	07/03/17	07/03/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10		< 10	< 10	
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10		< 10	< 10	
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		0.54	0.08	
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		< 0.03	< 0.03	
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.07	< 0.03		< 0.03	< 0.03	
Fluorene	DETSC 3303	0.03	mg/kg	0.05	< 0.03		0.12	< 0.03	
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.34	0.16		0.93	0.19	
Anthracene	DETSC 3303	0.03	mg/kg	0.04	< 0.03		0.09	0.04	
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.18	0.18		0.41	0.16	
Pyrene	DETSC 3303#	0.03	mg/kg	0.13	0.14		0.40	0.11	
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.05	0.09		0.10	0.11	
Chrysene	DETSC 3303	0.03	mg/kg	0.05	0.13		0.29	0.13	
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.04	0.11		0.12	0.17	
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.04		0.03	0.07	
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.04		0.04	0.10	
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.04		0.03	0.08	
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03		< 0.03	< 0.03	
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	0.04		0.05	0.08	
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.93	0.99		3.2	1.3	
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3		< 0.3	< 0.3	

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-94108
Client Ref SLS1015
Contract Title Redcar Site

	Lab No	1142187	1142188	1142189	1142191	1142192	1142193
	Sample ID	TPE58	TPE59	TPE60	TPE61	TPE62	TPE65
	Depth	1.00	3.50	3.50	1.00	3.20	1.50
	Other ID	E1	E1	E1	E1	E1	E2
	Sample Type	ES	ES	ES	ES	ES	ES
	Sampling Date	08/03/17	08/03/17	08/03/17	08/03/17	08/03/17	n/s
	Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Metals							
Antimony	DETSC 2301*	1	mg/kg		5.7	< 1.0		< 1.0	
Arsenic	DETSC 2301#	0.2	mg/kg		21	7.6		21	5.3
Barium	DETSC 2301#	1.5	mg/kg		280	260		140	
Beryllium	DETSC 2301#	0.2	mg/kg		0.8	3.6		3.5	
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg		4.2	6.2		6.8	3.1
Cadmium	DETSC 2301#	0.1	mg/kg		0.9	< 0.1		0.8	0.2
Chromium	DETSC 2301#	0.15	mg/kg		410	29		23	170
Chromium, Hexavalent	DETSC 2204*	1	mg/kg		< 1.0	< 1.0		< 1.0	
Copper	DETSC 2301#	0.2	mg/kg		35	4.9		13	16
Lead	DETSC 2301#	0.3	mg/kg		64	12		79	19
Mercury	DETSC 2325#	0.05	mg/kg		0.09	< 0.05		< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg		3.1	0.5		1.2	
Nickel	DETSC 2301#	1	mg/kg		15	4.3		5.7	3.9
Vanadium	DETSC 2301	0.8	mg/kg		1300	90		97	
Zinc	DETSC 2301#	1	mg/kg		280	29		310	29
Inorganics									
pH	DETSC 2008#			10.6	11.9	11.0	10.9	10.7	11.9
Cyanide, Total	DETSC 2130#	0.1	mg/kg		0.6	0.2		0.2	< 0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg		< 0.1	< 0.1		< 0.1	
Cyanide, Complex	DETSC 2130*	0.2	mg/kg		0.6	< 0.2		< 0.2	
Thiocyanate	DETSC 2130#	0.6	mg/kg		0.8	< 0.6		< 0.6	
Organic matter	DETSC 2002#	0.1	%		0.7	0.5		1.1	0.4
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1500	1200	1600	1500	1500	130
Sulphur as S, Total	DETSC 2320	0.01	%	0.45	0.37	0.43	0.33		0.43
Sulphate as SO4, Total	DETSC 2321#	0.01	%	1.3	1.3	1.2	1.5		1.2
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01		< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01		< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01		< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg		< 1.5	< 1.5		< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg		< 1.2	< 1.2		< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg		< 1.5	< 1.5		< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg		< 3.4	< 3.4		< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg		< 10	< 10		< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01		< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01		< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01		< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg		< 0.9	< 0.9		< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg		< 0.5	< 0.5		< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg		5.3	< 0.6		< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg		11	< 1.4		< 1.4	< 1.4

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-94108
Client Ref SLS1015
Contract Title Redcar Site

				Lab No	1142187	1142188	1142189	1142191	1142192	1142193
				Sample ID	TPE58	TPE59	TPE60	TPE61	TPE62	TPE65
				Depth	1.00	3.50	3.50	1.00	3.20	1.50
				Other ID	E1	E1	E1	E1	E1	E2
				Sample Type	ES	ES	ES	ES	ES	ES
				Sampling Date	08/03/17	08/03/17	08/03/17	08/03/17	08/03/17	n/s
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic C5-C35	DETSC 3072*	10	mg/kg		16	< 10		< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg		16	< 10		< 10	< 10
PAHs										
Naphthalene	DETSC 3303#	0.03	mg/kg		0.06	< 0.03		< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg		0.04	< 0.03		< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg		0.03	< 0.03		< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg		0.07	< 0.03		< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg		1.2	< 0.03		0.06	0.09
Anthracene	DETSC 3303	0.03	mg/kg		0.23	< 0.03		< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg		1.8	< 0.03		0.10	0.14
Pyrene	DETSC 3303#	0.03	mg/kg		1.3	< 0.03		0.08	0.11
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg		0.60	< 0.03		0.06	0.08
Chrysene	DETSC 3303	0.03	mg/kg		0.60	< 0.03		0.07	0.10
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg		0.54	< 0.03		0.07	0.10
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg		0.23	< 0.03		< 0.03	0.04
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg		0.29	< 0.03		0.03	0.06
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg		0.19	< 0.03		0.03	0.04
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg		0.06	< 0.03		< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg		0.19	< 0.03		0.03	0.04
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg		7.4	< 0.10		0.52	0.81
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg		< 0.3	< 0.3		< 0.3	< 0.3

Summary of Chemical Analysis
Soil Samples

Our Ref 17-94108
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1142194	1142203
			Sample ID	TPE71	TPE63
			Depth	2.40	1.14
			Other ID	E1	E1
			Sample Type	ES	ES
			Sampling Date	n/s	08/03/17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Metals					
Antimony	DETSC 2301*	1	mg/kg		
Arsenic	DETSC 2301#	0.2	mg/kg		110
Barium	DETSC 2301#	1.5	mg/kg		
Beryllium	DETSC 2301#	0.2	mg/kg		
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg		3.7
Cadmium	DETSC 2301#	0.1	mg/kg		0.7
Chromium	DETSC 2301#	0.15	mg/kg		110
Chromium, Hexavalent	DETSC 2204*	1	mg/kg		
Copper	DETSC 2301#	0.2	mg/kg		15
Lead	DETSC 2301#	0.3	mg/kg		96
Mercury	DETSC 2325#	0.05	mg/kg		< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg		
Nickel	DETSC 2301#	1	mg/kg		22
Vanadium	DETSC 2301	0.8	mg/kg		
Zinc	DETSC 2301#	1	mg/kg		440
Inorganics					
pH	DETSC 2008#			10.6	10.7
Cyanide, Total	DETSC 2130#	0.1	mg/kg		< 0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg		
Cyanide, Complex	DETSC 2130*	0.2	mg/kg		
Thiocyanate	DETSC 2130#	0.6	mg/kg		
Organic matter	DETSC 2002#	0.1	%		0.6
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1500	1500
Sulphur as S, Total	DETSC 2320	0.01	%	0.73	
Sulphate as SO4, Total	DETSC 2321#	0.01	%	2.6	
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg		< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg		< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg		< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg		< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg		< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg		< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg		< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg		< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg		< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg		< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg		< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg		< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg		< 1.4

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-94108
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1142194	1142203
			Sample ID	TPE71	TPE63
			Depth	2.40	1.14
			Other ID	E1	E1
			Sample Type	ES	ES
			Sampling Date	n/s	08/03/17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Aromatic C5-C35	DETSC 3072*	10	mg/kg		< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg		< 10
PAHs					
Naphthalene	DETSC 3303#	0.03	mg/kg		< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg		< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg		< 0.03
Fluorene	DETSC 3303	0.03	mg/kg		< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg		0.08
Anthracene	DETSC 3303	0.03	mg/kg		< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg		0.10
Pyrene	DETSC 3303#	0.03	mg/kg		0.08
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg		0.04
Chrysene	DETSC 3303	0.03	mg/kg		0.06
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg		0.07
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg		< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg		0.04
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg		0.04
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg		< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg		0.04
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg		0.55
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg		< 0.3

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Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-94108
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1142182	1142188	1142189	1142190	1142192
			Sample ID	TPE49	TPE59	TPE60	TPE60	TPE62
			Depth	3.40	3.50	3.50	4.50	3.20
			Other ID	E2	E1	E1	E2	E1
			Sample Type	ES	ES	ES	ES	ES
			Sampling Date	07/03/17	08/03/17	08/03/17	08/03/17	08/03/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
VOCs								
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-94108
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1142182	1142188	1142189	1142190	1142192
			Sample ID	TPE49	TPE59	TPE60	TPE60	TPE62
			Depth	3.40	3.50	3.50	4.50	3.20
			Other ID	E2	E1	E1	E2	E1
			Sample Type	ES	ES	ES	ES	ES
			Sampling Date	07/03/17	08/03/17	08/03/17	08/03/17	08/03/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Naphthalene	DETSC 3431	0.01	mg/kg				0.21	
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
SVOCs								
Phenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	1.3	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3433	0.1	mg/kg				2.4	
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3433	0.1	mg/kg				0.6	
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	0.1	< 0.1	3.0	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1	0.2	< 0.1	3.5	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3433	0.1	mg/kg				1.6	

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Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-94108
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1142182	1142188	1142189	1142190	1142192
			Sample ID	TPE49	TPE59	TPE60	TPE60	TPE62
			Depth	3.40	3.50	3.50	4.50	3.20
			Other ID	E2	E1	E1	E2	E1
			Sample Type	ES	ES	ES	ES	ES
			Sampling Date	07/03/17	08/03/17	08/03/17	08/03/17	08/03/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3433	0.1	mg/kg				20	
Anthracene	DETSC 3433	0.1	mg/kg				4.3	
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3433	0.1	mg/kg				15	
Pyrene	DETSC 3433	0.1	mg/kg				11	
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3433	0.1	mg/kg				6.2	
Chrysene	DETSC 3433	0.1	mg/kg				5.0	
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3433	0.1	mg/kg				6.2	
Benzo(k)fluoranthene	DETSC 3433	0.1	mg/kg				2.5	
Benzo(a)pyrene	DETSC 3433	0.1	mg/kg				4.7	
Indeno(123cd)pyrene	DETSC 3433	0.1	mg/kg				2.7	
Dibenzo(ah)anthracene	DETSC 3433	0.1	mg/kg				0.8	
Benzo(ghi)perylene	DETSC 3433	0.1	mg/kg				2.6	
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1	0.2	< 0.1	1.6	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-94108
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1142195	1142196	1142197	1142199	1142200	1142201	1142202
			Sample ID	TPE39	TPE41	TPE44	TPE49	TPE52	TPE59	TPE62
			Depth	1.80	1.70	4.20	3.40	0.90	3.50	3.20
			Other ID	E1	E1	E2	E2	E1	E1	E1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	06/03/17	06/03/17	06/03/17	07/03/17	07/03/17	08/03/17	08/03/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Preparation										
Leachate 10:1	DETS 036*			Y	Y	Y	Y	Y	Y	Y
Metals										
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	2.0	0.80	0.55	2.3	8.8	5.3	2.9
Barium, Dissolved	DETSC 2306	0.26	ug/l	58	33	22	59	17	41	21
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron	DETSC 2123	100	ug/l	< 100	< 100	< 100	< 100	< 100	< 100	< 100
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	0.10	0.05	0.13	< 0.03	< 0.03	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	1.3	< 0.25	0.51	0.38	1.1	0.44	< 0.25
Copper, Dissolved	DETSC 2306	0.4	ug/l	0.6	0.9	6.5	< 0.4	< 0.4	0.5	0.4
Iron, Dissolved	DETSC 2306	5.5	ug/l	11	< 5.5	< 5.5	< 5.5	6.0	< 5.5	< 5.5
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.10	< 0.09	0.39	< 0.09	0.10	< 0.09	< 0.09
Manganese, Dissolved	DETSC 2306	0.22	ug/l	15	24	< 0.22	10	9.4	6.6	7.1
Mercury, Dissolved	DETSC 2306	0.01	ug/l	0.04	0.04	0.08	0.01	0.05	0.03	0.02
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	0.5	< 0.5	< 0.5	0.5	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	3.9	2.0	12	1.7	1.4	1.3	1.0
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	1.1	1.0	14	2.3	1.0	8.3	6.6
Zinc, Dissolved	DETSC 2306	1.3	ug/l	1.5	4.1	< 1.3	30	4.5	1.6	2.4
Inorganics										
pH	DETSC 2008			7.5	7.3	11.6	7.8	7.4	7.3	8.0
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	0.021	0.018	0.021	< 0.015	< 0.015	< 0.015	0.055
Chloride	DETSC 2055	0.1	mg/l	2.9	2.0	14	1.9	2.6	2.6	3.4

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-94108
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1142175	TPE39 E1 1.80	SOIL	NAD	none	D Wilkinson
1142177	TPE41 E1 1.70	SOIL	NAD	none	D Wilkinson
1142178	TPE42 E1 3.00-3.10	SOIL	NAD	none	D Wilkinson
1142179	TPE43 E2 3.20	SOIL	NAD	none	D Wilkinson
1142180	TPE44 E1 0.10	SOIL	NAD	none	D Wilkinson
1142181	TPE44 E2 4.20	SOIL	NAD	none	D Wilkinson
1142182	TPE49 E2 3.40	SOIL	NAD	none	D Wilkinson
1142184	TPE51 E1 2.00	SOIL	NAD	none	D Wilkinson
1142185	TPE52 E1 0.90	SOIL	NAD	none	D Wilkinson
1142188	TPE59 E1 3.50	SOIL	NAD	none	D Wilkinson
1142189	TPE60 E1 3.50	SOIL	NAD	none	D Wilkinson
1142192	TPE62 E1 3.20	SOIL	NAD	none	D Wilkinson
1142193	TPE65 E2 1.50	SOIL	NAD	none	D Wilkinson
1142203	TPE63 E1 1.14	SOIL	NAD	none	D Wilkinson

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 17-94108
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1142175	TPE39 1.80 SOIL	06/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142176	TPE40 3.60 SOIL	06/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142177	TPE41 1.70 SOIL	06/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142178	TPE42 3.00-3.10 SOIL	06/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142179	TPE43 3.20 SOIL	06/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142180	TPE44 0.10 SOIL	06/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142181	TPE44 4.20 SOIL	06/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142182	TPE49 3.40 SOIL	07/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142183	TPE50 4.00 SOIL	07/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142184	TPE51 2.00 SOIL	07/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142185	TPE52 0.90 SOIL	07/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142186	TPE53 2.50 SOIL	07/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142187	TPE58 1.00 SOIL	08/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142188	TPE59 3.50 SOIL	08/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142189	TPE60 3.50 SOIL	08/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142190	TPE60 4.50 SOIL	08/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142191	TPE61 1.00 SOIL	08/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142192	TPE62 3.20 SOIL	08/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142193	TPE65 1.50 SOIL		GJ 250ml x2, GV, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Mercury (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP (365 days), Metals ICP Prep (365 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days)	
1142194	TPE71 2.40 SOIL		GJ 250ml x2, GV, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP Prep (365 days), pH + Conductivity (7 days)	
1142195	TPE39 1.80 LEACHATE	06/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142196	TPE41 1.70 LEACHATE	06/03/17	No containers logged		Cannot evaluate
1142197	TPE44 4.20 LEACHATE	06/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142198	TPE44 4.20 LEACHATE	06/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142199	TPE49 3.40 LEACHATE	07/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142200	TPE52 0.90 LEACHATE	07/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142201	TPE59 3.50 LEACHATE	08/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142202	TPE62 3.20 LEACHATE	08/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1142203	TPE63 1.14 SOIL	08/03/17	GJ 250ml x2, GJ 60ml, PT 1L		

Information in Support of the Analytical Results

Our Ref 17-94108
Client Ref SLS1015
Contract Redcar Site

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

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

Certificate of Analysis

Certificate Number 17-94460

24-Mar-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-94460

Client Reference SLS1015

Order No CH-1332

Contract Title Redcar Site

Description 13 Soil samples, 5 Leachate samples.

Date Received 15-Mar-17

Date Started 15-Mar-17

Date Completed 24-Mar-17

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

Notes Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 17-94460
Client Ref SLS1015
Contract Title Redcar Site

	Lab No	1143854	1143855	1143856	1143857	1143858	1143859	1143860
	Sample ID	TPE11	TPE20	TPE24	TPE29	TPE29	TPE12	TPE17
	Depth	1.50	0.50	1.50	0.50	2.60	1.00	3.10
	Other ID	E1	E2	E1	E1	E3	E3	E1
	Sample Type	ES	ES	ES	ES	ES	ES	ES
	Sampling Date	27/02/17	01/03/17	01/03/17	01/03/17	01/03/17	27/02/17	28/02/17
	Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
Metals								
Antimony	DETSC 2301*	1	mg/kg	1.7	4.9		1.6	< 1.0		< 1.0
Arsenic	DETSC 2301#	0.2	mg/kg	270	27	11	12	8.9	6.5	7.0
Barium	DETSC 2301#	1.5	mg/kg	110	560		210	260		320
Beryllium	DETSC 2301#	0.2	mg/kg	6.1	3.6		1.6	6.0		4.9
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	7.9	4.0	4.9	3.7	6.8	4.3	6.3
Cadmium	DETSC 2301#	0.1	mg/kg	0.6	0.7	0.1	1.2	0.2	0.5	0.1
Chromium	DETSC 2301#	0.15	mg/kg	82	350	25	67	17	15	29
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Copper	DETSC 2301#	0.2	mg/kg	19	31	5.2	23	7.4	9.9	8.6
Lead	DETSC 2301#	0.3	mg/kg	110	56	8.7	100	12	42	11
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	20	3.1		1.0	0.7		0.8
Nickel	DETSC 2301#	1	mg/kg	78	16	3.8	10	3.4	4.6	6.0
Vanadium	DETSC 2301	0.8	mg/kg	260	1000		170	77		96
Zinc	DETSC 2301#	1	mg/kg	120	150	23	330	39	95	37
Inorganics										
pH	DETSC 2008#			9.7	11.6	10.8	11.3	10.9	11.7	10.9
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	0.4	0.1	< 0.1	1.5	0.3	0.4
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1		< 0.1	< 0.1		< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	< 0.2	0.4		< 0.2	1.5		0.4
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6	< 0.6		< 0.6	< 0.6		< 0.6
Organic matter	DETSC 2002#	0.1	%	1.9	1.4	0.4	1.3	0.6	0.8	0.6
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	2000	1200	1400	600	1300	270	1500
Sulphur as S, Total	DETSC 2320	0.01	%					0.80	0.12	
Sulphate as SO4, Total	DETSC 2321#	0.01	%					1.4	0.41	
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	5.0	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	6.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-94460
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1143854	1143855	1143856	1143857	1143858	1143859	1143860
			Sample ID	TPE11	TPE20	TPE24	TPE29	TPE29	TPE12	TPE17
			Depth	1.50	0.50	1.50	0.50	2.60	1.00	3.10
			Other ID	E1	E2	E1	E1	E3	E3	E1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	27/02/17	01/03/17	01/03/17	01/03/17	01/03/17	27/02/17	28/02/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	12	< 10	< 10	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	12	< 10	< 10	< 10	< 10	< 10
PAHs										
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	0.05	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	0.04	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.14	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	0.21	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	1.5	< 0.03	0.04	0.04	< 0.03	0.12
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	0.80	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	1.8	< 0.03	0.07	0.08	< 0.03	0.21
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	2.0	< 0.03	0.04	0.08	< 0.03	0.18
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	1.6	< 0.03	0.04	0.04	< 0.03	0.11
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	1.3	< 0.03	0.03	0.03	< 0.03	0.09
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	2.2	< 0.03	0.03	< 0.03	< 0.03	0.12
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.78	< 0.03	< 0.03	< 0.03	< 0.03	0.04
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	1.0	< 0.03	< 0.03	< 0.03	< 0.03	0.07
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.53	< 0.03	< 0.03	< 0.03	< 0.03	0.04
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	0.16	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	0.55	< 0.03	< 0.03	< 0.03	< 0.03	0.04
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10	15	< 0.10	0.27	0.27	< 0.10	1.0
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-94460
Client Ref SLS1015
Contract Title Redcar Site

	Lab No	1143861	1143862	1143863	1143864	1143865	1143866
	Sample ID	TPE18	TPE19	TPE19	TPE23	TPE22	TPE22
	Depth	2.50	0.20	3.30	3.50	0.50	2.00
	Other ID	E1	E1	E4	E1	E1	E3
	Sample Type	ES	ES	ES	ES	ES	ES
	Sampling Date	28/02/17	28/02/17	28/02/17	01/03/17	01/03/17	01/03/17
	Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Metals							
Antimony	DETSC 2301*	1	mg/kg		2.8				2.3
Arsenic	DETSC 2301#	0.2	mg/kg		5.7	6.1		6.4	25
Barium	DETSC 2301#	1.5	mg/kg		330				360
Beryllium	DETSC 2301#	0.2	mg/kg		2.0				2.9
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg		3.3	2.8		7.3	6.7
Cadmium	DETSC 2301#	0.1	mg/kg		0.5	0.5		1.1	1.0
Chromium	DETSC 2301#	0.15	mg/kg		93	390		180	67
Chromium, Hexavalent	DETSC 2204*	1	mg/kg		< 1.0				< 1.0
Copper	DETSC 2301#	0.2	mg/kg		20	39		24	32
Lead	DETSC 2301#	0.3	mg/kg		22	41		83	73
Mercury	DETSC 2325#	0.05	mg/kg		< 0.05	< 0.05		< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg		1.6				1.4
Nickel	DETSC 2301#	1	mg/kg		13	9.6		7.3	22
Vanadium	DETSC 2301	0.8	mg/kg		280				230
Zinc	DETSC 2301#	1	mg/kg		80	70		300	390
Inorganics									
pH	DETSC 2008#			11.1	11.3	12.0	10.8	11.6	10.7
Cyanide, Total	DETSC 2130#	0.1	mg/kg		< 0.1	0.1		< 0.1	4.6
Cyanide, Free	DETSC 2130#	0.1	mg/kg		< 0.1				< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg		< 0.2				4.6
Thiocyanate	DETSC 2130#	0.6	mg/kg		< 0.6				0.9
Organic matter	DETSC 2002#	0.1	%		2.9	0.6		1.8	1.3
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1100	1100	550	1500	430	1400
Sulphur as S, Total	DETSC 2320	0.01	%	0.63			0.93		
Sulphate as SO4, Total	DETSC 2321#	0.01	%	1.5			1.6		
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01		< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01		< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01		< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg		< 1.5	< 1.5		< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg		< 1.2	< 1.2		< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg		< 1.5	6.5		< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg		< 3.4	11		< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg		< 10	17		< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01		< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01		< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01		< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg		< 0.9	< 0.9		< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg		< 0.5	< 0.5		0.9	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg		< 0.6	11		2.2	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg		< 1.4	27		< 1.4	< 1.4

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-94460
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1143861	1143862	1143863	1143864	1143865	1143866
			Sample ID	TPE18	TPE19	TPE19	TPE23	TPE22	TPE22
			Depth	2.50	0.20	3.30	3.50	0.50	2.00
			Other ID	E1	E1	E4	E1	E1	E3
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	28/02/17	28/02/17	28/02/17	01/03/17	01/03/17	01/03/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C5-C35	DETSC 3072*	10	mg/kg		< 10	38		< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg		< 10	55		< 10	< 10
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg		0.06	< 0.03		1.6	0.26
Acenaphthylene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03		0.12	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03		1.6	0.21
Fluorene	DETSC 3303	0.03	mg/kg		< 0.03	< 0.03		0.51	0.08
Phenanthrene	DETSC 3303#	0.03	mg/kg		0.12	0.14		1.2	0.28
Anthracene	DETSC 3303	0.03	mg/kg		0.04	0.15		0.30	0.06
Fluoranthene	DETSC 3303#	0.03	mg/kg		0.15	0.53		1.1	0.24
Pyrene	DETSC 3303#	0.03	mg/kg		0.12	1.3		0.83	0.18
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg		0.09	0.23		0.42	0.08
Chrysene	DETSC 3303	0.03	mg/kg		0.07	0.24		0.31	0.06
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg		0.11	0.69		0.49	0.07
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg		0.04	0.22		0.13	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg		0.06	0.31		0.22	0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg		0.04	0.21		0.11	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg		< 0.03	0.05		0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg		0.04	0.20		0.10	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg		0.95	4.2		9.1	1.6
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg		< 0.3	< 0.3		< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-94460
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1143867	1143868	1143869	1143870	1143871
			Sample ID	TPE11	TPE20	TPE29	TPE17	TPE22
			Depth	1.50	0.50	0.50	3.10	2.00
			Other ID	E1	E2	E1	E1	E2
			Sample Type	ES	ES	ES	ES	ES
			Sampling Date	27/02/17	01/03/17	01/03/17	28/02/17	01/03/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
Preparation								
Leachate 10:1	DETS 036*			Y	Y	Y	Y	Y
Metals								
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	16	1.2	1.6	0.51	1.6
Barium, Dissolved	DETSC 2306	0.26	ug/l	30	16	5.0	21	15
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron	DETSC 2123	100	ug/l	< 100	< 100	< 100	< 100	< 100
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25	0.33	2.6	< 0.25	0.28
Copper, Dissolved	DETSC 2306	0.4	ug/l	< 0.4	0.6	0.7	0.6	0.6
Iron, Dissolved	DETSC 2306	5.5	ug/l	< 5.5	10	23	5.8	57
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	< 0.09	0.63	0.39	< 0.09
Manganese, Dissolved	DETSC 2306	0.22	ug/l	6.2	1.0	1.8	1.3	1.1
Mercury, Dissolved	DETSC 2306	0.01	ug/l	0.02	< 0.01	0.02	< 0.01	0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	1.1	0.57	0.68	0.91	0.69
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	4.1	6.9	6.5	2.5	4.7
Zinc, Dissolved	DETSC 2306	1.3	ug/l	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Inorganics								
pH	DETSC 2008			7.4	7.7	8.1	7.8	8.0
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	0.015	< 0.015	< 0.015	< 0.015	< 0.015
Chloride	DETSC 2055	0.1	mg/l	5.6	2.7	1.9	2.5	2.6

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-94460
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1143854	TPE11 E1 1.50	SOIL	NAD	none	D Wilkinson
1143855	TPE20 E2 0.50	SOIL	NAD	none	D Wilkinson
1143856	TPE24 E1 1.50	SOIL	NAD	none	D Wilkinson
1143857	TPE29 E1 0.50	SOIL	NAD	none	D Wilkinson
1143858	TPE29 E3 2.60	SOIL	NAD	none	D Wilkinson
1143859	TPE12 E3 1.00	SOIL	NAD	none	D Wilkinson
1143860	TPE17 E1 3.10	SOIL	NAD	none	D Wilkinson
1143862	TPE19 E1 0.20	SOIL	NAD	none	D Wilkinson
1143863	TPE19 E4 3.30	SOIL	NAD	none	D Wilkinson
1143865	TPE22 E1 0.50	SOIL	NAD	none	D Wilkinson
1143866	TPE22 E3 2.00	SOIL	NAD	none	D Wilkinson

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 17-94460
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1143854	TPE11 1.50 SOIL	27/02/17	GJ 250ml x2, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX (14 days), Naphthalene (14 days), PAH MS (14 days), pH + Conductivity (7 days)	
1143855	TPE20 0.50 SOIL	01/03/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1143856	TPE24 1.50 SOIL	01/03/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1143857	TPE29 0.50 SOIL	01/03/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1143858	TPE29 2.60 SOIL	01/03/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1143859	TPE12 1.00 SOIL	27/02/17	GJ 250ml x2, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX (14 days), Naphthalene (14 days), PAH MS (14 days), pH + Conductivity (7 days)	
1143860	TPE17 3.10 SOIL	28/02/17	GJ 250ml x2, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX (14 days), Naphthalene (14 days), PAH MS (14 days), pH + Conductivity (7 days)	
1143861	TPE18 2.50 SOIL	28/02/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1143862	TPE19 0.20 SOIL	28/02/17	GJ 250ml x2, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX (14 days), Naphthalene (14 days), PAH MS (14 days), pH + Conductivity (7 days)	
1143863	TPE19 3.30 SOIL	28/02/17	GJ 250ml x2, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX (14 days), Naphthalene (14 days), PAH MS (14 days), pH + Conductivity (7 days)	
1143864	TPE23 3.50 SOIL	01/03/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1143865	TPE22 0.50 SOIL	01/03/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1143866	TPE22 2.00 SOIL	01/03/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1143867	TPE11 1.50 LEACHATE	27/02/17	GJ 250ml x2, GJ 60ml, PT 1L		
1143868	TPE20 0.50 LEACHATE	01/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1143869	TPE29 0.50 LEACHATE	01/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1143870	TPE17 3.10 LEACHATE	28/02/17	GJ 250ml x2, GJ 60ml, PT 1L		
1143871	TPE22 2.00 LEACHATE	01/03/17	GJ 250ml x2, 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

Certificate of Analysis

Certificate Number 17-94721-1

30-Mar-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-94721-1

Client Reference SLS1015

Order No (not supplied)

Contract Title Redcar Site

Description 16 Soil samples, 7 Leachate samples.

Date Received 17-Mar-17

Date Started 17-Mar-17

Date Completed 30-Mar-17

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

Notes **This report supersedes 17-94721. Extra testing.**
Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 17-94721-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1145606	1145607	1145608	1145609	1145610	1145611	1145612
			Sample ID	TPE28	TPE37	TPE37	TPE47	TPE48	TPE56	TPE64
			Depth	0.80	3.00	4.50	2.00	1.50	2.60	1.30
			Other ID	E1	E1	E3	E1	E1	E1	E1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	13/03/17	14/03/17	14/03/17	13/03/17	13/03/17	13/03/17	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Metals										
Antimony	DETSC 2301*	1	mg/kg		< 1.0	5.4			2.3	
Arsenic	DETSC 2301#	0.2	mg/kg	18	8.8	4.7	33		12	11
Barium	DETSC 2301#	1.5	mg/kg		130	180			260	
Beryllium	DETSC 2301#	0.2	mg/kg		1.0	0.7			2.7	
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	4.4	3.6	1.6	2.4		5.5	5.8
Cadmium	DETSC 2301#	0.1	mg/kg	1.4	0.4	0.7	0.5		0.3	0.3
Chromium	DETSC 2301#	0.15	mg/kg	33	20	420	33		190	190
Chromium, Hexavalent	DETSC 2204*	1	mg/kg		< 1.0	< 1.0			< 1.0	
Copper	DETSC 2301#	0.2	mg/kg	16	19	50	14		31	19
Lead	DETSC 2301#	0.3	mg/kg	61	29	48	38		29	22
Mercury	DETSC 2325#	0.05	mg/kg	0.67	0.05	0.11	< 0.05		< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg		0.8	2.2			1.1	
Nickel	DETSC 2301#	1	mg/kg	7.7	11	10	13		9.8	8.7
Vanadium	DETSC 2301	0.8	mg/kg		42	1200			870	
Zinc	DETSC 2301#	1	mg/kg	1600	210	190	340		130	110
Inorganics										
pH	DETSC 2008#			9.7	9.4	11.5	9.4	10.6	11.2	11.3
Cyanide, Total	DETSC 2130#	0.1	mg/kg	2.0	0.3	0.7	0.3		0.2	0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg		< 0.1	< 0.1			< 0.1	
Cyanide, Complex	DETSC 2130*	0.2	mg/kg		0.3	0.7			< 0.2	
Thiocyanate	DETSC 2130#	0.6	mg/kg		< 0.6	< 0.6			< 0.6	
Organic matter	DETSC 2002#	0.1	%	3.0	1.8	1.2	0.2		0.4	0.8
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1400	580	820	1600	1600	800	620
Sulphur as S, Total	DETSC 2320	0.01	%			0.61	0.49	0.86		
Sulphate as SO4, Total	DETSC 2321#	0.01	%			1.8	0.91	1.7		
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5		< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2		< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	3.7	< 1.5		< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	39	< 3.4		< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	43	< 10		< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9		< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6		< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4		< 1.4	< 1.4

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-94721-1
Client Ref SLS1015
Contract Title Redcar Site

				Lab No	1145606	1145607	1145608	1145609	1145610	1145611	1145612
				Sample ID	TPE28	TPE37	TPE37	TPE47	TPE48	TPE56	TPE64
				Depth	0.80	3.00	4.50	2.00	1.50	2.60	1.30
				Other ID	E1	E1	E3	E1	E1	E1	E1
				Sample Type	ES	ES	ES	ES	ES	ES	ES
				Sampling Date	13/03/17	14/03/17	14/03/17	13/03/17	13/03/17	13/03/17	n/s
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**								
Aromatic C5-C35	DETSC 3072*	10	mg/kg		< 10	< 10	< 10	< 10		< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg		< 10	< 10	43	< 10		< 10	< 10
PAHs											
Naphthalene	DETSC 3303#	0.03	mg/kg		0.07	< 0.03	< 0.03	< 0.03		< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg		< 0.03	0.04	0.04	< 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
Fluorene	DETSC 3303	0.03	mg/kg		< 0.03	< 0.03	< 0.03	< 0.03		< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg		0.17	0.14	0.17	0.08		0.12	0.07
Anthracene	DETSC 3303	0.03	mg/kg		0.05	0.04	0.05	< 0.03		< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg		0.25	0.12	0.14	0.10		0.15	0.10
Pyrene	DETSC 3303#	0.03	mg/kg		0.19	0.12	0.13	0.08		0.12	0.08
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg		0.11	0.04	0.07	< 0.03		0.05	0.03
Chrysene	DETSC 3303	0.03	mg/kg		0.14	< 0.03	0.07	< 0.03		0.06	0.05
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg		0.15	< 0.03	0.07	< 0.03		0.05	0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg		0.06	< 0.03	< 0.03	< 0.03		< 0.03	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg		0.07	< 0.03	0.04	< 0.03		< 0.03	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg		0.07	< 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
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg		0.06	< 0.03	< 0.03	< 0.03		< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg		1.4	0.49	0.78	0.27		0.54	0.37
Phenols											
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg		< 0.3	< 0.3	< 0.3	< 0.3		< 0.3	< 0.3

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-94721-1
Client Ref SLS1015
Contract Title Redcar Site

	Lab No	1145613	1145615	1145616	1145617	1145618	1145619	1145620
	Sample ID	TPE69	TPF11	TPF11	TPF12	TPF13	TPF13	TPF14
	Depth	3.80	1.00	4.00	2.00	1.00	2.40	1.00
	Other ID	E1	E1	E3	E1	E1	E2	E1
	Sample Type	ES	ES	ES	ES	ES	ES	ES
	Sampling Date	n/s	15/03/17	15/03/17	15/03/17	15/03/17	15/03/17	15/03/17
	Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
Metals								
Antimony	DETSC 2301*	1	mg/kg	7.4	< 1.0		10	13
Arsenic	DETSC 2301#	0.2	mg/kg	9.3	30	9.8	4.4	4.0	7.4
Barium	DETSC 2301#	1.5	mg/kg	530	100		1800	2100
Beryllium	DETSC 2301#	0.2	mg/kg	0.4	0.5		0.5	0.7
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	4.2	1.2	0.7	3.2	6.0	4.4
Cadmium	DETSC 2301#	0.1	mg/kg	0.7	0.5	0.1	0.7	0.9	0.7
Chromium	DETSC 2301#	0.15	mg/kg	630	23	8.2	860	960	1200
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0		< 1.0		< 1.0
Copper	DETSC 2301#	0.2	mg/kg	32	32	7.5	52	83	67
Lead	DETSC 2301#	0.3	mg/kg	71	140	40	48	58	39
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.18	< 0.05	< 0.05	< 0.05	0.14
Molybdenum	DETSC 2301#	0.4	mg/kg	1.8	1.8		5.9		9.7
Nickel	DETSC 2301#	1	mg/kg	13	12	4.9	13	15	15
Vanadium	DETSC 2301	0.8	mg/kg	2300	59		2800		3300
Zinc	DETSC 2301#	1	mg/kg	110	91	35	76	120	62
Inorganics								
pH	DETSC 2008#			12.0	10.3	10.3	9.4	12.0	12.0	12.3
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.2	0.2	0.1	0.1	0.1	0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1		< 0.1		< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	0.2	< 0.2		< 0.2		< 0.2
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6	1.4		< 0.6		< 0.6
Organic matter	DETSC 2002#	0.1	%	0.3	15	2.7	0.6	< 0.1	0.3
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	35	830	190	320	11	50	< 10
Sulphur as S, Total	DETSC 2320	0.01	%			0.05	0.09	0.17	0.20	
Sulphate as SO4, Total	DETSC 2321#	0.01	%			0.15	0.11	0.32	0.36	
Petroleum Hydrocarbons								
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	0.03	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	7.3	< 1.5		< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	100	< 1.2		< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	130	< 1.5		< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	63	< 3.4		< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	300	< 10		< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9		< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	28	2.7		< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	65	12		< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	34	28		< 1.4	< 1.4	< 1.4	< 1.4

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-94721-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1145613	1145615	1145616	1145617	1145618	1145619	1145620
			Sample ID	TPE69	TPF11	TPF11	TPF12	TPF13	TPF13	TPF14
			Depth	3.80	1.00	4.00	2.00	1.00	2.40	1.00
			Other ID	E1	E1	E3	E1	E1	E2	E1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	n/s	15/03/17	15/03/17	15/03/17	15/03/17	15/03/17	15/03/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic C5-C35	DETSC 3072*	10	mg/kg	130	43		< 10	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	430	43		< 10	< 10	< 10	< 10
PAHs										
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	0.23		< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	0.09		< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.14		< 0.03	< 0.03	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	0.24		< 0.03	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.03	1.7		0.06	0.11	0.36	0.09
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	0.62		0.06	< 0.03	0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.11	2.4		0.06	0.32	1.2	0.10
Pyrene	DETSC 3303#	0.03	mg/kg	0.14	1.9		0.05	0.26	0.91	0.07
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.04	1.2		0.03	0.12	0.35	0.03
Chrysene	DETSC 3303	0.03	mg/kg	0.05	1.0		< 0.03	0.15	0.42	0.04
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.05	1.0		< 0.03	0.15	0.41	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.41		< 0.03	0.08	0.16	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.76		< 0.03	0.08	0.17	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.35		< 0.03	0.07	0.14	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	0.12		< 0.03	< 0.03	0.04	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	0.34		< 0.03	0.07	0.15	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.43	12		0.28	1.4	4.3	0.33
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3		< 0.3	< 0.3	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-94721-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1150702	1150703
			Sample ID	TPF08	TPF09
			Depth	0.20	0.20
			Other ID		
			Sample Type	ES	ES
			Sampling Date	15/03/17	15/03/17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Metals					
Antimony	DETSC 2301*	1	mg/kg	2.4	
Arsenic	DETSC 2301#	0.2	mg/kg	5.4	
Barium	DETSC 2301#	1.5	mg/kg	82	
Beryllium	DETSC 2301#	0.2	mg/kg	0.4	
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	0.6	
Cadmium	DETSC 2301#	0.1	mg/kg	0.4	
Chromium	DETSC 2301#	0.15	mg/kg	32	
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	
Copper	DETSC 2301#	0.2	mg/kg	22	
Lead	DETSC 2301#	0.3	mg/kg	17	
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	
Molybdenum	DETSC 2301#	0.4	mg/kg	2.3	
Nickel	DETSC 2301#	1	mg/kg	29	
Vanadium	DETSC 2301	0.8	mg/kg	37	
Zinc	DETSC 2301#	1	mg/kg	82	
Inorganics					
pH	DETSC 2008#			9.3	10.3
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.2	
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	0.2	
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6	
Organic matter	DETSC 2002#	0.1	%	9.4	
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	170	160
Sulphur as S, Total	DETSC 2320	0.01	%		0.07
Sulphate as SO4, Total	DETSC 2321#	0.01	%		0.15
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	3.5	
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	12	
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	110	
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	130	
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-94721-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1150702	1150703
			Sample ID	TPF08	TPF09
			Depth	0.20	0.20
			Other ID		
			Sample Type	ES	ES
			Sampling Date	15/03/17	15/03/17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	130	
PAHs					
Naphthalene	DETSC 3303#	0.03	mg/kg	0.57	
Acenaphthylene	DETSC 3303#	0.03	mg/kg	0.17	
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.07	
Fluorene	DETSC 3303	0.03	mg/kg	0.17	
Phenanthrene	DETSC 3303#	0.03	mg/kg	1.2	
Anthracene	DETSC 3303	0.03	mg/kg	0.46	
Fluoranthene	DETSC 3303#	0.03	mg/kg	1.5	
Pyrene	DETSC 3303#	0.03	mg/kg	1.1	
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.48	
Chrysene	DETSC 3303	0.03	mg/kg	0.56	
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.76	
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.25	
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.38	
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.21	
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	0.07	
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.20	
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	8.1	
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-94721-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1145613
Sample ID	TPE69
Depth	3.80
Other ID	E1
Sample Type	ES
Sampling Date	n/s
Sampling Time	n/s

Test	Method	LOD	Units	
VOCs				
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-94721-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1145613
Sample ID	TPE69
Depth	3.80
Other ID	E1
Sample Type	ES
Sampling Date	n/s
Sampling Time	n/s

Test	Method	LOD	Units	
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01
SVOCs				
Phenol	DETSC 3433	0.1	mg/kg	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-94721-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1145613
Sample ID	TPE69
Depth	3.80
Other ID	E1
Sample Type	ES
Sampling Date	n/s
Sampling Time	n/s

Test	Method	LOD	Units	
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-94721-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1145621	1145622	1145623	1145624	1145625	1145626	1150704
			Sample ID	TPE37	TPE56	TPE69	TPF11	TPF14	TPE70	TPF08
			Depth	3.00	2.60	3.80	1.00	1.00	1.00	0.20
			Other ID	E1	E1	E1	E1	E1	E1	
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	14/03/17	13/03/17	n/s	15/03/17	15/03/17	n/s	15/03/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Preparation										
Leachate 10:1	DETS 036*			Y	Y	Y	Y	Y	Y	Y
Metals										
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	3.5	3.4	1.0	1.3	1.2	1.0	1.6
Barium, Dissolved	DETSC 2306	0.26	ug/l	28	60	6.9	14	110		5.8
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1
Boron	DETSC 2123	100	ug/l	170	< 100	< 100	< 100	< 100	< 100	< 100
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	0.04	0.04	0.04	0.19	0.04	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	0.31	0.47	1.3	< 0.25	36	2.7	0.25
Copper, Dissolved	DETSC 2306	0.4	ug/l	1.2	1.6	1.3	1.3	4.6	0.6	0.9
Iron, Dissolved	DETSC 2306	5.5	ug/l	< 5.5	14	12	63	9.3		120
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	< 0.09	< 0.09	0.86	0.26	0.11	0.11
Manganese, Dissolved	DETSC 2306	0.22	ug/l	14	12	1.0	1.1	< 0.22		7.8
Mercury, Dissolved	DETSC 2306	0.01	ug/l	0.01	0.01	< 0.01	0.03	0.17	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	3.5	0.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	1.1	1.1	< 0.25	2.6	14	1.9	0.76
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	7.1	5.3	3.2	0.6	8.0		5.2
Zinc, Dissolved	DETSC 2306	1.3	ug/l	1.5	6.0	1.8	1.8	< 1.3	< 1.3	< 1.3
Inorganics										
pH	DETSC 2008			7.3	6.9	9.9	7.6	11.9	8.9	8.6
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	0.15	0.10	0.018	0.026	0.018		0.14
Chloride	DETSC 2055	0.1	mg/l							2.0

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-94721-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1145606	TPE28 E1 0.80	SOIL	NAD	none	Steven Lambert
1145607	TPE37 E1 3.00	SOIL	NAD	none	Steven Lambert
1145608	TPE37 E3 4.50	SOIL	NAD	none	Steven Lambert
1145609	TPE47 E1 2.00	SOIL	NAD	none	Steven Lambert
1145611	TPE56 E1 2.60	SOIL	NAD	none	Steven Lambert
1145612	TPE64 E1 1.30	SOIL	NAD	none	Steven Lambert
1145613	TPE69 E1 3.80	SOIL	NAD	none	Steven Lambert
1145615	TPF11 E1 1.00	SOIL	NAD	none	Steven Lambert
1145617	TPF12 E1 2.00	SOIL	NAD	none	Steven Lambert
1145618	TPF13 E1 1.00	SOIL	NAD	none	Steven Lambert
1145619	TPF13 E2 2.40	SOIL	NAD	none	Steven Lambert
1145620	TPF14 E1 1.00	SOIL	NAD	none	Steven Lambert
1150702	TPF08 0.20	SOIL	NAD	none	Keith Wilson

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 17-94721-1
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1145606	TPE28 0.80 SOIL	13/03/17	GJ 250ml, GJ 60ml, PT 1L		
1145607	TPE37 3.00 SOIL	14/03/17	GJ 250ml, GJ 60ml, PT 1L		
1145608	TPE37 4.50 SOIL	14/03/17	GJ 250ml, GJ 60ml, PT 1L		
1145609	TPE47 2.00 SOIL	13/03/17	GJ 250ml, GJ 60ml, PT 1L		
1145610	TPE48 1.50 SOIL	13/03/17	GJ 250ml, GJ 60ml, PT 1L		
1145611	TPE56 2.60 SOIL	13/03/17	GJ 250ml, GJ 60ml, PT 1L		
1145612	TPE64 1.30 SOIL		GJ 250ml x2, GV, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days)	
1145613	TPE69 3.80 SOIL		GJ 250ml x2, GV, PT 1L	Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), Boron (365 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days), SVOC (14 days)	
1145614	TPE70 1.00 SOIL		GJ 250ml x2, GV, PT 1L		
1145615	TPF11 1.00 SOIL	15/03/17	GJ 250ml, GJ 60ml, PT 1L		
1145616	TPF11 4.00 SOIL	15/03/17	GJ 250ml, GJ 60ml, PT 1L		
1145617	TPF12 2.00 SOIL	15/03/17	GJ 250ml, GJ 60ml, PT 1L		
1145618	TPF13 1.00 SOIL	15/03/17	GJ 250ml, GJ 60ml, PT 1L		
1145619	TPF13 2.40 SOIL	15/03/17	GJ 250ml, GJ 60ml, PT 1L		
1145620	TPF14 1.00 SOIL	15/03/17	GJ 250ml, GJ 60ml, PT 1L		
1145621	TPE37 3.00 LEACHATE	14/03/17	GJ 250ml, GJ 60ml, PT 1L		
1145622	TPE56 2.60 LEACHATE	13/03/17	GJ 250ml, GJ 60ml, PT 1L		
1145623	TPE69 3.80 LEACHATE		GJ 250ml x2, GV, PT 1L	Sample date not supplied	
1145624	TPF11 1.00 LEACHATE	15/03/17	GJ 250ml, GJ 60ml, PT 1L		
1145625	TPF14 1.00 LEACHATE	15/03/17	GJ 250ml, GJ 60ml, PT 1L		
1145626	TPE70 1.00 LEACHATE		GJ 250ml x2, GV, PT 1L	Sample date not supplied	
1150702	TPF08 0.20 SOIL	15/03/17	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1150703	TPF09 0.20 SOIL	15/03/17	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1150704	TPF08 0.20 LEACHATE	15/03/17	GJ 250ml, GJ 60ml, PT 1L		

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

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.

Information in Support of the Analytical Results

Our Ref 17-94721-1
Client Ref SLS1015
Contract Redcar Site

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

Certificate of Analysis

Certificate Number 17-95545-1

13-Apr-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-95545-1

Client Reference SLS1015

Order No CH-1332

Contract Title Redcar Site

Description 21 Soil samples, 7 Leachate samples.

Date Received Monday, March 27, 2017

Date Started Monday, March 27, 2017

Date Completed Thursday, April 13, 2017

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

Notes **This report supersedes 17-95545. Extra testing.**
Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 17-95545-1
Client Ref SLS1015
Contract Title Redcar Site

				Lab No	1150242	1150243	1150244	1150245	1150246	1150247	1150248
				Sample ID	TPF01	TPF01	TPF02	TPF04	TPF05	TPF06	TPF07
				Depth	0.70	2.00	2.50	4.00	0.50	2.50	0.50-0.60
				Other ID	1	2	1	3	1	1	1
				Sample Type	S	ES	ES	ES	ES	ES	ES
				Sampling Date	16-Mar-17	16-Mar-17	16-Mar-17	16-Mar-17	16-Mar-17	16-Mar-17	17-Mar-17
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**								
Asbestos Quantification	DETSC 1102	0									
Metals											
Antimony	DETSC 2301*	1	mg/kg	4.4	1.2	< 1.0		3.1	< 1.0		
Arsenic	DETSC 2301#	0.2	mg/kg	7.1	6.9	6.9		11	7.0		
Barium	DETSC 2301#	1.5	mg/kg	130	110	88		210	100		
Beryllium	DETSC 2301#	0.2	mg/kg	0.6	0.4	< 0.2		2.1	0.4		
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	2.0	1.3	0.8		1.2	1.0		
Cadmium	DETSC 2301#	0.1	mg/kg	0.6	< 0.1	< 0.1		0.3	< 0.1		
Chromium	DETSC 2301#	0.15	mg/kg	51	65	6.1		38	8.3		
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		
Copper	DETSC 2301#	0.2	mg/kg	34	13	5.7		32	8.6		
Lead	DETSC 2301#	0.3	mg/kg	27	19	23		21	25		
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05		< 0.05	< 0.05		
Molybdenum	DETSC 2301#	0.4	mg/kg	5.3	0.8	0.5		2.3	0.5		
Nickel	DETSC 2301#	1	mg/kg	34	7.6	4.2		22	6.1		
Vanadium	DETSC 2301	0.8	mg/kg	55	84	16		100	23		
Zinc	DETSC 2301#	1	mg/kg	160	32	27		92	33		
Inorganics											
pH	DETSC 2008#			11.3	12.0	9.3	9.6	10.1	9.3	11.7	
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.6	0.1	0.1		0.2	0.1		
Cyanide, Free	DETSC 2130#	0.1	mg/kg	0.1	< 0.1	< 0.1		< 0.1	< 0.1		
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	0.5	< 0.2	< 0.2		< 0.2	< 0.2		
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6	< 0.6	< 0.6		< 0.6	< 0.6		
Organic matter	DETSC 2002#	0.1	%	7.8	0.2	2.3		5.6	0.9		
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	230	25	61	31	150	62	230	
Sulphur as S, Total	DETSC 2320	0.01	%	0.06		0.04	0.02			0.25	
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.18		0.07	0.06			0.53	
Petroleum Hydrocarbons											
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01		
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01		
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01		
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5		< 1.5	< 1.5		
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2		< 1.2	< 1.2		
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	8.1	5.8	< 1.5		< 1.5	< 1.5		
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	91	14	< 3.4		< 3.4	< 3.4		
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	99	19	< 10		< 10	< 10		
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01		
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01		
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01		
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9		< 0.9	< 0.9		
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	5.6	< 0.5	< 0.5		< 0.5	< 0.5		
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	14	3.1	< 0.6		3.8	< 0.6		

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-95545-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1150242	1150243	1150244	1150245	1150246	1150247	1150248
			Sample ID	TPF01	TPF01	TPF02	TPF04	TPF05	TPF06	TPF07
			Depth	0.70	2.00	2.50	4.00	0.50	2.50	0.50-0.60
			Other ID	1	2	1	3	1	1	1
			Sample Type	S	ES	ES	ES	ES	ES	ES
			Sampling Date	16-Mar-17	16-Mar-17	16-Mar-17	16-Mar-17	16-Mar-17	16-Mar-17	17-Mar-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	41	4.8	< 1.4		12	< 1.4	
Aromatic C5-C35	DETSC 3072*	10	mg/kg	61	< 10	< 10		16	< 10	
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	160	27	< 10		16	< 10	
PAHs										
Naphthalene	DETSC 3303#	0.03	mg/kg	0.89	0.04	< 0.03		0.11	< 0.03	
Acenaphthylene	DETSC 3303#	0.03	mg/kg	0.19	< 0.03	< 0.03		< 0.03	< 0.03	
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.63	< 0.03	< 0.03		< 0.03	< 0.03	
Fluorene	DETSC 3303	0.03	mg/kg	0.40	< 0.03	< 0.03		0.04	< 0.03	
Phenanthrene	DETSC 3303#	0.03	mg/kg	1.5	0.06	< 0.03		0.20	0.06	
Anthracene	DETSC 3303	0.03	mg/kg	0.75	< 0.03	< 0.03		0.04	< 0.03	
Fluoranthene	DETSC 3303#	0.03	mg/kg	1.5	0.07	< 0.03		0.20	0.05	
Pyrene	DETSC 3303#	0.03	mg/kg	1.1	0.05	< 0.03		0.16	0.03	
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.49	0.03	< 0.03		0.10	< 0.03	
Chrysene	DETSC 3303	0.03	mg/kg	0.52	0.03	< 0.03		0.12	< 0.03	
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.54	0.03	< 0.03		0.13	< 0.03	
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.20	< 0.03	< 0.03		0.05	< 0.03	
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.34	< 0.03	< 0.03		0.08	< 0.03	
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.18	< 0.03	< 0.03		0.05	< 0.03	
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	0.06	< 0.03	< 0.03		< 0.03	< 0.03	
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.20	< 0.03	< 0.03		0.06	< 0.03	
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	9.4	0.32	< 0.10		1.4	0.15	
PCBs										
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg							
PCB 52	DETSC 3401#	0.01	mg/kg							
PCB 101	DETSC 3401#	0.01	mg/kg							
PCB 118	DETSC 3401#	0.01	mg/kg							
PCB 153	DETSC 3401#	0.01	mg/kg							
PCB 138	DETSC 3401#	0.01	mg/kg							
PCB 180	DETSC 3401#	0.01	mg/kg							
PCB 7 Total	DETSC 3401#	0.01	mg/kg							
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3		< 0.3	0.5	

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-95545-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1150249	1150250	1150251	1150252	1150253	1150254	1150255
			Sample ID	TPF10	TPC08	TPC09	TPC19	TPC19	TPC28	TPC28
			Depth	0.20-0.60	4.10-5.40	0.10-0.50	0.30	0.70	2.20	3.40
			Other ID	1	1	1	1	2	1	
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	16-Mar-17	23-Mar-17	23-Mar-17	22-Mar-17	22-Mar-17	23-Mar-17	24-Mar-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Asbestos Quantification	DETSC 1102	0					Y			
Metals										
Antimony	DETSC 2301*	1	mg/kg		5.1				< 1.0	3.2
Arsenic	DETSC 2301#	0.2	mg/kg	21	76		83	9.0	7.8	63
Barium	DETSC 2301#	1.5	mg/kg		190				210	650
Beryllium	DETSC 2301#	0.2	mg/kg		2.2				1.2	1.8
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	1.5	21		9.4	4.5	3.0	14
Cadmium	DETSC 2301#	0.1	mg/kg	0.4	1.4		1.0	0.1	0.2	0.7
Chromium	DETSC 2301#	0.15	mg/kg	110	34		43	26	28	29
Chromium, Hexavalent	DETSC 2204*	1	mg/kg		< 1.0				< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	44	89		120	22	20	85
Lead	DETSC 2301#	0.3	mg/kg	29	120		88	20	18	63
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.18		0.26	< 0.05	< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg		2.1				2.4	1.7
Nickel	DETSC 2301#	1	mg/kg	18	46		52	28	26	40
Vanadium	DETSC 2301	0.8	mg/kg		160				42	100
Zinc	DETSC 2301#	1	mg/kg	93	160		160	58	67	120
Inorganics										
pH	DETSC 2008#			11.0	10.0	8.8	8.9	8.3	9.1	9.2
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.2	< 0.1		0.1	0.1	0.2	< 0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg		< 0.1				< 0.1	< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg		< 0.2				< 0.2	< 0.2
Thiocyanate	DETSC 2130#	0.6	mg/kg		< 0.6				< 0.6	< 0.6
Organic matter	DETSC 2002#	0.1	%	0.5	1.7		1.7	1.5	0.8	0.4
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	330	780	57	82	180	110	130
Sulphur as S, Total	DETSC 2320	0.01	%		0.15	0.04				0.03
Sulphate as SO4, Total	DETSC 2321#	0.01	%		0.55	0.12				0.10
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5		< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2		< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5		< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4		< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10		< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9		< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	14	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	74	< 0.6		< 0.6	< 0.6	< 0.6	< 0.6

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-95545-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1150249	1150250	1150251	1150252	1150253	1150254	1150255
			Sample ID	TPF10	TPC08	TPC09	TPC19	TPC19	TPC28	TPC28
			Depth	0.20-0.60	4.10-5.40	0.10-0.50	0.30	0.70	2.20	3.40
			Other ID	1	1	1	1	2	1	
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	16-Mar-17	23-Mar-17	23-Mar-17	22-Mar-17	22-Mar-17	23-Mar-17	24-Mar-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	81	< 1.4		< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	170	< 10		< 10	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	170	< 10		< 10	< 10	< 10	< 10
PAHs										
Naphthalene	DETSC 3303#	0.03	mg/kg	0.03	< 0.03		< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	0.18	< 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
Fluorene	DETSC 3303	0.03	mg/kg	0.10	< 0.03		< 0.03	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.98	< 0.03		< 0.03	< 0.03	< 0.03	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	0.31	< 0.03		< 0.03	< 0.03	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	2.0	< 0.03		< 0.03	< 0.03	< 0.03	< 0.03
Pyrene	DETSC 3303#	0.03	mg/kg	1.5	< 0.03		< 0.03	< 0.03	< 0.03	< 0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.84	< 0.03		< 0.03	< 0.03	< 0.03	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	0.73	< 0.03		< 0.03	< 0.03	< 0.03	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.86	< 0.03		< 0.03	< 0.03	< 0.03	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.37	< 0.03		< 0.03	< 0.03	< 0.03	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.57	< 0.03		< 0.03	< 0.03	< 0.03	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.30	< 0.03		< 0.03	< 0.03	< 0.03	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	0.11	< 0.03		< 0.03	< 0.03	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.33	< 0.03		< 0.03	< 0.03	< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	9.3	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10
PCBs										
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg							
PCB 52	DETSC 3401#	0.01	mg/kg							
PCB 101	DETSC 3401#	0.01	mg/kg							
PCB 118	DETSC 3401#	0.01	mg/kg							
PCB 153	DETSC 3401#	0.01	mg/kg							
PCB 138	DETSC 3401#	0.01	mg/kg							
PCB 180	DETSC 3401#	0.01	mg/kg							
PCB 7 Total	DETSC 3401#	0.01	mg/kg							
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3		0.5	< 0.3	< 0.3	3.2

Summary of Chemical Analysis
Soil Samples

Our Ref 17-95545-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1150256	1150257	1150258	1150259	1150260	1150261	1150262
			Sample ID	TPC29	TPC30	TPC30	TPC38	TPC40	TPC40	TPC41
			Depth	1.00	1.50-2.00	2.10-2.30	1.60	0.70	2.50	0.80-1.10
			Other ID							
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	22-Mar-17	23-Mar-17	23-Mar-17	23-Mar-17	22-Mar-17	22-Mar-17	22-Mar-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Asbestos Quantification	DETSC 1102	0				Y				Y
Metals										
Antimony	DETSC 2301*	1	mg/kg		1.2	1.3	4.8	3.5		1.1
Arsenic	DETSC 2301#	0.2	mg/kg		7.8	8.8	67	46		8.2
Barium	DETSC 2301#	1.5	mg/kg		130	590	260	260		200
Beryllium	DETSC 2301#	0.2	mg/kg		1.0	2.8	2.4	1.6		0.9
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg		1.5	12	22	10		1.4
Cadmium	DETSC 2301#	0.1	mg/kg		0.2	0.3	1.0	0.7		0.1
Chromium	DETSC 2301#	0.15	mg/kg		29	110	37	22		28
Chromium, Hexavalent	DETSC 2204*	1	mg/kg		1.6	< 1.0	< 1.0	< 1.0		< 1.0
Copper	DETSC 2301#	0.2	mg/kg		24	22	100	94		22
Lead	DETSC 2301#	0.3	mg/kg		25	62	79	45		23
Mercury	DETSC 2325#	0.05	mg/kg		< 0.05	< 0.05	0.17	0.19		0.07
Molybdenum	DETSC 2301#	0.4	mg/kg		0.8	1.5	4.0	3.0		0.7
Nickel	DETSC 2301#	1	mg/kg		31	14	56	39		30
Vanadium	DETSC 2301	0.8	mg/kg		41	260	160	85		42
Zinc	DETSC 2301#	1	mg/kg		64	76	190	130		57
Inorganics										
pH	DETSC 2008#			9.0	8.2	11.1	9.5	9.8	10.7	8.5
Cyanide, Total	DETSC 2130#	0.1	mg/kg		0.2	0.2	0.2	0.1		0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1		< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg		< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
Thiocyanate	DETSC 2130#	0.6	mg/kg		< 0.6	< 0.6	< 0.6	< 0.6		< 0.6
Organic matter	DETSC 2002#	0.1	%		1.1	0.6	20	4.6		1.3
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	500	76	510	660	330	500	36
Sulphur as S, Total	DETSC 2320	0.01	%	0.18					0.59	
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.25					1.0	
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01		< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01		< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01		< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg		< 1.5	< 1.5	< 1.5	< 1.5		< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg		< 1.2	< 1.2	< 1.2	< 1.2		< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg		< 1.5	< 1.5	< 1.5	< 1.5		3.1
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg		< 3.4	< 3.4	< 3.4	< 3.4		5.0
Aliphatic C5-C35	DETSC 3072*	10	mg/kg		< 10	< 10	< 10	< 10		< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01		< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01		< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01		< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg		< 0.9	< 0.9	< 0.9	< 0.9		< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg		< 0.5	< 0.5	< 0.5	< 0.5		< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg		< 0.6	0.8	< 0.6	< 0.6		0.9

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-95545-1
Client Ref SLS1015
Contract Title Redcar Site

				Lab No	1150256	1150257	1150258	1150259	1150260	1150261	1150262
				Sample ID	TPC29	TPC30	TPC30	TPC38	TPC40	TPC40	TPC41
				Depth	1.00	1.50-2.00	2.10-2.30	1.60	0.70	2.50	0.80-1.10
				Other ID							
				Sample Type	ES	ES	ES	ES	ES	ES	ES
				Sampling Date	22-Mar-17	23-Mar-17	23-Mar-17	23-Mar-17	22-Mar-17	22-Mar-17	22-Mar-17
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**								
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg		< 1.4	2.8	< 1.4	< 1.4		2.2
Aromatic C5-C35	DETSC 3072*	10	mg/kg		< 10	< 10	< 10	< 10		< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg		< 10	< 10	< 10	< 10		11
PAHs											
Naphthalene	DETSC 3303#	0.03	mg/kg		< 0.03	0.05	< 0.03	< 0.03		< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	< 0.03		< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg		< 0.03	0.13	< 0.03	< 0.03		< 0.03
Fluorene	DETSC 3303	0.03	mg/kg		< 0.03	0.10	< 0.03	< 0.03		< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg		< 0.03	0.31	< 0.03	< 0.03		0.42
Anthracene	DETSC 3303	0.03	mg/kg		< 0.03	0.07	< 0.03	< 0.03		0.15
Fluoranthene	DETSC 3303#	0.03	mg/kg		< 0.03	0.77	< 0.03	< 0.03		2.1
Pyrene	DETSC 3303#	0.03	mg/kg		< 0.03	0.74	< 0.03	< 0.03		1.9
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg		< 0.03	0.36	< 0.03	< 0.03		0.92
Chrysene	DETSC 3303	0.03	mg/kg		< 0.03	0.32	< 0.03	< 0.03		0.85
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg		< 0.03	0.40	< 0.03	< 0.03		1.1
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg		< 0.03	0.15	< 0.03	< 0.03		0.46
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg		< 0.03	0.26	< 0.03	< 0.03		0.75
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg		< 0.03	0.13	< 0.03	< 0.03		0.44
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg		< 0.03	0.04	< 0.03	< 0.03		0.11
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg		< 0.03	0.14	< 0.03	< 0.03		0.42
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg		< 0.10	4.0	< 0.10	< 0.10		9.6
PCBs											
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg				< 0.01			
PCB 52	DETSC 3401#	0.01	mg/kg				< 0.01			
PCB 101	DETSC 3401#	0.01	mg/kg				< 0.01			
PCB 118	DETSC 3401#	0.01	mg/kg				< 0.01			
PCB 153	DETSC 3401#	0.01	mg/kg				< 0.01			
PCB 138	DETSC 3401#	0.01	mg/kg				< 0.01			
PCB 180	DETSC 3401#	0.01	mg/kg				< 0.01			
PCB 7 Total	DETSC 3401#	0.01	mg/kg				< 0.01			
Phenols											
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg		< 0.3	< 0.3	< 0.3	1.8		3.8

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Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-95545-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1150258	1150259
			Sample ID	TPC30	TPC38
			Depth	2.10-2.30	1.60
			Other ID		
			Sample Type	ES	ES
			Sampling Date	23-Mar-17	23-Mar-17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
VOCs					
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	0.02
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	0.02
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01

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Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-95545-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1150258	1150259
			Sample ID	TPC30	TPC38
			Depth	2.10-2.30	1.60
			Other ID		
			Sample Type	ES	ES
			Sampling Date	23-Mar-17	23-Mar-17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	0.01	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
SVOCs					
Phenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1

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Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-95545-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1150258	1150259
			Sample ID	TPC30	TPC38
			Depth	2.10-2.30	1.60
			Other ID		
			Sample Type	ES	ES
			Sampling Date	23-Mar-17	23-Mar-17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-95545-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1150263	1150264	1150265	1150266	1150267	1150268	1150269
			Sample ID	TPF01	TPF02	TPF06	TPC08	TPC28	TPC38	TPC40
			Depth	2.00	2.50	2.50	4.10-5.40	2.20	1.60	0.70
			Other ID							
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	16-Mar-17	16-Mar-17	16-Mar-17	23-Mar-17	23-Mar-17	23-Mar-17	22-Mar-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Preparation										
Leachate 10:1	DETS 036*			Y	Y	Y	Y	Y	Y	Y
Metals										
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	3.5	0.85	1.1	35	0.42	22	1.2
Barium, Dissolved	DETSC 2306	0.26	ug/l	2.3	2.8	4.4	6.7	2.0	3.1	5.9
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron	DETSC 2123	100	ug/l	< 100	< 100	100	340	180	230	190
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	0.41	< 0.25	< 0.25	0.65	< 0.25	5.7	< 0.25
Copper, Dissolved	DETSC 2306	0.4	ug/l	2.1	< 0.4	< 0.4	0.8	0.5	0.5	0.7
Iron, Dissolved	DETSC 2306	5.5	ug/l	20	16	20	< 5.5	190	8.6	< 5.5
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.12	0.17	0.19	< 0.09	0.15	0.11	< 0.09
Manganese, Dissolved	DETSC 2306	0.22	ug/l	0.41	2.0	3.5	0.88	0.61	0.76	3.7
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.29	< 0.25	< 0.25	31	0.63	8.9	1.2
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	13	1.4	1.2	85	2.0	21	20
Zinc, Dissolved	DETSC 2306	1.3	ug/l	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Inorganics										
pH	DETSC 2008			10.8	8.1	8.3	9.8	7.7	9.0	9.6
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	0.017	< 0.015	< 0.015	< 0.015	0.020	0.021	0.015
Chloride	DETSC 2055	0.1	mg/l	6.9	4.2	6.6	4.4	2.3	1.9	3.0

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-95545-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1150242	TPF01 1 0.70	SOIL	NAD	none	D Wilkinson
1150243	TPF01 2 2.00	SOIL	NAD	none	D Wilkinson
1150244	TPF02 1 2.50	SOIL	NAD	none	D Wilkinson
1150246	TPF05 1 0.50	SOIL	NAD	none	D Wilkinson
1150247	TPF06 1 2.50	SOIL	NAD	none	D Wilkinson
1150249	TPF10 1 0.20-0.60	SOIL	NAD	none	D Wilkinson
1150250	TPC08 1 4.10-5.40	SOIL	NAD	none	D Wilkinson
1150252	TPC19 1 0.30	SOIL	Chrysotile	Chrysotile present as small fibre bundle	D Wilkinson
1150253	TPC19 2 0.70	SOIL	NAD	none	D Wilkinson
1150254	TPC28 1 2.20	SOIL	NAD	none	D Wilkinson
1150255	TPC28 3.40	SOIL	NAD	none	D Wilkinson
1150257	TPC30 1.50-2.00	SOIL	NAD	none	D Wilkinson
1150258	TPC30 2.10-2.30	SOIL	Chrysotile	Chrysotile present as fibre bundles	D Wilkinson
1150259	TPC38 1.60	SOIL	NAD	none	D Wilkinson
1150260	TPC40 0.70	SOIL	NAD	none	D Wilkinson
1150262	TPC41 0.80-1.10	SOIL	Chrysotile	Chrysotile present as fibre bundle	D Wilkinson

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.

Summary of Asbestos Quantification Analysis

Soil Samples

Our Ref 17-95545-1
Client Ref SLS1015
Contract Title Redcar Site

		Lab No	1150252	1150258	1150262
		Sample ID	TPC19	TPC30	TPC41
		Depth	0.30	2.10-2.30	0.80-1.10
		Other ID	1		
		Sample Type	SOIL	SOIL	SOIL
		Sampling Date	22-Mar-17	23-Mar-17	22-Mar-17
		Sampling Time			
Test	**Method**	**Units**			
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**0.001**	**0.004**	**0.006**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na	na	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	0.001	0.004	0.006
Quantification by PCOM (c)	DETSC 1102	Mass %	na	na	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na	na	na
Breakdown of Gravimetric Analysis (a)					
Mass of Sample		g	797.89	31.35	23.37
ACMs present*		type			
Mass of ACM in sample		g			
% ACM by mass		%			
% asbestos in ACM		%			
% asbestos in sample		%			
Breakdown of Detailed Gravimetric Analysis (b)					
% Amphibole bundles in sample		Mass %	na	na	na
% Chrysotile bundles in sample		Mass %	0.001	0.004	0.006
Breakdown of PCOM Analysis (c)					
% Amphibole fibres in sample		Mass %	na	na	na
% Chrysotile fibres in sample		Mass %	na	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)					
Amphibole fibres		Fibres/g	na	na	na
Chrysotile fibres		Fibres/g	na	na	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Information in Support of the Analytical Results

Our Ref 17-95545-1
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1150242	TPF01 0.70 SOIL	16/03/17	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1150243	TPF01 2.00 SOIL	16/03/17	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1150244	TPF02 2.50 SOIL	16/03/17	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1150245	TPF04 4.00 SOIL	16/03/17	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1150246	TPF05 0.50 SOIL	16/03/17	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1150247	TPF06 2.50 SOIL	16/03/17	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1150248	TPF07 0.50-0.60 SOIL	17/03/17	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1150249	TPF10 0.20-0.60 SOIL	16/03/17	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1150250	TPC08 4.10-5.40 SOIL	23/03/17	No containers logged		Cannot evaluate
1150251	TPC09 0.10-0.50 SOIL	23/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1150252	TPC19 0.30 SOIL	22/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1150253	TPC19 0.70 SOIL	22/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1150254	TPC28 2.20 SOIL	23/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1150255	TPC28 3.40 SOIL	24/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1150256	TPC29 1.00 SOIL	22/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1150257	TPC30 1.50-2.00 SOIL	23/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1150258	TPC30 2.10-2.30 SOIL	23/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1150259	TPC38 1.60 SOIL	23/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1150260	TPC40 0.70 SOIL	22/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1150261	TPC40 2.50 SOIL	22/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1150262	TPC41 0.80-1.10 SOIL	22/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1150263	TPF01 2.00 LEACHATE	16/03/17	GJ 250ml, GJ 60ml, PT 1L		
1150264	TPF02 2.50 LEACHATE	16/03/17	GJ 250ml, GJ 60ml, PT 1L		
1150265	TPF06 2.50 LEACHATE	16/03/17	GJ 250ml, GJ 60ml, PT 1L		
1150266	TPC08 4.10-5.40 LEACHATE	23/03/17	No containers logged		Cannot evaluate
1150267	TPC28 2.20 LEACHATE	23/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1150268	TPC38 1.60 LEACHATE	23/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1150269	TPC40 0.70 LEACHATE	22/03/17	GJ 250ml x2, 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

Certificate of Analysis

Certificate Number 17-96098-1

24-Apr-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-96098-1

Client Reference SLS 1015

Order No CH-1332

Contract Title SSI Redcar

Description 23 Soil samples, 10 Leachate samples.

Date Received Saturday, April 1, 2017

Date Started Saturday, April 1, 2017

Date Completed Monday, April 24, 2017

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

Notes **This report supersedes 17-96098. Extra testing**
Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

mCERTS
THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 17-96098-1
Client Ref SLS 1015
Contract Title SSI Redcar

Sample ID	Other ID	Depth	Lab No	Completed	Matrix Description
TPC01	E1	1	1153085	11-Apr-17	Light grey gravelly, sandy CLAY
TPC05	E1	0.3	1153086	11-Apr-17	Dark brown gravelly, sandy CLAY including odd rootlets
TPC05	E2	0.3	1153087	11-Apr-17	White brown clayey, SAND including odd wood
TPC06	E1	1	1153088	11-Apr-17	Dark brown gravelly, sandy CLAY including odd rootlets (Made ground - plastic, glass, brick)
TPC10	E1	0.1	1153089	11-Apr-17	Dark brown gravelly, sandy CLAY including odd rootlets
TPC10	E2	4.5	1153090	11-Apr-17	Dark grey sandy CLAY petrol odour
TPC14	E1	0.5	1153091	11-Apr-17	Dark grey sandy CLAY
TPC15	E1	1	1153092	11-Apr-17	Dark brown gravelly SAND
TPC16	E1	3.1	1153093	11-Apr-17	Dark brown sandy, clayey GRAVEL including odd rootlets petrol odour (sample matrix outside MCERTS scope of accreditation)
TPC20	E1	0.4	1153094	11-Apr-17	Dark grey clayey SAND
TPC21	E1	0	1153095	11-Apr-17	Grey, clayey SAND including odd rootlets
TPC22	E2	4	1153096	11-Apr-17	Grey clayey SAND
TPC24	E2	2.6	1153097	11-Apr-17	Grey clayey SAND
TPC25	E1	3.8	1153098	11-Apr-17	Dark brown gravelly, sandy CLAY including odd rootlets (Made ground - plastic, brick, glass)
TPC26	E1	0.9	1153099	11-Apr-17	Dark brown gravelly SAND
TPC31	E2	3.2	1153100	11-Apr-17	Dark grey, clayey, gravelly SAND
TPC32	E2	3.8	1153101	11-Apr-17	Dark brown gravelly SAND
TPC33	E1	2	1153102	11-Apr-17	Dark grey gravelly, clayey SAND
TPC36	E1	1.1	1153103	11-Apr-17	Brown gravelly, sandy CLAY
TPC37	E1	0.3	1153104	11-Apr-17	Dark grey clayey SAND including odd rootlets
TPC37	E2	1.7	1153105	11-Apr-17	Dark grey clayey SAND
TPC37	E3	3.2	1153106	11-Apr-17	Black gravelly, sandy CLAY
TPC37	E4	3.3	1153107	11-Apr-17	Brown gravelly, sandy CLAY

Summary of Chemical Analysis
Soil Samples

Our Ref 17-96098-1
Client Ref SLS 1015
Contract Title SSI Redcar

			Lab No	1153085	1153086	1153087	1153088	1153089	1153090
			Sample ID	TPC01	TPC05	TPC05	TPC06	TPC10	TPC10
			Depth	1.00	0.30	0.30	1.00	0.10	4.50
			Other ID	E1	E1	E2	E1	E1	E2
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	29-Mar-17	28-Mar-17	28-Mar-17	28-Mar-17	29-Mar-17	29-Mar-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Asbestos Quantification	DETSC 1102	0			Y		Y	Y	
Metals									
Antimony	DETSC 2301*	1	mg/kg	1.1	13	5.1	10	1.3	3.7
Arsenic	DETSC 2301#	0.2	mg/kg	2.3	9.6	12	15	10	65
Barium	DETSC 2301#	1.5	mg/kg	41	310	37	280	260	390
Beryllium	DETSC 2301#	0.2	mg/kg	0.4	1.5	0.5	1.1	1.1	2.0
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	13	2.2	< 0.2	1.9	2.4	11
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	6.7	10	12	0.4	1.2
Chromium	DETSC 2301#	0.15	mg/kg	16	180	14	230	49	29
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	4.7	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	12	700	140	220	52	79
Lead	DETSC 2301#	0.3	mg/kg	10	100	35	170	28	80
Mercury	DETSC 2325#	0.05	mg/kg	0.08	2.1	1.6	3.9	0.65	0.09
Molybdenum	DETSC 2301#	0.4	mg/kg	2.4	3.4	3.6	12	1.1	2.8
Nickel	DETSC 2301#	1	mg/kg	9.0	37	13	94	31	35
Vanadium	DETSC 2301	0.8	mg/kg	32	48	29	61	80	110
Zinc	DETSC 2301#	1	mg/kg	19	380	6600	610	130	150
Inorganics									
pH	DETSC 2008#			12.6	9.3	11.0	10.3	9.3	10.5
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	2.5	0.4	1.0	2.5	< 0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	0.4	< 0.1	< 0.1	1.2	< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	< 0.2	2.1	0.4	1.0	1.4	< 0.2
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6	0.8	0.8	0.7	3.7	< 0.6
Organic matter	DETSC 2002#	0.1	%	2.6	7.9	< 0.1	6.7	20	U/S
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	< 10	180	650	120	100	300
Sulphur as S, Total	DETSC 2320	0.01	%				0.08		
Sulphate as SO4, Total	DETSC 2321#	0.01	%				0.18		
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	11
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	0.02	< 0.01	0.06	7.5
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	12
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	36	2.2	110	4.3
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	29	2.0	68	14
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	180	17	120	23
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	6.5	< 3.4	1100	170	220	57
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	1400	190	530	130
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	0.04	7.5
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	0.21	< 0.01	0.13	23
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	0.22	< 0.01	0.69	87
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	4.9	< 0.9	3900	330
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	5.1	< 0.5	2100	270
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	28	2.7	2500	160

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied. U/S -unsuitable.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-96098-1
Client Ref SLS 1015
Contract Title SSI Redcar

			Lab No	1153085	1153086	1153087	1153088	1153089	1153090
			Sample ID	TPC01	TPC05	TPC05	TPC06	TPC10	TPC10
			Depth	1.00	0.30	0.30	1.00	0.10	4.50
			Other ID	E1	E1	E2	E1	E1	E2
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	29-Mar-17	28-Mar-17	28-Mar-17	28-Mar-17	29-Mar-17	29-Mar-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	180	23	5600	280
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	220	26	14000	1200
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	1600	220	15000	1300
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	0.04	< 0.03	< 0.30	< 0.03	1.3	290
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	1.1	< 0.03	< 0.30	19
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	5.8	< 0.03	< 0.30	9.6
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	7.1	< 0.03	< 0.30	14
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.04	0.07	29	0.07	< 0.30	22
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	0.06	1.8	< 0.03	< 0.30	4.5
Fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.25	4.7	0.13	< 0.30	1.4
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.32	9.7	0.12	< 0.30	3.2
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	0.74	7.9	0.11	< 0.30	1.2
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	0.79	22	0.12	< 0.30	2.0
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.75	6.2	0.44	0.46	0.66
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.75	1.0	0.82	< 0.30	< 0.30
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.56	0.44	0.17	< 0.30	0.95
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.66	0.46	0.14	< 0.30	< 0.30
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	0.72	0.93	0.07	< 0.30	< 0.30
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	0.71	0.46	0.18	< 0.30	< 0.30
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10	6.4	< 83.56	2.4	1.8	360
PCBs									
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg				< 0.01		< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg				< 0.01		< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg				< 0.01		< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg				< 0.01		< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg				< 0.01		< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg				< 0.01		< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg				< 0.01		< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg				< 0.01		< 0.01
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	200	3.8	51	18	2.3

Summary of Chemical Analysis
Soil Samples

Our Ref 17-96098-1
Client Ref SLS 1015
Contract Title SSI Redcar

			Lab No	1153091	1153092	1153093	1153094	1153096	1153097
			Sample ID	TPC14	TPC15	TPC16	TPC20	TPC22	TPC24
			Depth	0.50	1.00	3.10	0.40	4.00	2.60
			Other ID	E1	E1	E1	E1	E2	E2
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	29-Mar-17	29-Mar-17	29-Mar-17	29-Mar-17	29-Mar-17	28-Mar-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Asbestos Quantification	DETSC 1102	0					Y		Y
Metals									
Antimony	DETSC 2301*	1	mg/kg	7.3	1.4	1.5	4.2	3.9	
Arsenic	DETSC 2301#	0.2	mg/kg	110	9.8	10	69	74	62
Barium	DETSC 2301#	1.5	mg/kg	460	680	330	420	900	
Beryllium	DETSC 2301#	0.2	mg/kg	3.3	3.9	2.3	2.8	2.0	
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	10	6.8	4.3	2.5	3.0	6.9
Cadmium	DETSC 2301#	0.1	mg/kg	2.8	0.1	0.4	1.0	1.1	0.8
Chromium	DETSC 2301#	0.15	mg/kg	73	68	63	34	33	28
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Copper	DETSC 2301#	0.2	mg/kg	190	120	98	110	100	89
Lead	DETSC 2301#	0.3	mg/kg	170	17	30	88	86	71
Mercury	DETSC 2325#	0.05	mg/kg	0.67	0.08	0.85	0.35	0.12	0.14
Molybdenum	DETSC 2301#	0.4	mg/kg	6.5	3.2	1.8	2.1	3.0	
Nickel	DETSC 2301#	1	mg/kg	68	66	47	51	46	40
Vanadium	DETSC 2301	0.8	mg/kg	230	190	110	140	220	
Zinc	DETSC 2301#	1	mg/kg	290	67	91	190	150	120
Inorganics									
pH	DETSC 2008#			9.9	10.8	8.4	8.7	8.7	9.3
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.3	0.4	6.7	0.2	0.2	< 0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg	0.1	0.3	2.1	0.1	< 0.1	
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	< 0.2	< 0.2	4.6	< 0.2	< 0.2	
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6	< 0.6	16	< 0.6	< 0.6	
Organic matter	DETSC 2002#	0.1	%	12	3.3	21	5.3	3.6	3.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	710	180	120	47	660	510
Sulphur as S, Total	DETSC 2320	0.01	%	0.17		0.11	0.02	0.14	
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.61		0.13	0.05	0.42	
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	11	< 0.01	< 0.01	0.17	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	16	< 0.01	< 0.01	2.6	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	23	< 0.01	< 0.01	2.2	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	14	< 1.5	< 1.5	80	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	57	< 1.2	< 1.2	62	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	88	< 1.5	< 1.5	170	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	190	< 3.4	< 3.4	410	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	400	< 10	< 10	720	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	0.55	0.10	< 0.01	11	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	8.3	0.04	< 0.01	18	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	100	0.10	< 0.01	29	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	1400	29	< 0.9	2200	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	1600	25	< 0.5	1200	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	1100	15	< 0.6	1300	< 0.6	< 0.6

Summary of Chemical Analysis
Soil Samples

Our Ref 17-96098-1
Client Ref SLS 1015
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			Lab No	1153091	1153092	1153093	1153094	1153096	1153097
			Sample ID	TPC14	TPC15	TPC16	TPC20	TPC22	TPC24
			Depth	0.50	1.00	3.10	0.40	4.00	2.60
			Other ID	E1	E1	E1	E1	E2	E2
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	29-Mar-17	29-Mar-17	29-Mar-17	29-Mar-17	29-Mar-17	28-Mar-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	2000	35	< 1.4	4300	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	6200	100	< 10	9000	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	6600	100	< 10	9800	< 10	< 10
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	580	5.2	0.20	2200	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	49	0.16	< 0.03	62	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	26	0.10	< 0.03	75	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	40	0.08	< 0.03	83	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	77	0.08	< 0.03	280	< 0.03	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	16	< 0.03	< 0.03	32	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	6.7	< 0.03	< 0.03	37	< 0.03	< 0.03
Pyrene	DETSC 3303#	0.03	mg/kg	14	< 0.03	< 0.03	67	< 0.03	< 0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	6.4	< 0.03	< 0.03	56	< 0.03	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	12	< 0.03	< 0.03	110	< 0.03	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	4.7	< 0.03	< 0.03	63	< 0.03	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.59	< 0.03	< 0.03	7.9	< 0.03	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.86	< 0.03	< 0.03	2.2	< 0.03	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.30	< 0.03	< 0.03	1.5	< 0.03	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.30	< 0.03	< 0.03	3.2	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.30	< 0.03	< 0.03	0.91	< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	830	5.6	0.20	3000	< 0.10	< 0.10
PCBs									
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg						
PCB 52	DETSC 3401#	0.01	mg/kg						
PCB 101	DETSC 3401#	0.01	mg/kg						
PCB 118	DETSC 3401#	0.01	mg/kg						
PCB 153	DETSC 3401#	0.01	mg/kg						
PCB 138	DETSC 3401#	0.01	mg/kg						
PCB 180	DETSC 3401#	0.01	mg/kg						
PCB 7 Total	DETSC 3401#	0.01	mg/kg						
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	20	3.5	87	2.6	5.0	1.8

Summary of Chemical Analysis
Soil Samples

Our Ref 17-96098-1
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	Lab No	1153098	1153099	1153100	1153101	1153102	1153103
	Sample ID	TPC25	TPC26	TPC31	TPC32	TPC33	TPC36
	Depth	3.80	0.90	3.20	3.80	2.00	1.10
	Other ID	E1	E1	E2	E2	E1	E1
	Sample Type	ES	ES	ES	ES	ES	ES
	Sampling Date	28-Mar-17	27-Mar-17	28-Mar-17	29-Mar-17	29-Mar-17	28-Mar-17
	Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Asbestos Quantification	DETSC 1102	0							
Metals									
Antimony	DETSC 2301*	1	mg/kg			1.3			4.9
Arsenic	DETSC 2301#	0.2	mg/kg		39	9.7		5.5	84
Barium	DETSC 2301#	1.5	mg/kg			910			960
Beryllium	DETSC 2301#	0.2	mg/kg			3.4			2.8
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg		15	1.6		24	9.7
Cadmium	DETSC 2301#	0.1	mg/kg		0.6	0.1		< 0.1	1.4
Chromium	DETSC 2301#	0.15	mg/kg		23	55		70	42
Chromium, Hexavalent	DETSC 2204*	1	mg/kg			< 1.0			< 1.0
Copper	DETSC 2301#	0.2	mg/kg		140	110		120	130
Lead	DETSC 2301#	0.3	mg/kg		41	15		10	100
Mercury	DETSC 2325#	0.05	mg/kg		0.07	< 0.05		< 0.05	0.26
Molybdenum	DETSC 2301#	0.4	mg/kg			2.9			4.2
Nickel	DETSC 2301#	1	mg/kg		48	60		70	51
Vanadium	DETSC 2301	0.8	mg/kg			160			170
Zinc	DETSC 2301#	1	mg/kg		120	66		49	220
Inorganics									
pH	DETSC 2008#			9.5	10.8	9.2	10.5	10.2	10.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg		< 0.1	< 0.1		< 0.1	< 0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg			< 0.1			< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg			< 0.2			< 0.2
Thiocyanate	DETSC 2130#	0.6	mg/kg			< 0.6			< 0.6
Organic matter	DETSC 2002#	0.1	%		3.2	< 0.1		1.1	0.7
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	560	290	61	360	150	630
Sulphur as S, Total	DETSC 2320	0.01	%	0.12	0.11		0.09		0.11
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.31	0.27		0.30		0.40
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01		< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01		< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01		< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg		< 1.5	< 1.5		< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg		< 1.2	< 1.2		< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg		< 1.5	< 1.5		< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg		< 3.4	< 3.4		< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg		< 10	< 10		< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01		< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01		< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01		< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg		< 0.9	< 0.9		< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg		< 0.5	< 0.5		< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg		< 0.6	< 0.6		< 0.6	< 0.6

Summary of Chemical Analysis
Soil Samples

Our Ref 17-96098-1
Client Ref SLS 1015
Contract Title SSI Redcar

				Lab No	1153098	1153099	1153100	1153101	1153102	1153103
				Sample ID	TPC25	TPC26	TPC31	TPC32	TPC33	TPC36
				Depth	3.80	0.90	3.20	3.80	2.00	1.10
				Other ID	E1	E1	E2	E2	E1	E1
				Sample Type	ES	ES	ES	ES	ES	ES
				Sampling Date	28-Mar-17	27-Mar-17	28-Mar-17	29-Mar-17	29-Mar-17	28-Mar-17
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg		< 1.4	< 1.4		< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg		< 10	< 10		< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg		< 10	< 10		< 10	< 10
PAHs										
Naphthalene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03		< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03		< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03		< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg		< 0.03	< 0.03		< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03		< 0.03	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg		< 0.03	< 0.03		< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03		< 0.03	< 0.03
Pyrene	DETSC 3303#	0.03	mg/kg		< 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
Chrysene	DETSC 3303	0.03	mg/kg		< 0.03	< 0.03		< 0.03	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03		< 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
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg		< 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
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03		< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg		< 0.10	< 0.10		< 0.10	< 0.10
PCBs										
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg						
PCB 52	DETSC 3401#	0.01	mg/kg						
PCB 101	DETSC 3401#	0.01	mg/kg						
PCB 118	DETSC 3401#	0.01	mg/kg						
PCB 153	DETSC 3401#	0.01	mg/kg						
PCB 138	DETSC 3401#	0.01	mg/kg						
PCB 180	DETSC 3401#	0.01	mg/kg						
PCB 7 Total	DETSC 3401#	0.01	mg/kg						
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg		1.3	1.9		1.1	2.7

Summary of Chemical Analysis
Soil Samples

Our Ref 17-96098-1
Client Ref SLS 1015
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			Lab No	1153104	1153105	1153106	1153107
			Sample ID	TPC37	TPC37	TPC37	TPC37
			Depth	0.30	1.70	3.20	3.30
			Other ID	E1	E2	E3	E4
			Sample Type	ES	ES	ES	ES
			Sampling Date	27-Mar-17	27-Mar-17	27-Mar-17	27-Mar-17
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Asbestos Quantification	DETSC 1102	0					
Metals							
Antimony	DETSC 2301*	1	mg/kg		4.8	2.3	2.3
Arsenic	DETSC 2301#	0.2	mg/kg	20	88	45	48
Barium	DETSC 2301#	1.5	mg/kg		300	210	240
Beryllium	DETSC 2301#	0.2	mg/kg		3.0	1.2	1.7
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	7.1	5.1	11	11
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	1.2	0.5	0.8
Chromium	DETSC 2301#	0.15	mg/kg	650	39	29	31
Chromium, Hexavalent	DETSC 2204*	1	mg/kg		< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	51	130	68	67
Lead	DETSC 2301#	0.3	mg/kg	28	100	29	58
Mercury	DETSC 2325#	0.05	mg/kg	0.06	0.27	0.07	0.13
Molybdenum	DETSC 2301#	0.4	mg/kg		2.0	2.8	15
Nickel	DETSC 2301#	1	mg/kg	29	64	35	35
Vanadium	DETSC 2301	0.8	mg/kg		160	92	120
Zinc	DETSC 2301#	1	mg/kg	74	200	88	140
Inorganics							
pH	DETSC 2008#			10.3	9.8	9.3	8.6
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.2
Cyanide, Free	DETSC 2130#	0.1	mg/kg		< 0.1	< 0.1	< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg		< 0.2	< 0.2	< 0.2
Thiocyanate	DETSC 2130#	0.6	mg/kg		< 0.6	0.8	1.2
Organic matter	DETSC 2002#	0.1	%	1.5	1.4	2.2	1.9
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	170	150	340	340
Sulphur as S, Total	DETSC 2320	0.01	%				
Sulphate as SO4, Total	DETSC 2321#	0.01	%				
Petroleum Hydrocarbons							
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	0.02	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	0.05	0.23	0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	0.6	< 0.6

Summary of Chemical Analysis
Soil Samples

Our Ref 17-96098-1
Client Ref SLS 1015
Contract Title SSI Redcar

			Lab No	1153104	1153105	1153106	1153107
			Sample ID	TPC37	TPC37	TPC37	TPC37
			Depth	0.30	1.70	3.20	3.30
			Other ID	E1	E2	E3	E4
			Sample Type	ES	ES	ES	ES
			Sampling Date	27-Mar-17	27-Mar-17	27-Mar-17	27-Mar-17
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	2.0	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10
PAHs							
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Pyrene	DETSC 3303#	0.03	mg/kg	< 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
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 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
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 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
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10
PCBs							
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg			< 0.01	< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg			< 0.01	< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg			< 0.01	< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg			< 0.01	< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg			< 0.01	< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg			< 0.01	< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg			< 0.01	< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg			< 0.01	< 0.01
Phenols							
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.9	1.0	1.1	1.2

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-96098-1
Client Ref SLS 1015
Contract Title SSI Redcar

			Lab No	1153086	1153087	1153088	1153089	1153090	1153091	1153092
			Sample ID	TPC05	TPC05	TPC06	TPC10	TPC10	TPC14	TPC15
			Depth	0.30	0.30	1.00	0.10	4.50	0.50	1.00
			Other ID	E1	E2	E1	E1	E2	E1	E1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	28-Mar-17	28-Mar-17	28-Mar-17	29-Mar-17	29-Mar-17	29-Mar-17	29-Mar-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
VOCs										
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	0.05	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	0.02	1.1	0.14	0.10
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	0.04	< 0.01	< 0.01	0.06	7.8	0.84	1.5
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	0.02	< 0.01	< 0.01	0.02	5.2	1.3	0.65
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	0.08	22	5.7	2.7
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	0.05	12	3.5	1.8
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	0.04	12	4.5	1.6
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	0.23	0.15	0.02
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	0.01	2.0	1.6	0.11
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	0.08	10	4.9	0.45
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	0.04	< 0.01	< 0.01	0.16	34	22	2.9

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-96098-1
Client Ref SLS 1015
Contract Title SSI Redcar

			Lab No	1153086	1153087	1153088	1153089	1153090	1153091	1153092
			Sample ID	TPC05	TPC05	TPC06	TPC10	TPC10	TPC14	TPC15
			Depth	0.30	0.30	1.00	0.10	4.50	0.50	1.00
			Other ID	E1	E2	E1	E1	E2	E1	E1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	28-Mar-17	28-Mar-17	28-Mar-17	29-Mar-17	29-Mar-17	29-Mar-17	29-Mar-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	0.07	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	0.03	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Naphthalene	DETSC 3431	0.01	mg/kg							
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	0.03	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
SVOCs										
Phenol	DETSC 3433	0.1	mg/kg	< 0.1	1.1	< 0.1	19	0.5	< 1.0	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	4.2	< 0.1	< 1.0	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1	0.2	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	3.7	< 0.1	10	< 0.1	< 1.0	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	8.4	< 0.1	49	0.5	< 1.0	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1	46	< 0.1	33	< 0.1	< 1.0	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	1.6	< 0.1	< 1.0	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	3.3	< 0.1	13	< 0.1	< 1.0	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	71	< 0.1	220	120	240	14
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.2	< 0.1	< 1.0	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
Acenaphthylene	DETSC 3433	0.1	mg/kg							
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
Acenaphthene	DETSC 3433	0.1	mg/kg							
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1	22	< 0.1	8.9	< 0.1	< 1.0	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	0.3	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
Fluorene	DETSC 3433	0.1	mg/kg							

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-96098-1
Client Ref SLS 1015
Contract Title SSI Redcar

			Lab No	1153086	1153087	1153088	1153089	1153090	1153091	1153092
			Sample ID	TPC05	TPC05	TPC06	TPC10	TPC10	TPC14	TPC15
			Depth	0.30	0.30	1.00	0.10	4.50	0.50	1.00
			Other ID	E1	E2	E1	E1	E2	E1	E1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	28-Mar-17	28-Mar-17	28-Mar-17	29-Mar-17	29-Mar-17	29-Mar-17	29-Mar-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
Phenanthrene	DETSC 3433	0.1	mg/kg							
Anthracene	DETSC 3433	0.1	mg/kg							
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	0.2	15	3.1	1.8	0.4	4.5	0.3
Fluoranthene	DETSC 3433	0.1	mg/kg							
Pyrene	DETSC 3433	0.1	mg/kg							
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
Benzo(a)anthracene	DETSC 3433	0.1	mg/kg							
Chrysene	DETSC 3433	0.1	mg/kg							
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	3.7	0.3
Benzo(b)fluoranthene	DETSC 3433	0.1	mg/kg							
Benzo(k)fluoranthene	DETSC 3433	0.1	mg/kg							
Benzo(a)pyrene	DETSC 3433	0.1	mg/kg							
Indeno(123cd)pyrene	DETSC 3433	0.1	mg/kg							
Dibenzo(ah)anthracene	DETSC 3433	0.1	mg/kg							
Benzo(ghi)perylene	DETSC 3433	0.1	mg/kg							
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	7.6	< 0.1	< 0.1	21	< 1.0	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	1.7	< 0.1	29	< 0.1	< 1.0	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1	19	< 0.1	6.7	0.4	< 1.0	0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-96098-1
Client Ref SLS 1015
Contract Title SSI Redcar

			Lab No	1153094	1153095	1153096	1153105	1153106	1153107
			Sample ID	TPC20	TPC21	TPC22	TPC37	TPC37	TPC37
			Depth	0.40	0.00	4.00	1.70	3.20	3.30
			Other ID	E1	E1	E2	E2	E3	E4
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	29-Mar-17	29-Mar-17	29-Mar-17	27-Mar-17	27-Mar-17	27-Mar-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
VOCs									
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	0.04	< 0.01	< 0.01	0.01	0.02
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	0.01	0.01	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	4.5	0.61	< 0.01	0.04	0.07	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	0.19	< 0.01	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	0.29	0.37	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	41	0.73	0.13	< 0.01	0.01	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	0.03	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	6.1	0.11	0.06	< 0.01	< 0.01	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	110	0.31	0.18	< 0.01	< 0.01	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	14	0.16	< 0.01	< 0.01	< 0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	17	0.14	0.12	< 0.01	< 0.01	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	0.10	< 0.01	< 0.01	0.27	0.72	0.09
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	1.2	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	3.6	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	13	< 0.10	0.30	0.01	< 0.01	< 0.01

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-96098-1
Client Ref SLS 1015
Contract Title SSI Redcar

			Lab No	1153094	1153095	1153096	1153105	1153106	1153107
			Sample ID	TPC20	TPC21	TPC22	TPC37	TPC37	TPC37
			Depth	0.40	0.00	4.00	1.70	3.20	3.30
			Other ID	E1	E1	E2	E2	E3	E4
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	29-Mar-17	29-Mar-17	29-Mar-17	27-Mar-17	27-Mar-17	27-Mar-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Naphthalene	DETSC 3431	0.01	mg/kg		5.3				
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
SVOCs									
Phenol	DETSC 3433	0.1	mg/kg	18	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	4.6	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	6.6	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	23	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	19	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	260	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3433	0.1	mg/kg		< 0.1				
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3433	0.1	mg/kg		< 0.1				
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	8.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3433	0.1	mg/kg		< 0.1				

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-96098-1
Client Ref SLS 1015
Contract Title SSI Redcar

			Lab No	1153094	1153095	1153096	1153105	1153106	1153107
			Sample ID	TPC20	TPC21	TPC22	TPC37	TPC37	TPC37
			Depth	0.40	0.00	4.00	1.70	3.20	3.30
			Other ID	E1	E1	E2	E2	E3	E4
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	29-Mar-17	29-Mar-17	29-Mar-17	27-Mar-17	27-Mar-17	27-Mar-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3433	0.1	mg/kg		< 0.1				
Anthracene	DETSC 3433	0.1	mg/kg		< 0.1				
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3433	0.1	mg/kg		< 0.1				
Pyrene	DETSC 3433	0.1	mg/kg		< 0.1				
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3433	0.1	mg/kg		< 0.1				
Chrysene	DETSC 3433	0.1	mg/kg		< 0.1				
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3433	0.1	mg/kg		< 0.1				
Benzo(k)fluoranthene	DETSC 3433	0.1	mg/kg		< 0.1				
Benzo(a)pyrene	DETSC 3433	0.1	mg/kg		< 0.1				
Indeno(123cd)pyrene	DETSC 3433	0.1	mg/kg		< 0.1				
Dibenzo(ah)anthracene	DETSC 3433	0.1	mg/kg		< 0.1				
Benzo(ghi)perylene	DETSC 3433	0.1	mg/kg		< 0.1				
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	31	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	6.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-96098-1
Client Ref SLS 1015
Contract Title SSI Redcar

			Lab No	1153108	1153109	1153110	1153111	1153112	1153113
			Sample ID	TPC05	TPC06	TPC10	TPC15	TPC16	TPC24
			Depth	0.30	1.00	0.10	1.00	3.10	2.60
			Other ID	E2	E1	E1	E1	E1	E2
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	28-Mar-17	28-Mar-17	29-Mar-17	29-Mar-17	29-Mar-17	28-Mar-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Preparation									
Leachate 2:1 250g Non-WAC	DETS 036*			Y	Y	Y	Y	Y	Y
Metals									
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.77	0.47	2.3	29	20	52
Barium, Dissolved	DETSC 2306	0.26	ug/l	81	21	4.8	27	22	
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Boron	DETSC 2123	100	ug/l	< 100	< 100	110	240	220	310
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	0.56	0.10	< 0.03	< 0.03	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25	8.3	4.4	0.65	1.4	0.48
Copper, Dissolved	DETSC 2306	0.4	ug/l	0.8	8.8	15	2.1	2.3	1.5
Iron, Dissolved	DETSC 2306	5.5	ug/l	31	91	2400	21	6.1	
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	0.21	1.0	< 0.09	< 0.09	< 0.09
Manganese, Dissolved	DETSC 2306	0.22	ug/l	62	17	15	1.2	0.55	
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	0.03	0.03	< 0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	6.5	4.2	9.3	0.7	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.31	1.5	1.0	38	10	31
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	< 0.6	< 0.6	4.6	42	5.2	
Zinc, Dissolved	DETSC 2306	1.3	ug/l	4800	8.8	3.9	2.1	< 1.3	6.2
Inorganics									
pH	DETSC 2008			6.7	7.4	7.7	10.0	10.2	10.1
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	0.90	0.46	0.68	0.46	0.067	
Chloride	DETSC 2055	0.1	mg/l	2.2	5.1	6.4	8.1	1.7	

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-96098-1
Client Ref SLS 1015
Contract Title SSI Redcar

			Lab No	1153114	1153115	1153116	1153117
			Sample ID	TPC31	TPC33	TPC37	TPC37
			Depth	3.20	2.00	1.70	3.20
			Other ID	E2	E1	E2	E3
			Sample Type	ES	ES	ES	ES
			Sampling Date	28-Mar-17	29-Mar-17	27-Mar-17	27-Mar-17
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Preparation							
Leachate 2:1 250g Non-WAC	DETS 036*			Y	Y	Y	Y
Metals							
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	10	34	4.0	1.6
Barium, Dissolved	DETSC 2306	0.26	ug/l	35		58	27
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1		< 0.1	< 0.1
Boron	DETSC 2123	100	ug/l	5400	750	740	500
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	0.29	9.0	< 0.25	0.34
Copper, Dissolved	DETSC 2306	0.4	ug/l	1.0	1.6	1.1	1.6
Iron, Dissolved	DETSC 2306	5.5	ug/l	< 5.5		< 5.5	740
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	< 0.09	< 0.09	0.51
Manganese, Dissolved	DETSC 2306	0.22	ug/l	2.2		20	35
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5	0.6	1.0
Selenium, Dissolved	DETSC 2306	0.25	ug/l	27	28	2.2	0.49
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	28		1.6	0.6
Zinc, Dissolved	DETSC 2306	1.3	ug/l	< 1.3	1.6	2.2	1.8
Inorganics							
pH	DETSC 2008			9.7	9.3	7.7	7.5
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	0.69		4.2	3.6
Chloride	DETSC 2055	0.1	mg/l	8.7		25	17

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-96098-1
Client Ref SLS 1015
Contract Title SSI Redcar

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1153085	TPC01 E1 1.00	SOIL	NAD	none	Steven Lambert
1153086	TPC05 E1 0.30	SOIL	Amosite	Small bundle of Amosite	Steven Lambert
1153087	TPC05 E2 0.30	SOIL	NAD	none	Steven Lambert
1153088	TPC06 E1 1.00	SOIL	Amosite Chrysotile	Microscopic loose fibrous asbestos debris & Bundles of Chrysotile and Amosite	Steven Lambert
1153089	TPC10 E1 0.10	SOIL	Amosite Chrysotile	bundle of Amosite & bundle of Chrysotile	Steven Lambert
1153090	TPC10 E2 4.50	SOIL	NAD	none	Steven Lambert
1153091	TPC14 E1 0.50	SOIL	NAD	none	Steven Lambert
1153092	TPC15 E1 1.00	SOIL	NAD	none	Steven Lambert
1153093	TPC16 E1 3.10	SOIL	NAD	none	Steven Lambert
1153094	TPC20 E1 0.40	SOIL	Chrysotile	Bundles of Chrysotile	Steven Lambert
1153096	TPC22 E2 4.00	SOIL	NAD	none	Steven Lambert
1153097	TPC24 E2 2.60	SOIL	Amosite	Small bundle of Amosite	Steven Lambert
1153099	TPC26 E1 0.90	SOIL	NAD	none	Steven Lambert
1153100	TPC31 E2 3.20	SOIL	NAD	none	Steven Lambert
1153102	TPC33 E1 2.00	SOIL	NAD	none	Steven Lambert
1153103	TPC36 E1 1.10	SOIL	NAD	none	Steven Lambert
1153104	TPC37 E1 0.30	SOIL	NAD	none	Steven Lambert
1153105	TPC37 E2 1.70	SOIL	NAD	none	Steven Lambert
1153106	TPC37 E3 3.20	SOIL	NAD	none	Steven Lambert
1153107	TPC37 E4 3.30	SOIL	NAD	none	Steven Lambert

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.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 17-96098-1
Client Ref SLS 1015
Contract Title SSI Redcar

	Lab No	1153086	1153088	1153089	1153094
	Sample ID	TPC05	TPC06	TPC10	TPC20
	Depth	0.30	1.00	0.10	0.40
	Other ID	E1	E1	E1	E1
	Sample Type	SOIL	SOIL	SOIL	SOIL
	Sampling Date	28-Mar-17	28-Mar-17	29-Mar-17	29-Mar-17
	Sampling Time				
Test	**Method**	**Units**				
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**0.003**	**0.086**	**0.004**	**0.001**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na	0.039	na	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	0.003	0.047	0.004	0.001
Quantification by PCOM (c)	DETSC 1102	Mass %	na	na	na	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na	na	na	na
Breakdown of Gravimetric Analysis (a)						
Mass of Sample		g	7.20	12.48	5.33	7.54
ACMs present*		type		LFAD		
Mass of ACM in sample		g		0.01		
% ACM by mass		%		0.05		
% asbestos in ACM		%		85		
% asbestos in sample		%		0.039		
Breakdown of Detailed Gravimetric Analysis (b)						
% Amphibole bundles in sample		Mass %	0.003	0.011	0.002	na
% Chrysotile bundles in sample		Mass %	na	0.036	0.002	0.001
Breakdown of PCOM Analysis (c)						
% Amphibole fibres in sample		Mass %	na	na	na	na
% Chrysotile fibres in sample		Mass %	na	na	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)						
Amphibole fibres		Fibres/g	na	na	na	na
Chrysotile fibres		Fibres/g	na	na	na	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Summary of Asbestos Quantification Analysi

Soil Samples

Our Ref 17-96098-1
Client Ref SLS 1015
Contract Title SSI Redcar

Lab No	1153097
Sample ID	TPC24
Depth	2.60
Other ID	E2
Sample Type	SOIL
Sampling Date	28-Mar-17
Sampling Time	

Test	**Method**	**Units**	
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**0.003**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	0.003
Quantification by PCOM (c)	DETSC 1102	Mass %	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na
Breakdown of Gravimetric Analysis (a)			
Mass of Sample		g	3.17
ACMs present*		type	
Mass of ACM in sample		g	
% ACM by mass		%	
% asbestos in ACM		%	
% asbestos in sample		%	
Breakdown of Detailed Gravimetric Analysis (b)			
% Amphibole bundles in sample		Mass %	0.003
% Chrysotile bundles in sample		Mass %	na
Breakdown of PCOM Analysis (c)			
% Amphibole fibres in sample		Mass %	na
% Chrysotile fibres in sample		Mass %	na
Breakdown of Potentially Respirable Fibre Analysis (d)			
Amphibole fibres		Fibres/g	na
Chrysotile fibres		Fibres/g	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Information in Support of the Analytical Results

Our Ref 17-96098-1
Client Ref SLS 1015
Contract SSI Redcar

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1153085	TPC01 1.00 SOIL	29/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153086	TPC05 0.30 SOIL	28/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153087	TPC05 0.30 SOIL	28/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153088	TPC06 1.00 SOIL	28/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153089	TPC10 0.10 SOIL	29/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153090	TPC10 4.50 SOIL	29/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153091	TPC14 0.50 SOIL	29/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153092	TPC15 1.00 SOIL	29/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153093	TPC16 3.10 SOIL	29/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153094	TPC20 0.40 SOIL	29/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153095	TPC21 0.00 SOIL	29/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153096	TPC22 4.00 SOIL	29/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153097	TPC24 2.60 SOIL	28/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153098	TPC25 3.80 SOIL	28/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153099	TPC26 0.90 SOIL	27/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153100	TPC31 3.20 SOIL	28/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153101	TPC32 3.80 SOIL	29/03/17	GJ 60ml, PB to 250ml x2, PT 1L		
1153102	TPC33 2.00 SOIL	29/03/17	GJ 60ml, PB to 250ml x2, PT 1L		
1153103	TPC36 1.10 SOIL	28/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153104	TPC37 0.30 SOIL	27/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153105	TPC37 1.70 SOIL	27/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153106	TPC37 3.20 SOIL	27/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153107	TPC37 3.30 SOIL	27/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153108	TPC05 0.30 LEACHATE	28/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153109	TPC06 1.00 LEACHATE	28/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153110	TPC10 0.10 LEACHATE	29/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153111	TPC15 1.00 LEACHATE	29/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153112	TPC16 3.10 LEACHATE	29/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153113	TPC24 2.60 LEACHATE	28/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153114	TPC31 3.20 LEACHATE	28/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153115	TPC33 2.00 LEACHATE	29/03/17	GJ 60ml, PB to 250ml x2, PT 1L		
1153116	TPC37 1.70 LEACHATE	27/03/17	GJ 250ml x2, GJ 60ml, PT 1L		
1153117	TPC37 3.20 LEACHATE	27/03/17	GJ 250ml x2, GJ 60ml, PT 1L		

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

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.

Information in Support of the Analytical Results

Our Ref 17-96098-1
Client Ref SLS 1015
Contract SSI Redcar

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

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Certificate of Analysis

Certificate Number 17-96291

13-Apr-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-96291

Client Reference SLS1015

Order No (not supplied)

Contract Title Redcar Site

Description 1 Soil sample, 1 Leachate sample.

Date Received 04-Apr-17

Date Started 04-Apr-17

Date Completed 13-Apr-17

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

Notes Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 17-96291
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1154663
			Sample ID	TPC18
			Depth	3.00
			Other ID	E1
			Sample Type	ES
			Sampling Date	23/03/17
			Sampling Time	n/s
Test	**Method**	**LOD**	**Units**	
Metals				
Antimony	DETSC 2301*	1	mg/kg	2.7
Arsenic	DETSC 2301#	0.2	mg/kg	49
Barium	DETSC 2301#	1.5	mg/kg	520
Beryllium	DETSC 2301#	0.2	mg/kg	1.8
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	12
Cadmium	DETSC 2301#	0.1	mg/kg	0.7
Chromium	DETSC 2301#	0.15	mg/kg	28
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	140
Lead	DETSC 2301#	0.3	mg/kg	50
Mercury	DETSC 2325#	0.05	mg/kg	0.08
Molybdenum	DETSC 2301#	0.4	mg/kg	4.7
Nickel	DETSC 2301#	1	mg/kg	57
Vanadium	DETSC 2301	0.8	mg/kg	110
Zinc	DETSC 2301#	1	mg/kg	140
Inorganics				
pH	DETSC 2008#			9.7
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	< 0.2
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6
Organic matter	DETSC 2002#	0.1	%	1.2
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	510
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-96291
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1154663
Sample ID	TPC18
Depth	3.00
Other ID	E1
Sample Type	ES
Sampling Date	23/03/17
Sampling Time	n/s

Test	Method	LOD	Units	
PAHs				
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10
Phenols				
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-96291
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1154664
Sample ID	TPC18
Depth	3.00
Other ID	E1
Sample Type	ES
Sampling Date	23/03/17
Sampling Time	n/s

Test	Method	LOD	Units	
Preparation				
Leachate 10:1	DETS 036*			Y
Metals				
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	2.2
Barium, Dissolved	DETSC 2306	0.26	ug/l	35
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1
Boron	DETSC 2123	100	ug/l	280
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	1.2
Copper, Dissolved	DETSC 2306	0.4	ug/l	7.1
Iron, Dissolved	DETSC 2306	5.5	ug/l	250
Lead, Dissolved	DETSC 2306	0.09	ug/l	1.6
Manganese, Dissolved	DETSC 2306	0.22	ug/l	0.90
Mercury, Dissolved	DETSC 2306	0.01	ug/l	0.02
Nickel, Dissolved	DETSC 2306	0.5	ug/l	0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.75
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	0.8
Zinc, Dissolved	DETSC 2306	1.3	ug/l	3.5
Inorganics				
pH	DETSC 2008			8.9
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	0.18
Chloride	DETSC 2055	0.1	mg/l	3.8

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-96291
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1154663	TPC18 E1 3.00	SOIL	NAD	none	Jeff Cruddas

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 17-96291
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1154663	TPC18 3.00 SOIL	23/03/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1154664	TPC18 3.00 LEACHATE	23/03/17	GJ 250ml x2, 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

Certificate of Analysis

Certificate Number 17-96515-1

24-Apr-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-96515-1

Client Reference (not supplied)

Order No CH-1332

Contract Title Redcar Site

Description 12 Soil samples, 5 Leachate samples.

Date Received 06-Apr-17

Date Started 06-Apr-17

Date Completed 24-Apr-17

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

Notes **This report supersedes 17-96515. Extra testing.**
Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 17-96515-1
Client Ref
Contract Title Redcar Site

			Lab No	1155753	1155754	1155755	1155756	1155757	1155758	1155759
			Sample ID	TPD44	TPD43	TPD43	TPD41	TPD40	TPD38	TPD38
			Depth	0.70-0.90	0.50	1.10	1.40	1.00	0.50	1.80
			Other ID	E3	E1	E2	E3	E1	E1	E2
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	03/04/17	03/04/17	03/04/17	03/04/17	03/04/17	04/04/17	04/04/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Asbestos Quantification	DETSC 1102	0				Y	Y			
Metals										
Antimony	DETSC 2301*	1	mg/kg	< 1.0	1.2	1.9		1.0		
Arsenic	DETSC 2301#	0.2	mg/kg	92	99	23	15	80	82	87
Barium	DETSC 2301#	1.5	mg/kg	410	770	400		270		
Beryllium	DETSC 2301#	0.2	mg/kg	5.6	5.0	2.6		4.8		
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	3.8	3.4	5.1	13	5.5	5.5	12
Cadmium	DETSC 2301#	0.1	mg/kg	0.5	0.4	0.4	0.6	1.4	1.5	2.7
Chromium	DETSC 2301#	0.15	mg/kg	63	65	48	50	65	49	36
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0		< 1.0		
Copper	DETSC 2301#	0.2	mg/kg	15	19	44	270	49	60	62
Lead	DETSC 2301#	0.3	mg/kg	48	47	35	62	90	140	110
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	0.18	1.9	0.30	0.35	0.42
Molybdenum	DETSC 2301#	0.4	mg/kg	3.6	2.8	1.7		2.8		
Nickel	DETSC 2301#	1	mg/kg	23	26	28	28	21	24	28
Vanadium	DETSC 2301	0.8	mg/kg	210	210	130		210		
Zinc	DETSC 2301#	1	mg/kg	220	250	330	170	520	860	1100
Inorganics										
pH	DETSC 2008#			9.7	9.3	9.1	8.9	10.0	9.2	9.3
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.5	4.9	0.4	0.3	0.6	0.5	0.9
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1		< 0.1		
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	0.5	4.9	0.4		0.6		
Thiocyanate	DETSC 2130#	0.6	mg/kg	0.8	0.7	1.1		< 0.6		
Organic matter	DETSC 2002#	0.1	%	1.8	4.4	1.9	2.3	1.7	5.6	5.1
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1800	340	710	970	1600	1900	2200
Sulphur as S, Total	DETSC 2320	0.01	%	0.55	0.30	0.50	0.41		0.86	0.93
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.78	0.42	0.46	0.43		1.4	1.3
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	2.6	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	15	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	60	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	8.0	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	86	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	0.97	0.10	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	3.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	49	3.1	< 0.6	< 0.6	< 0.6	6.5	< 0.6

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-96515-1
Client Ref
Contract Title Redcar Site

				Lab No	1155753	1155754	1155755	1155756	1155757	1155758	1155759
				Sample ID	TPD44	TPD43	TPD43	TPD41	TPD40	TPD38	TPD38
				Depth	0.70-0.90	0.50	1.10	1.40	1.00	0.50	1.80
				Other ID	E3	E1	E2	E3	E1	E1	E2
				Sample Type	ES	ES	ES	ES	ES	ES	ES
				Sampling Date	03/04/17	03/04/17	03/04/17	03/04/17	03/04/17	04/04/17	04/04/17
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**								
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg		9.5	12	< 1.4	< 1.4	< 1.4	9.8	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg		63	16	< 10	< 10	< 10	16	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg		150	16	< 10	< 10	< 10	16	< 10
PAHs											
Naphthalene	DETSC 3303#	0.03	mg/kg		0.57	1.6	0.06	0.33	0.15	1.8	0.39
Acenaphthylene	DETSC 3303#	0.03	mg/kg		0.21	0.29	< 0.03	< 0.03	< 0.03	1.6	0.07
Acenaphthene	DETSC 3303#	0.03	mg/kg		0.64	0.43	< 0.03	0.06	< 0.03	0.45	0.04
Fluorene	DETSC 3303	0.03	mg/kg		0.10	0.29	< 0.03	0.07	0.04	2.6	0.08
Phenanthrene	DETSC 3303#	0.03	mg/kg		0.27	1.3	0.05	0.14	0.31	9.9	0.40
Anthracene	DETSC 3303	0.03	mg/kg		0.10	0.41	< 0.03	0.04	0.06	3.3	0.12
Fluoranthene	DETSC 3303#	0.03	mg/kg		0.28	1.9	0.09	0.09	0.39	10	0.55
Pyrene	DETSC 3303#	0.03	mg/kg		0.21	1.7	0.08	0.09	0.32	6.5	0.41
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg		0.07	0.93	< 0.03	< 0.03	0.15	2.6	0.17
Chrysene	DETSC 3303	0.03	mg/kg		0.10	0.96	0.04	< 0.03	0.20	2.4	0.19
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg		0.10	0.97	0.04	< 0.03	0.17	2.2	0.17
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg		0.04	0.37	< 0.03	< 0.03	0.07	0.89	0.06
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg		0.07	0.69	< 0.03	< 0.03	0.08	1.4	0.09
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg		0.05	0.30	< 0.03	< 0.03	0.05	0.55	0.05
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg		< 0.03	0.13	< 0.03	< 0.03	< 0.03	0.20	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg		0.09	0.46	< 0.03	< 0.03	0.06	0.59	0.06
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg		2.9	13	0.36	0.81	2.0	47	2.8
PCBs											
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg		< 0.01						
PCB 52	DETSC 3401#	0.01	mg/kg		< 0.01						
PCB 101	DETSC 3401#	0.01	mg/kg		< 0.01						
PCB 118	DETSC 3401#	0.01	mg/kg		< 0.01						
PCB 153	DETSC 3401#	0.01	mg/kg		< 0.01						
PCB 138	DETSC 3401#	0.01	mg/kg		< 0.01						
PCB 180	DETSC 3401#	0.01	mg/kg		< 0.01						
PCB 7 Total	DETSC 3401#	0.01	mg/kg		< 0.01						
Phenols											
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg		< 0.3	0.5	< 0.3	< 0.3	< 0.3	< 0.3	0.8

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-96515-1
Client Ref
Contract Title Redcar Site

	Lab No	1155760	1155762	1155763	1155767
	Sample ID	TPD37	TPD35	TPD35	TPD39
	Depth	0.90	0.00-0.20	1.80-1.90	0.70-0.85
	Other ID	E1	E1	E2	E1
	Sample Type	ES	ES	ES	ES
	Sampling Date	04/04/17	05/04/17	05/04/17	03/04/17
	Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Asbestos Quantification	DETSC 1102	0					
Metals							
Antimony	DETSC 2301*	1	mg/kg			2.3	
Arsenic	DETSC 2301#	0.2	mg/kg	16	51	22	27
Barium	DETSC 2301#	1.5	mg/kg			230	
Beryllium	DETSC 2301#	0.2	mg/kg			1.2	
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	7.9	5.5	5.5	6.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.5	0.2	0.8	1.0
Chromium	DETSC 2301#	0.15	mg/kg	18	47	40	40
Chromium, Hexavalent	DETSC 2204*	1	mg/kg			< 1.0	
Copper	DETSC 2301#	0.2	mg/kg	43	20	100	88
Lead	DETSC 2301#	0.3	mg/kg	110	38	210	280
Mercury	DETSC 2325#	0.05	mg/kg	0.77	0.10	1.2	1.3
Molybdenum	DETSC 2301#	0.4	mg/kg			1.6	
Nickel	DETSC 2301#	1	mg/kg	8.2	21	30	30
Vanadium	DETSC 2301	0.8	mg/kg			59	
Zinc	DETSC 2301#	1	mg/kg	230	110	330	400
Inorganics							
pH	DETSC 2008#			9.2	9.7	7.8	8.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.5	0.3	0.2	0.3
Cyanide, Free	DETSC 2130#	0.1	mg/kg			< 0.1	
Cyanide, Complex	DETSC 2130*	0.2	mg/kg			0.2	
Thiocyanate	DETSC 2130#	0.6	mg/kg			< 0.6	
Organic matter	DETSC 2002#	0.1	%	2.8	2.0	7.3	8.2
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1300	1500	1700	1800
Sulphur as S, Total	DETSC 2320	0.01	%				
Sulphate as SO4, Total	DETSC 2321#	0.01	%				
Petroleum Hydrocarbons							
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	12
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	27
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	39
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	1.7	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	7.8	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	1.2	48	< 0.6	< 0.6

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-96515-1
Client Ref
Contract Title Redcar Site

			Lab No	1155760	1155762	1155763	1155767
			Sample ID	TPD37	TPD35	TPD35	TPD39
			Depth	0.90	0.00-0.20	1.80-1.90	0.70-0.85
			Other ID	E1	E1	E2	E1
			Sample Type	ES	ES	ES	ES
			Sampling Date	04/04/17	05/04/17	05/04/17	03/04/17
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	99	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	160	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	160	< 10	39
PAHs							
Naphthalene	DETSC 3303#	0.03	mg/kg	1.1	11	0.25	0.41
Acenaphthylene	DETSC 3303#	0.03	mg/kg	0.14	3.5	< 0.03	0.04
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.26	2.4	0.09	0.12
Fluorene	DETSC 3303	0.03	mg/kg	0.36	4.2	0.16	0.15
Phenanthrene	DETSC 3303#	0.03	mg/kg	1.3	19	0.66	0.61
Anthracene	DETSC 3303	0.03	mg/kg	0.32	6.1	0.16	0.25
Fluoranthene	DETSC 3303#	0.03	mg/kg	1.2	27	0.56	0.69
Pyrene	DETSC 3303#	0.03	mg/kg	0.86	20	0.44	0.92
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.27	12	0.16	0.18
Chrysene	DETSC 3303	0.03	mg/kg	0.28	11	0.16	0.21
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.22	15	0.13	0.19
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.10	5.5	0.04	0.07
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.13	9.6	0.09	0.11
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.06	4.6	0.04	0.06
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	1.7	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.08	5.1	0.06	0.07
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	6.7	160	3.0	4.1
PCBs							
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg				
PCB 52	DETSC 3401#	0.01	mg/kg				
PCB 101	DETSC 3401#	0.01	mg/kg				
PCB 118	DETSC 3401#	0.01	mg/kg				
PCB 153	DETSC 3401#	0.01	mg/kg				
PCB 138	DETSC 3401#	0.01	mg/kg				
PCB 180	DETSC 3401#	0.01	mg/kg				
PCB 7 Total	DETSC 3401#	0.01	mg/kg				
Phenols							
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-96515-1
Client Ref
Contract Title Redcar Site

			Lab No	1155753	1155755	1155761	1155763
			Sample ID	TPD44	TPD43	TPD36	TPD35
			Depth	0.70-0.90	1.10	1.40	1.80-1.90
			Other ID	E3	E2	E1	E2
			Sample Type	ES	ES	ES	ES
			Sampling Date	03/04/17	03/04/17	05/04/17	05/04/17
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
VOCs							
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	0.10	0.04	< 0.01	0.04
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	0.06	< 0.01	0.04	0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	0.05	0.08
m+p-Xylene	DETSC 3431	0.01	mg/kg	0.03	< 0.01	0.01	0.01
o-Xylene	DETSC 3431	0.01	mg/kg	0.01	< 0.01	< 0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	0.02	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	0.01	0.06
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	0.02

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-96515-1
Client Ref
Contract Title Redcar Site

			Lab No	1155753	1155755	1155761	1155763
			Sample ID	TPD44	TPD43	TPD36	TPD35
			Depth	0.70-0.90	1.10	1.40	1.80-1.90
			Other ID	E3	E2	E1	E2
			Sample Type	ES	ES	ES	ES
			Sampling Date	03/04/17	03/04/17	05/04/17	05/04/17
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	0.02
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Naphthalene	DETSC 3431	0.01	mg/kg			0.07	
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
SVOCs							
Phenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	0.7	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3433	0.1	mg/kg			< 0.1	
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3433	0.1	mg/kg			< 0.1	
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	0.2	< 0.1	< 0.1	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3433	0.1	mg/kg			< 0.1	

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-96515-1
Client Ref
Contract Title Redcar Site

			Lab No	1155753	1155755	1155761	1155763
			Sample ID	TPD44	TPD43	TPD36	TPD35
			Depth	0.70-0.90	1.10	1.40	1.80-1.90
			Other ID	E3	E2	E1	E2
			Sample Type	ES	ES	ES	ES
			Sampling Date	03/04/17	03/04/17	05/04/17	05/04/17
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3433	0.1	mg/kg			< 0.1	
Anthracene	DETSC 3433	0.1	mg/kg			< 0.1	
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3433	0.1	mg/kg			< 0.1	
Pyrene	DETSC 3433	0.1	mg/kg			< 0.1	
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3433	0.1	mg/kg			< 0.1	
Chrysene	DETSC 3433	0.1	mg/kg			< 0.1	
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3433	0.1	mg/kg			< 0.1	
Benzo(k)fluoranthene	DETSC 3433	0.1	mg/kg			< 0.1	
Benzo(a)pyrene	DETSC 3433	0.1	mg/kg			< 0.1	
Indeno(123cd)pyrene	DETSC 3433	0.1	mg/kg			< 0.1	
Dibenzo(ah)anthracene	DETSC 3433	0.1	mg/kg			< 0.1	
Benzo(ghi)perylene	DETSC 3433	0.1	mg/kg			< 0.1	
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-96515-1
Client Ref
Contract Title Redcar Site

	Lab No	1155764	1155765	1155766	1157592	1157593
	Sample ID	TPD44	TPD43	TPD35	TPD35	TPD41
	Depth	0.70-0.90	0.50	1.80-1.90	0.00-0.20	1.40
	Other ID	E3	E1	E2	E1	E3
	Sample Type	ES	ES	ES	ES	ES
	Sampling Date	03/04/17	03/04/17	05/04/17	05/04/17	03/04/17
	Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Preparation						
Leachate 10:1	DETS 036*			Y	Y	Y	Y	Y
Metals								
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	3.2	3.7	1.3	0.52	1.7
Barium, Dissolved	DETSC 2306	0.26	ug/l	26	4.7	3.3		
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1	< 0.1		
Boron	DETSC 2123	100	ug/l	< 100	< 100	< 100	< 100	360
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25	< 0.25	0.63	< 0.25	< 0.25
Copper, Dissolved	DETSC 2306	0.4	ug/l	0.5	1.2	1.1	< 0.4	< 0.4
Iron, Dissolved	DETSC 2306	5.5	ug/l	11	120	150		
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	0.83	0.38	0.24	< 0.09
Manganese, Dissolved	DETSC 2306	0.22	ug/l	200	17	6.1		
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	0.8	0.5	< 0.5	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.53	0.91	1.2	< 0.25	< 0.25
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	< 0.6	4.2	6.8		
Zinc, Dissolved	DETSC 2306	1.3	ug/l	3.9	1.5	< 1.3	3.8	1.6
Inorganics								
pH	DETSC 2008			6.9	7.3	7.4	7.3	7.4
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	< 0.015	< 0.015	< 0.015		
Chloride	DETSC 2055	0.1	mg/l	1.6	2.1	1.6		

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-96515-1
Client Ref
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1155753	TPD44 E3 0.70-0.90	SOIL	NAD	none	Colin Patrick
1155754	TPD43 E1 0.50	SOIL	NAD	none	Colin Patrick
1155755	TPD43 E2 1.10	SOIL	Chrysotile Amosite	bundle of Amosite+ Chrysotile fibres	Colin Patrick
1155756	TPD41 E3 1.40	SOIL	Amosite	small bundle of Amosite fibres	Colin Patrick
1155757	TPD40 E1 1.00	SOIL	NAD	none	Colin Patrick
1155758	TPD38 E1 0.50	SOIL	NAD	none	Colin Patrick
1155759	TPD38 E2 1.80	SOIL	NAD	none	Colin Patrick
1155760	TPD37 E1 0.90	SOIL	NAD	none	Colin Patrick
1155762	TPD35 E1 0.00-0.20	SOIL	NAD	none	Colin Patrick
1155763	TPD35 E2 1.80-1.90	SOIL	NAD	none	Colin Patrick
1155767	TPD39 E1 0.70-0.85	SOIL	NAD	none	Colin Patrick

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.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 17-96515-1
Client Ref
Contract Title Redcar Site

		Lab No	1155755		1155756
		Sample ID	TPD43		TPD41
		Depth	1.10		1.40
		Other ID	E2		E3
		Sample Type	SOIL		SOIL
		Sampling Date	03/04/17		03/04/17
		Sampling Time			
Test	**Method**	**Units**			
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**0.688**		**< 0.001**
Gravimetric Quantification (a)	DETSC 1102	Mass %	0.144		na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	0.535		<0.001
Quantification by PCOM (c)	DETSC 1102	Mass %	0.009		na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na		na
Breakdown of Gravimetric Analysis (a)					
Mass of Sample		g	1386.23		812.98
ACMs present*		type	Cement	Insulation	
Mass of ACM in sample		g	5.88	1.31	
% ACM by mass		%	0.42	0.09	
% asbestos in ACM		%	15.00	85	
% asbestos in sample		%	0.06	0.080	
Breakdown of Detailed Gravimetric Analysis (b)					
% Amphibole bundles in sample		Mass %	0.028		<0.001
% Chrysotile bundles in sample		Mass %	0.507		na
Breakdown of PCOM Analysis (c)					
% Amphibole fibres in sample		Mass %	0.009		na
% Chrysotile fibres in sample		Mass %	<0.001		na
Breakdown of Potentially Respirable Fibre Analysis (d)					
Amphibole fibres		Fibres/g	na		na
Chrysotile fibres		Fibres/g	na		na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Information in Support of the Analytical Results

Our Ref 17-96515-1
Client Ref
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1155753	TPD44 0.70-0.90 SOIL	03/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1155754	TPD43 0.50 SOIL	03/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1155755	TPD43 1.10 SOIL	03/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1155756	TPD41 1.40 SOIL	03/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1155757	TPD40 1.00 SOIL	03/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1155758	TPD38 0.50 SOIL	04/04/17	GJ 60ml x7, PT 1L		
1155759	TPD38 1.80 SOIL	04/04/17	GJ 60ml x7, PT 1L		
1155760	TPD37 0.90 SOIL	04/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1155761	TPD36 1.40 SOIL	05/04/17	GJ 60ml x7, PT 1L		
1155762	TPD35 0.00-0.20 SOIL	05/04/17	GJ 60ml x7, PT 1L		
1155763	TPD35 1.80-1.90 SOIL	05/04/17	GJ 60ml x7, PT 1L		
1155764	TPD44 0.70-0.90 LEACHATE	03/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1155765	TPD43 0.50 LEACHATE	03/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1155766	TPD35 1.80-1.90 LEACHATE	05/04/17	GJ 60ml x7, PT 1L		
1155767	TPD39 0.70-0.85 SOIL	03/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1157592	TPD35 0.00-0.20 LEACHATE	05/04/17	GJ 60ml x7, PT 1L		
1157593	TPD41 1.40 LEACHATE	03/04/17	GJ 250ml x2, 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

Certificate of Analysis

Certificate Number 17-96874

19-Apr-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-96874

Client Reference SLS1015

Order No CH-1332

Contract Title Redcar Site

Description 9 Soil samples, 5 Leachate samples.

Date Received Tuesday, April 11, 2017

Date Started Tuesday, April 11, 2017

Date Completed Wednesday, April 19, 2017

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

Notes Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

mCERTS
THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 17-96874
Client Ref SLS1015
Contract Title Redcar Site

Sample ID	Other ID	Depth	Lab No	Completed	Matrix Description
TPD12	E1	1.80-2.80	1157574	19-Apr-17	Grey clayey SAND
TPD13	E2	1.50-2.50	1157575	19-Apr-17	Grey clayey SAND
TPD14	E1	0.30-0.90	1157576	19-Apr-17	Dark brown clayey, gravelly SAND (Made ground - coal)
TPD15	E1	0.80-1.40	1157577	19-Apr-17	Brown clayey SAND
TPD16	E1	0.15-0.40	1157578	19-Apr-17	Dark brown clayey, gravelly SAND (Possible made ground - coal)
TPD17	E1	2.8	1157579	19-Apr-17	Brown clayey SAND
TPD19	E1	0.20-0.40	1157580	19-Apr-17	Dark brown clayey, gravelly SAND (Made ground - coal, slag, brick)
TPD19	E2	1.50-2.50	1157581	19-Apr-17	Brown clayey SAND
TPD20	E1	1.00-1.50	1157582	19-Apr-17	Black sandy GRAVEL hydrocarbon odour (Made ground - oil) (sample matrix outside MCERTS scope of accreditation)

Summary of Chemical Analysis
Soil Samples

Our Ref 17-96874
Client Ref SLS1015
Contract Title Redcar Site

	Lab No	1157575	1157576	1157577	1157578	1157579	1157580
	Sample ID	TPD13	TPD14	TPD15	TPD16	TPD17	TPD19
	Depth	1.50-2.50	0.30-0.90	0.80-1.40	0.15-0.40	2.80	0.20-0.40
	Other ID	E2	E1	E1	E1	E1	E1
	Sample Type	ES	ES	ES	ES	ES	ES
	Sampling Date	06-Apr-17	06-Apr-17	06-Apr-17	06-Apr-17	07-Apr-17	07-Apr-17
	Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Metals									
Antimony	DETSC 2301*	1	mg/kg				< 1.0		
Arsenic	DETSC 2301#	0.2	mg/kg	6.9	4.9	35	4.8	36	
Barium	DETSC 2301#	1.5	mg/kg				83		
Beryllium	DETSC 2301#	0.2	mg/kg				< 0.2		
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	1.6	2.0	4.1	1.6	1.9	
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1	< 0.1	1.3	< 0.1	3.8	
Chromium	DETSC 2301#	0.15	mg/kg	16	6.3	210	5.5	9.9	
Chromium, Hexavalent	DETSC 2204*	1	mg/kg				< 1.0		
Copper	DETSC 2301#	0.2	mg/kg	5.0	5.0	52	4.0	59	
Lead	DETSC 2301#	0.3	mg/kg	16	13	150	15	180	
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	0.12	< 0.05	0.25	
Molybdenum	DETSC 2301#	0.4	mg/kg				< 0.4		
Nickel	DETSC 2301#	1	mg/kg	4.8	3.0	22	3.8	18	
Vanadium	DETSC 2301	0.8	mg/kg				15		
Zinc	DETSC 2301#	1	mg/kg	22	20	1200	25	750	
Inorganics									
Loss on Ignition at 440oC	DETSC 2003#	0.01	%					35	
pH	DETSC 2008#			10.2	9.9	11.0	9.4	8.2	8.9
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	5.9	< 0.1	9.5	
Cyanide, Free	DETSC 2130#	0.1	mg/kg				< 0.1		
Cyanide, Complex	DETSC 2130*	0.2	mg/kg				< 0.2		
Thiocyanate	DETSC 2130#	0.6	mg/kg				< 0.6		
Organic matter	DETSC 2002#	0.1	%	1.2	1.6	3.9	0.2	> 25	
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	59	360	1300	130	1700	180
Sulphur as S, Total	DETSC 2320	0.01	%		0.12	0.35			0.05
Sulphate as SO4, Total	DETSC 2321#	0.01	%		0.21	1.1			0.10
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	3.3	< 1.5	
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	7.9	< 1.2	
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	14	< 1.5	
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	50	< 3.4	
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	75	< 10	
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	1.6	< 0.9	
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	1.6	< 0.5	1.7	< 0.5	
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	7.2	< 0.6	6.8	< 0.6	

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-96874
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1157575	1157576	1157577	1157578	1157579	1157580
			Sample ID	TPD13	TPD14	TPD15	TPD16	TPD17	TPD19
			Depth	1.50-2.50	0.30-0.90	0.80-1.40	0.15-0.40	2.80	0.20-0.40
			Other ID	E2	E1	E1	E1	E1	E1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	06-Apr-17	06-Apr-17	06-Apr-17	06-Apr-17	07-Apr-17	07-Apr-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	18	< 1.4	5.6	< 1.4	
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	27	< 10	16	< 10	
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	27	< 10	90	< 10	
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	0.15	< 0.03	1.6	< 0.03	
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	0.13	< 0.03	1.1	< 0.03	
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.09	< 0.03	0.38	< 0.03	
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	0.23	< 0.03	1.3	< 0.03	
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	1.8	< 0.03	5.8	< 0.03	
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	0.49	< 0.03	1.2	< 0.03	
Fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	3.1	< 0.03	4.8	< 0.03	
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	2.3	< 0.03	3.1	< 0.03	
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	1.0	< 0.03	1.3	< 0.03	
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	0.93	< 0.03	1.1	0.04	
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	1.2	< 0.03	1.3	< 0.03	
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.47	< 0.03	0.45	< 0.03	
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.65	< 0.03	0.83	< 0.03	
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.38	< 0.03	0.34	< 0.03	
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	0.11	< 0.03	0.12	< 0.03	
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	0.42	< 0.03	0.28	< 0.03	
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10	13	< 0.10	25	< 0.10	
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-96874
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1157581	1157582
			Sample ID	TPD19	TPD20
			Depth	1.50-2.50	1.00-1.50
			Other ID	E2	E1
			Sample Type	ES	ES
			Sampling Date	07-Apr-17	07-Apr-17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Metals					
Antimony	DETSC 2301*	1	mg/kg	1.3	< 1.0
Arsenic	DETSC 2301#	0.2	mg/kg	41	6.9
Barium	DETSC 2301#	1.5	mg/kg	100	330
Beryllium	DETSC 2301#	0.2	mg/kg	0.8	3.7
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	1.6	2.4
Cadmium	DETSC 2301#	0.1	mg/kg	3.4	0.4
Chromium	DETSC 2301#	0.15	mg/kg	7.0	78
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	68	22
Lead	DETSC 2301#	0.3	mg/kg	170	25
Mercury	DETSC 2325#	0.05	mg/kg	0.24	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	2.8	1.0
Nickel	DETSC 2301#	1	mg/kg	22	4.4
Vanadium	DETSC 2301	0.8	mg/kg	29	210
Zinc	DETSC 2301#	1	mg/kg	660	67
Inorganics					
Loss on Ignition at 440oC	DETSC 2003#	0.01	%		
pH	DETSC 2008#			7.6	9.1
Cyanide, Total	DETSC 2130#	0.1	mg/kg	19	2.9
Cyanide, Free	DETSC 2130#	0.1	mg/kg	0.1	< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	19	2.9
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6	< 0.6
Organic matter	DETSC 2002#	0.1	%	21	1.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	2200	190
Sulphur as S, Total	DETSC 2320	0.01	%		
Sulphate as SO4, Total	DETSC 2321#	0.01	%		
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	2.1
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	2.4

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-96874
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1157581	1157582
			Sample ID	TPD19	TPD20
			Depth	1.50-2.50	1.00-1.50
			Other ID	E2	E1
			Sample Type	ES	ES
			Sampling Date	07-Apr-17	07-Apr-17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10
PAHs					
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	0.62
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	0.16
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.04
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	0.12
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.56
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	0.17
Fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.64
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.43
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	0.14
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	0.10
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.10
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.04
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.06
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.04	< 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	3.2
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3

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Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-96874
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1157574	1157582
Sample ID	TPD12	TPD20
Depth	1.80-2.80	1.00-1.50
Other ID	E1	E1
Sample Type	ES	ES
Sampling Date	06-Apr-17	07-Apr-17
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
VOCs					
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01

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Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-96874
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1157574	1157582
			Sample ID	TPD12	TPD20
			Depth	1.80-2.80	1.00-1.50
			Other ID	E1	E1
			Sample Type	ES	ES
			Sampling Date	06-Apr-17	07-Apr-17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Naphthalene	DETSC 3431	0.01	mg/kg	0.02	
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	0.01	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
SVOCs					
Phenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	0.3
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Acenaphthylene	DETSC 3433	0.1	mg/kg	< 0.1	
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Acenaphthene	DETSC 3433	0.1	mg/kg	< 0.1	
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1	0.2
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Fluorene	DETSC 3433	0.1	mg/kg	< 0.1	

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-96874
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1157574	1157582
			Sample ID	TPD12	TPD20
			Depth	1.80-2.80	1.00-1.50
			Other ID	E1	E1
			Sample Type	ES	ES
			Sampling Date	06-Apr-17	07-Apr-17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Phenanthrene	DETSC 3433	0.1	mg/kg	0.2	
Anthracene	DETSC 3433	0.1	mg/kg	< 0.1	
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Fluoranthene	DETSC 3433	0.1	mg/kg	0.1	
Pyrene	DETSC 3433	0.1	mg/kg	< 0.1	
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3433	0.1	mg/kg	< 0.1	
Chrysene	DETSC 3433	0.1	mg/kg	< 0.1	
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3433	0.1	mg/kg	< 0.1	
Benzo(k)fluoranthene	DETSC 3433	0.1	mg/kg	< 0.1	
Benzo(a)pyrene	DETSC 3433	0.1	mg/kg	< 0.1	
Indeno(123cd)pyrene	DETSC 3433	0.1	mg/kg	< 0.1	
Dibenzo(ah)anthracene	DETSC 3433	0.1	mg/kg	< 0.1	
Benzo(ghi)perylene	DETSC 3433	0.1	mg/kg	< 0.1	
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1	0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-96874
Client Ref SLS1015
Contract Title Redcar Site

	Lab No	1157583	1157584	1157585	1157586	1157587
	Sample ID	TPD13	TPD16	TPD17	TPD19	TPD20
	Depth	1.50-2.50	0.15-0.40	2.80	1.50-2.50	1.00-1.50
	Other ID	E2	E1	E1	E2	E1
	Sample Type	ES	ES	ES	ES	ES
	Sampling Date	06-Apr-17	06-Apr-17	07-Apr-17	07-Apr-17	07-Apr-17
	Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Preparation						
Leachate 10:1	DETS 036*			Y	Y	Y	Y	Y
Metals						
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	1.6	0.32	0.40	0.74	0.88
Barium, Dissolved	DETSC 2306	0.26	ug/l		31		4.5	17
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l		< 0.1		< 0.1	< 0.1
Boron	DETSC 2123	100	ug/l	< 100	< 100	< 100	< 100	< 100
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	0.24	< 0.03	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	0.33	< 0.25	< 0.25	< 0.25	< 0.25
Copper, Dissolved	DETSC 2306	0.4	ug/l	1.2	0.9	0.5	0.9	< 0.4
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.13	< 0.09	< 0.09	< 0.09	0.10
Manganese, Dissolved	DETSC 2306	0.22	ug/l		15		4.7	15
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	1.1	0.79	0.40	0.30	0.40
Vanadium, Dissolved	DETSC 2306	0.6	ug/l		1.0		< 0.6	1.7
Zinc, Dissolved	DETSC 2306	1.3	ug/l	2.5	51	14	7.1	1.5
Inorganics						
pH	DETSC 2008			8.0	7.3	7.4	7.3	7.2
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l		0.38		0.25	0.69
Chloride	DETSC 2055	0.1	mg/l		4.0		6.0	2.2

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-96874
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1157575	TPD13 E2 1.50-2.50	SOIL	NAD	none	Colin Patrick
1157576	TPD14 E1 0.30-0.90	SOIL	NAD	none	Colin Patrick
1157577	TPD15 E1 0.80-1.40	SOIL	NAD	none	Colin Patrick
1157578	TPD16 E1 0.15-0.40	SOIL	NAD	none	Colin Patrick
1157579	TPD17 E1 2.80	SOIL	NAD	none	Colin Patrick
1157581	TPD19 E2 1.50-2.50	SOIL	NAD	none	Colin Patrick
1157582	TPD20 E1 1.00-1.50	SOIL	NAD	none	Colin Patrick

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 17-96874
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1157574	TPD12 1.80-2.80 SOIL	06/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1157575	TPD13 1.50-2.50 SOIL	06/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1157576	TPD14 0.30-0.90 SOIL	06/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1157577	TPD15 0.80-1.40 SOIL	06/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1157578	TPD16 0.15-0.40 SOIL	06/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1157579	TPD17 2.80 SOIL	07/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1157580	TPD19 0.20-0.40 SOIL	07/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1157581	TPD19 1.50-2.50 SOIL	07/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1157582	TPD20 1.00-1.50 SOIL	07/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1157583	TPD13 1.50-2.50 LEACHATE	06/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1157584	TPD16 0.15-0.40 LEACHATE	06/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1157585	TPD17 2.80 LEACHATE	07/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1157586	TPD19 1.50-2.50 LEACHATE	07/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1157587	TPD20 1.00-1.50 LEACHATE	07/04/17	GJ 250ml x2, 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

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Certificate of Analysis

Certificate Number 17-97219-1

28-Apr-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-97219-1

Client Reference SLS1015

Order No CH-1332

Contract Title Redcar Site

Description 19 Soil samples, 8 Leachate samples.

Date Received 15-Apr-17

Date Started 15-Apr-17

Date Completed 28-Apr-17

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

Notes **This report supersedes 17-97219. Extra testing.**
Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

mCERTS
THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 17-97219-1
Client Ref SLS1015
Contract Title Redcar Site

Sample ID	Other ID	Depth	Lab No	Completed	Matrix Description
TPD01	E1	0.3	1159337	24/04/2017	Brown clayey SAND
TPD02	E2	2.5	1159338	24/04/2017	Brown, clayey SAND
TPD03	E2	0.3	1159339	24/04/2017	Brown gravelly,, sandy CLAY
TPD07	E1	0.1	1159340	24/04/2017	Black gravelly SAND coal
TPD07	E2	2.2	1159341	24/04/2017	Brown, clayey SAND
TPD08	E1	0.5	1159342	24/04/2017	Brown gravelly,, sandy CLAY
TPD21	E1	1.5	1159343	24/04/2017	Brown gravelly,, sandy CLAY
TPD22	E4	3.8	1159344	24/04/2017	Light brown clayey CLAY
TPD24	E1	0.7	1159345	24/04/2017	Brown gravelly,, sandy CLAY
TPD24	E3	1.9	1159346	24/04/2017	Brown gravelly,, sandy CLAY
TPD25	E2	1.7	1159347	24/04/2017	Brown gravelly,, sandy CLAY
TPD26	E1	1	1159348	24/04/2017	Dark brown sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TPD27	E2	1.1	1159349	24/04/2017	Grey sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TPD28	E1	0.9	1159350	24/04/2017	Brown gravelly,, sandy CLAY
TPD29	E1	1.2	1159351	24/04/2017	Brown sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TPD30	E1	0.7	1159352	24/04/2017	Brown gravelly,, sandy CLAY
TPD30	E2	1.6	1159353	24/04/2017	Brown gravelly,, sandy CLAY
TPD31	E2	1	1159354	24/04/2017	Brown gravelly,, sandy CLAY
TPD32	E1	0.5	1159355	24/04/2017	Brown gravelly,, sandy CLAY

Summary of Chemical Analysis
Soil Samples

Our Ref 17-97219-1
Client Ref SLS1015
Contract Title Redcar Site

	Lab No	1159337	1159338	1159339	1159340	1159341	1159342
	Sample ID	TPD01	TPD02	TPD03	TPD07	TPD07	TPD08
	Depth	0.30	2.50	0.30	0.10	2.20	0.50
	Other ID	E1	E2	E2	E1	E2	E1
	Sample Type	ES	ES	ES	ES	ES	ES
	Sampling Date	12/04/17	12/04/17	12/04/17	12/04/17	11/04/17	11/04/17
	Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Asbestos Quantification	DETSC 1102	0				Y			
Metals									
Antimony	DETSC 2301*	1	mg/kg		< 1.0	< 1.0	< 1.0		2.6
Arsenic	DETSC 2301#	0.2	mg/kg		6.0	7.4	4.5		27
Barium	DETSC 2301#	1.5	mg/kg		92	190	66		230
Beryllium	DETSC 2301#	0.2	mg/kg		< 0.2	1.4	0.2		1.7
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg		1.2	2.6	0.6		2.0
Cadmium	DETSC 2301#	0.1	mg/kg		< 0.1	0.3	< 0.1		0.9
Chromium	DETSC 2301#	0.15	mg/kg		5.5	46	3.3		110
Chromium, Hexavalent	DETSC 2204*	1	mg/kg		< 1.0	< 1.0	< 1.0		< 1.0
Copper	DETSC 2301#	0.2	mg/kg		4.7	11	12		27
Iron	DETSC 2301	25	mg/kg		8000		5100		36000
Lead	DETSC 2301#	0.3	mg/kg		16	31	8.7		73
Mercury	DETSC 2325#	0.05	mg/kg		< 0.05	< 0.05	0.05		0.09
Molybdenum	DETSC 2301#	0.4	mg/kg		0.5	0.5	0.9		2.0
Nickel	DETSC 2301#	1	mg/kg		3.5	4.2	3.1		14
Vanadium	DETSC 2301	0.8	mg/kg		14	150	11		210
Zinc	DETSC 2301#	1	mg/kg		24	100	25		190
Inorganics									
Loss on Ignition at 440oC	DETSC 2003#	0.01	%				89		
pH	DETSC 2008#			10.7	8.8	10.9	8.1	10.6	9.7
Cyanide, Total	DETSC 2130#	0.1	mg/kg		< 0.1	0.1	0.6		2.2
Cyanide, Free	DETSC 2130#	0.1	mg/kg		< 0.1	< 0.1	< 0.1		0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg		< 0.2	< 0.2	0.6		2.1
Thiocyanate	DETSC 2130#	0.6	mg/kg		< 0.6	< 0.6	1.2		< 0.6
Organic matter	DETSC 2002#	0.1	%		0.8	4.1	> 25		8.1
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	410	97	310	34	53	1600
Sulphur as S, Total	DETSC 2320	0.01	%	0.13		0.10		0.05	
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.31		0.27		0.10	
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01		< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01		< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01		< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg		1.8	< 1.5	6.3		< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg		< 1.2	< 1.2	12		< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg		< 1.5	< 1.5	15		< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg		< 3.4	< 3.4	44		< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg		< 10	< 10	77		< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01		< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01		< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01		< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg		< 0.9	< 0.9	2.6		< 0.9

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-97219-1
Client Ref SLS1015
Contract Title Redcar Site

				Lab No	1159337	1159338	1159339	1159340	1159341	1159342
				Sample ID	TPD01	TPD02	TPD03	TPD07	TPD07	TPD08
				Depth	0.30	2.50	0.30	0.10	2.20	0.50
				Other ID	E1	E2	E2	E1	E2	E1
				Sample Type	ES	ES	ES	ES	ES	ES
				Sampling Date	12/04/17	12/04/17	12/04/17	12/04/17	11/04/17	11/04/17
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg		0.8	3.0	15		1.4
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg		0.7	5.9	48		1.1
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg		< 1.4	31	62		3.6
Aromatic C5-C35	DETSC 3072*	10	mg/kg		< 10	41	130		< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg		< 10	41	200		< 10
PAHs										
Naphthalene	DETSC 3303#	0.03	mg/kg		< 0.03	0.15	12		0.70
Acenaphthylene	DETSC 3303#	0.03	mg/kg		< 0.03	0.15	6.7		0.10
Acenaphthene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	1.2		0.06
Fluorene	DETSC 3303	0.03	mg/kg		< 0.03	0.08	4.7		0.13
Phenanthrene	DETSC 3303#	0.03	mg/kg		< 0.03	0.96	24		0.68
Anthracene	DETSC 3303	0.03	mg/kg		< 0.03	0.26	8.7		0.15
Fluoranthene	DETSC 3303#	0.03	mg/kg		< 0.03	1.6	34		0.63
Pyrene	DETSC 3303#	0.03	mg/kg		< 0.03	1.1	23		0.44
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg		< 0.03	0.65	11		0.18
Chrysene	DETSC 3303	0.03	mg/kg		< 0.03	0.63	10		0.19
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg		< 0.03	0.87	13		0.22
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg		< 0.03	0.32	5.6		0.07
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg		< 0.03	0.54	8.7		0.13
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg		< 0.03	0.29	3.7		0.07
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg		< 0.03	0.10	1.3		< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg		< 0.03	0.31	3.8		0.08
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg		< 0.10	8.0	170		3.8
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg		< 0.3	< 0.3	0.5		< 0.3

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-97219-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1159343	1159344	1159345	1159346	1159347	1159348
			Sample ID	TPD21	TPD22	TPD24	TPD24	TPD25	TPD26
			Depth	1.50	3.80	0.70	1.90	1.70	1.00
			Other ID	E1	E4	E1	E3	E2	E1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	10/04/17	11/04/17	11/04/17	11/04/17	11/04/17	11/04/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Asbestos Quantification	DETSC 1102	0		Y				Y	
Metals									
Antimony	DETSC 2301*	1	mg/kg	1.2	< 1.0				< 1.0
Arsenic	DETSC 2301#	0.2	mg/kg	15	6.4	60	35	160	19
Barium	DETSC 2301#	1.5	mg/kg	160	20				130
Beryllium	DETSC 2301#	0.2	mg/kg	1.3	< 0.2				3.9
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	65	5.8	6.1	7.6	7.9	8.9
Cadmium	DETSC 2301#	0.1	mg/kg	0.2	0.2	1.1	0.2	0.2	0.2
Chromium	DETSC 2301#	0.15	mg/kg	35	4.8	59	17	31	26
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0				< 1.0
Copper	DETSC 2301#	0.2	mg/kg	15	25	78	8.1	55	27
Iron	DETSC 2301	25	mg/kg	30000					
Lead	DETSC 2301#	0.3	mg/kg	22	39	220	27	87	22
Mercury	DETSC 2325#	0.05	mg/kg	0.08	0.13	< 0.05	< 0.05	0.48	0.15
Molybdenum	DETSC 2301#	0.4	mg/kg	0.9	0.6				1.2
Nickel	DETSC 2301#	1	mg/kg	23	2.9	44	8.1	31	7.4
Vanadium	DETSC 2301	0.8	mg/kg	97	15				100
Zinc	DETSC 2301#	1	mg/kg	70	58	630	340	120	97
Inorganics									
Loss on Ignition at 440oC	DETSC 2003#	0.01	%						
pH	DETSC 2008#			9.2	8.7	9.4	9.8	8.9	9.5
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.2	0.1	0.2	0.2	0.2	< 0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1				< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	0.2	< 0.2				< 0.2
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6	< 0.6				0.6
Organic matter	DETSC 2002#	0.1	%	2.5	0.8	2.6	1.2	5.5	1.9
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	740	150	1500	1700	2500	1900
Sulphur as S, Total	DETSC 2320	0.01	%	0.14			0.37	0.94	
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.17			2.0	2.0	
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	0.10	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	0.02	0.04
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	1.4	< 0.9	< 0.9	< 0.9	< 0.9

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-97219-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1159343	1159344	1159345	1159346	1159347	1159348
			Sample ID	TPD21	TPD22	TPD24	TPD24	TPD25	TPD26
			Depth	1.50	3.80	0.70	1.90	1.70	1.00
			Other ID	E1	E4	E1	E3	E2	E1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	10/04/17	11/04/17	11/04/17	11/04/17	11/04/17	11/04/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	2.9	3.2	2.8	2.9	1.8	1.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	4.7	2.2	2.6	3.2	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	10	9.5	9.0	10	3.0	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	19	16	15	17	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	19	16	15	17	< 10	< 10
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	0.15	1.1	0.05	0.19	0.15	0.09
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.08	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.06	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.12	0.05	0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.11	0.10	0.22	0.88	0.16	0.15
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.19	0.05	0.05
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.19	0.52	0.28	2.4	0.17	0.23
Pyrene	DETSC 3303#	0.03	mg/kg	0.15	0.26	0.21	1.8	0.13	0.20
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.06	0.14	0.14	0.49	0.05	0.09
Chrysene	DETSC 3303	0.03	mg/kg	0.06	0.08	0.18	0.51	0.05	0.09
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.08	0.11	0.24	0.41	0.05	0.10
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.05	0.12	0.19	< 0.03	0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.04	0.07	0.12	0.24	< 0.03	0.06
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.07	0.10	< 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
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.08	0.11	< 0.03	0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.84	2.5	1.7	7.7	0.87	1.2
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-97219-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1159349	1159350	1159351	1159352	1159353	1159354
			Sample ID	TPD27	TPD28	TPD29	TPD30	TPD30	TPD31
			Depth	1.10	0.90	1.20	0.70	1.60	1.00
			Other ID	E2	E1	E1	E1	E2	E2
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	10/04/17	10/04/17	10/04/17	10/04/17	10/04/17	10/04/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Asbestos Quantification	DETSC 1102	0							Y
Metals									
Antimony	DETSC 2301*	1	mg/kg	< 1.0		< 1.0	2.5		4.6
Arsenic	DETSC 2301#	0.2	mg/kg	5.0		18	370		21
Barium	DETSC 2301#	1.5	mg/kg	89		110	110		220
Beryllium	DETSC 2301#	0.2	mg/kg	2.3		1.9	3.1		2.6
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	6.5		6.5	5.1		6.0
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1		0.1	1.2		0.4
Chromium	DETSC 2301#	0.15	mg/kg	9.9		14	61		22
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0		< 1.0	< 1.0		
Copper	DETSC 2301#	0.2	mg/kg	7.5		7.9	25		770
Iron	DETSC 2301	25	mg/kg	4600		9500	72000		16000
Lead	DETSC 2301#	0.3	mg/kg	6.5		12	170		62
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05		< 0.05	0.06		0.10
Molybdenum	DETSC 2301#	0.4	mg/kg	< 0.4		0.7	14		0.9
Nickel	DETSC 2301#	1	mg/kg	2.3		5.9	58		10
Vanadium	DETSC 2301	0.8	mg/kg	32		51	220		86
Zinc	DETSC 2301#	1	mg/kg	24		60	500		250
Inorganics									
Loss on Ignition at 440oC	DETSC 2003#	0.01	%						
pH	DETSC 2008#			10.7	9.7	9.7	8.9	10.5	9.9
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.1		0.3	0.2		0.3
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1		< 0.1	< 0.1		< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	< 0.2		0.3	< 0.2		0.3
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6		< 0.6	< 0.6		< 0.6
Organic matter	DETSC 2002#	0.1	%	1.2		2.0	1.1		3.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1300	1600	1600	1500	1600	1500
Sulphur as S, Total	DETSC 2320	0.01	%		0.96			0.25	
Sulphate as SO4, Total	DETSC 2321#	0.01	%		4.1			1.3	
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01		< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01		< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01		< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5		< 1.5	< 1.5		< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2		2.3	< 1.2		< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5		3.4	< 1.5		1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4		14	< 3.4		32
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10		21	< 10		33
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01		< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01		< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01		< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9		< 0.9	< 0.9		< 0.9

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-97219-1
Client Ref SLS1015
Contract Title Redcar Site

				Lab No	1159349	1159350	1159351	1159352	1159353	1159354
				Sample ID	TPD27	TPD28	TPD29	TPD30	TPD30	TPD31
				Depth	1.10	0.90	1.20	0.70	1.60	1.00
				Other ID	E2	E1	E1	E1	E2	E2
				Sample Type	ES	ES	ES	ES	ES	ES
				Sampling Date	10/04/17	10/04/17	10/04/17	10/04/17	10/04/17	10/04/17
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5		1.9	1.8		2.0
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6		< 0.6	< 0.6		1.4
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4		2.7	2.7		11
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10		< 10	< 10		15
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10		25	< 10		48
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03		0.31	0.05		0.19
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03		0.11	< 0.03		0.06
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03		< 0.03	< 0.03		< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03		0.10	< 0.03		< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.10		0.54	0.13		0.53
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03		0.22	< 0.03		0.55
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.15		0.75	0.15		0.78
Pyrene	DETSC 3303#	0.03	mg/kg	0.12		0.53	0.11		0.60
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.05		0.35	0.06		0.31
Chrysene	DETSC 3303	0.03	mg/kg	0.06		0.40	0.08		0.37
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.05		0.26	0.07		0.35
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03		0.19	< 0.03		0.14
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03		0.25	0.04		0.18
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03		0.17	< 0.03		0.10
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03		< 0.03	< 0.03		0.04
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03		0.19	< 0.03		0.11
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.53		4.4	0.68		4.3
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3		< 0.3	< 0.3		< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-97219-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1159355
			Sample ID	TPD32
			Depth	0.50
			Other ID	E1
			Sample Type	ES
			Sampling Date	10/04/17
			Sampling Time	n/s
Test	**Method**	**LOD**	**Units**	
Asbestos Quantification	DETSC 1102	0		
Metals				
Antimony	DETSC 2301*	1	mg/kg	
Arsenic	DETSC 2301#	0.2	mg/kg	17
Barium	DETSC 2301#	1.5	mg/kg	
Beryllium	DETSC 2301#	0.2	mg/kg	
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	6.0
Cadmium	DETSC 2301#	0.1	mg/kg	0.3
Chromium	DETSC 2301#	0.15	mg/kg	26
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	
Copper	DETSC 2301#	0.2	mg/kg	13
Iron	DETSC 2301	25	mg/kg	
Lead	DETSC 2301#	0.3	mg/kg	25
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	
Nickel	DETSC 2301#	1	mg/kg	6.1
Vanadium	DETSC 2301	0.8	mg/kg	
Zinc	DETSC 2301#	1	mg/kg	140
Inorganics				
Loss on Ignition at 440oC	DETSC 2003#	0.01	%	
pH	DETSC 2008#			10.4
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.2
Cyanide, Free	DETSC 2130#	0.1	mg/kg	
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	
Thiocyanate	DETSC 2130#	0.6	mg/kg	
Organic matter	DETSC 2002#	0.1	%	3.9
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1400
Sulphur as S, Total	DETSC 2320	0.01	%	0.16
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.63
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-97219-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1159355
Sample ID	TPD32
Depth	0.50
Other ID	E1
Sample Type	ES
Sampling Date	10/04/17
Sampling Time	n/s

Test	Method	LOD	Units	
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	1.6
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	2.9
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	8.8
Aromatic C5-C35	DETSC 3072*	10	mg/kg	14
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	14
PAHs				
Naphthalene	DETSC 3303#	0.03	mg/kg	0.15
Acenaphthylene	DETSC 3303#	0.03	mg/kg	0.07
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.53
Anthracene	DETSC 3303	0.03	mg/kg	0.14
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.90
Pyrene	DETSC 3303#	0.03	mg/kg	0.71
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.41
Chrysene	DETSC 3303	0.03	mg/kg	0.49
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.56
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.22
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.31
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.20
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	0.07
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.22
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	5.0
Phenols				
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-97219-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1159343	1159344	1159346	1159348	1159354
			Sample ID	TPD21	TPD22	TPD24	TPD26	TPD31
			Depth	1.50	3.80	1.90	1.00	1.00
			Other ID	E1	E4	E3	E1	E2
			Sample Type	ES	ES	ES	ES	ES
			Sampling Date	10/04/17	11/04/17	11/04/17	11/04/17	10/04/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
VOCs								
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	0.01	< 0.01	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	0.01	< 0.01	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	0.02	0.05	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	0.02	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	0.05

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Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-97219-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1159343	1159344	1159346	1159348	1159354
			Sample ID	TPD21	TPD22	TPD24	TPD26	TPD31
			Depth	1.50	3.80	1.90	1.00	1.00
			Other ID	E1	E4	E3	E1	E2
			Sample Type	ES	ES	ES	ES	ES
			Sampling Date	10/04/17	11/04/17	11/04/17	11/04/17	10/04/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	0.02	< 0.01	< 0.01	< 0.01	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
SVOCs								
Phenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	0.3	< 0.1	< 0.1	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-97219-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1159343	1159344	1159346	1159348	1159354
			Sample ID	TPD21	TPD22	TPD24	TPD26	TPD31
			Depth	1.50	3.80	1.90	1.00	1.00
			Other ID	E1	E4	E3	E1	E2
			Sample Type	ES	ES	ES	ES	ES
			Sampling Date	10/04/17	11/04/17	11/04/17	11/04/17	10/04/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-97219-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1159356	1159357	1159358	1159359	1159360	1159361
			Sample ID	TPD02	TPD07	TPD08	TPD21	TPD27	TPD29
			Depth	2.50	0.10	0.50	1.50	1.10	1.20
			Other ID	E2	E1	E1	E1	E2	E1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	12/04/17	12/04/17	11/04/17	10/04/17	10/04/17	10/04/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Preparation									
Leachate 10:1	DETS 036*			Y	Y	Y	Y	Y	Y
Metals									
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.43	0.28	0.39	2.6	1.1	0.87
Barium, Dissolved	DETSC 2306	0.26	ug/l	31	7.6	45	7.0	49	34
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron	DETSC 2123	100	ug/l	< 100	< 100	< 100	680	110	< 100
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25	< 0.25	0.34	< 0.25	< 0.25	< 0.25
Copper, Dissolved	DETSC 2306	0.4	ug/l	0.9	0.7	1.0	1.2	1.2	1.2
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.11	0.14	< 0.09	0.09	< 0.09	< 0.09
Manganese, Dissolved	DETSC 2306	0.22	ug/l	2.3	9.2	20	14	0.99	190
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.7
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.71	0.66	0.78	0.56	0.90	0.77
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	< 0.6	< 0.6	< 0.6	3.0	6.7	1.0
Zinc, Dissolved	DETSC 2306	1.3	ug/l	11	3.8	28	12	< 1.3	24
Inorganics									
pH	DETSC 2008			7.2	6.9	6.8	7.6	9.1	7.3
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	< 0.015	< 0.015	0.041	1.7	0.21	< 0.015
Chloride	DETSC 2055	0.1	mg/l	3.2	2.8	2.9	6.0	2.4	2.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-97219-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1159362	1159363
Sample ID	TPD30	TPD31
Depth	0.70	1.00
Other ID	E1	E2
Sample Type	ES	ES
Sampling Date	10/04/17	10/04/17
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Preparation					
Leachate 10:1	DETS 036*			Y	Y
Metals					
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	2.5	1.5
Barium, Dissolved	DETSC 2306	0.26	ug/l	23	28
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1
Boron	DETSC 2123	100	ug/l	< 100	< 100
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	0.05	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25	< 0.25
Copper, Dissolved	DETSC 2306	0.4	ug/l	1.1	1.0
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	< 0.09
Manganese, Dissolved	DETSC 2306	0.22	ug/l	30	46
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	0.7	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.71	0.52
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	0.7	1.6
Zinc, Dissolved	DETSC 2306	1.3	ug/l	20	3.6
Inorganics					
pH	DETSC 2008			7.0	7.2
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	< 0.015	< 0.015
Chloride	DETSC 2055	0.1	mg/l	2.6	3.0

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-97219-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1159338	TPD02 E2 2.50	SOIL	NAD	none	Keith Wilson
1159339	TPD03 E2 0.30	SOIL	Chrysotile	Small bundle of Chrysotile fibres	Keith Wilson
1159340	TPD07 E1 0.10	SOIL	NAD	none	Keith Wilson
1159342	TPD08 E1 0.50	SOIL	NAD	none	Keith Wilson
1159343	TPD21 E1 1.50	SOIL	Chrysotile	Small bundles of Chrysotile fibres	Keith Wilson
1159344	TPD22 E4 3.80	SOIL	NAD	none	Keith Wilson
1159345	TPD24 E1 0.70	SOIL	NAD	none	Keith Wilson
1159346	TPD24 E3 1.90	SOIL	NAD	none	Keith Wilson
1159347	TPD25 E2 1.70	SOIL	Amosite	Small bundle of Amosite fibres	Keith Wilson
1159348	TPD26 E1 1.00	SOIL	NAD	none	Keith Wilson
1159349	TPD27 E2 1.10	SOIL	NAD	none	Keith Wilson
1159351	TPD29 E1 1.20	SOIL	NAD	none	Keith Wilson
1159352	TPD30 E1 0.70	SOIL	NAD	none	Keith Wilson
1159354	TPD31 E2 1.00	SOIL	Amosite	Small bundle of Amosite fibres	Keith Wilson
1159355	TPD32 E1 0.50	SOIL	NAD	none	Keith Wilson

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.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 17-97219-1
Client Ref SLS1015
Contract Title Redcar Site

		Lab No	1159339	1159343	1159347	1159354
		Sample ID	TPD03	TPD21	TPD25	TPD31
		Depth	0.30	1.50	1.70	1.00
		Other ID	E2	E1	E2	E2
		Sample Type	SOIL	SOIL	SOIL	SOIL
		Sampling Date	12/04/17	10/04/17	11/04/17	10/04/17
		Sampling Time				
Test	**Method**	**Units**				
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**< 0.001**	**0.001**	**< 0.001**	**< 0.001**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na	na	na	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	<0.001	0.001	<0.001	<0.001
Quantification by PCOM (c)	DETSC 1102	Mass %	na	na	na	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na	na	na	na
Breakdown of Gravimetric Analysis (a)						
Mass of Sample		g	38.95	52.45	47.47	65.12
ACMs present*		type				
Mass of ACM in sample		g				
% ACM by mass		%				
% asbestos in ACM		%				
% asbestos in sample		%				
Breakdown of Detailed Gravimetric Analysis (b)						
% Amphibole bundles in sample		Mass %	na	na	<0.001	<0.001
% Chrysotile bundles in sample		Mass %	<0.001	0.001	na	na
Breakdown of PCOM Analysis (c)						
% Amphibole fibres in sample		Mass %	na	na	na	na
% Chrysotile fibres in sample		Mass %	na	na	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)						
Amphibole fibres		Fibres/g	na	na	na	na
Chrysotile fibres		Fibres/g	na	na	na	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Information in Support of the Analytical Results

Our Ref 17-97219-1
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1159337	TPD01 0.30 SOIL	12/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159338	TPD02 2.50 SOIL	12/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159339	TPD03 0.30 SOIL	12/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159340	TPD07 0.10 SOIL	12/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159341	TPD07 2.20 SOIL	11/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159342	TPD08 0.50 SOIL	11/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159343	TPD21 1.50 SOIL	10/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159344	TPD22 3.80 SOIL	11/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159345	TPD24 0.70 SOIL	11/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159346	TPD24 1.90 SOIL	11/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159347	TPD25 1.70 SOIL	11/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159348	TPD26 1.00 SOIL	11/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159349	TPD27 1.10 SOIL	10/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159350	TPD28 0.90 SOIL	10/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159351	TPD29 1.20 SOIL	10/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159352	TPD30 0.70 SOIL	10/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159353	TPD30 1.60 SOIL	10/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159354	TPD31 1.00 SOIL	10/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159355	TPD32 0.50 SOIL	10/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159356	TPD02 2.50 LEACHATE	12/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159357	TPD07 0.10 LEACHATE	12/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159358	TPD08 0.50 LEACHATE	11/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159359	TPD21 1.50 LEACHATE	10/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159360	TPD27 1.10 LEACHATE	10/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159361	TPD29 1.20 LEACHATE	10/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159362	TPD30 0.70 LEACHATE	10/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159363	TPD31 1.00 LEACHATE	10/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159364	TPD02 2.50 LEACHATE	12/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159365	TPD07 0.10 LEACHATE	12/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159366	TPD08 0.50 LEACHATE	11/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159367	TPD21 1.50 LEACHATE	10/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159368	TPD27 1.10 LEACHATE	10/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159369	TPD29 1.20 LEACHATE	10/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159370	TPD30 0.70 LEACHATE	10/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1159371	TPD31 1.00 LEACHATE	10/04/17	GJ 250ml x2, GJ 60ml x2, 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.

Information in Support of the Analytical Results

Our Ref 17-97219-1
Client Ref SLS1015
Contract Redcar Site

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

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Certificate of Analysis

Certificate Number 17-97916-1

05-May-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-97916-1

Client Reference SLS1015

Order No CH-1332

Contract Title Redcar Site

Description 7 Soil samples, 1 Leachate sample.

Date Received 25-Apr-17

Date Started 25-Apr-17

Date Completed 05-May-17

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

Notes **This report supersedes 17-97916, Extra Testing**

Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 17-97916-1
Client Ref SLS1015
Contract Title Redcar Site

Sample ID	Other ID	Depth	Lab No	Completed	Matrix Description
TPE75	E1	1	1163524	02/05/2017	Dark brown very sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TPE75	E2	3	1163525	02/05/2017	Dark grey sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TPE73	E1	0.2	1163526	02/05/2017	Black gravelly SAND including odd rootlets
TPE73	E2	3.5	1163527	02/05/2017	Dark grey sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TPE66	E1	1.5	1163528	02/05/2017	Dark brown clayey, gravelly SAND
TPE66	E2	2.5	1163529	02/05/2017	Brown clayey, gravelly SAND
TPE38	E1	2	1163530	02/05/2017	Dark brown clayey gravelly SAND

Summary of Chemical Analysis
Soil Samples

Our Ref 17-97916-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1163524	1163525	1163526	1163527	1163528	1163529	1163530
			Sample ID	TPE75	TPE75	TPE73	TPE73	TPE66	TPE66	TPE38
			Depth	1.00	3.00	0.20	3.50	1.50	2.50	2.00
			Other ID	E1	E2	E1	E2	E1	E2	E1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	20/04/17	20/04/17	20/04/17	20/04/17	20/04/17	20/04/17	21/04/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Asbestos Quantification	DETSC 1102	0						Y		
Metals										
Antimony	DETSC 2301*	1	mg/kg	13			15	11		
Arsenic	DETSC 2301#	0.2	mg/kg	8.0		3.0	4.7	8.7		16
Barium	DETSC 2301#	1.5	mg/kg	400			450	1000		
Beryllium	DETSC 2301#	0.2	mg/kg	0.7			0.7	0.8		
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	3.7		0.4	4.9	2.7		6.5
Cadmium	DETSC 2301#	0.1	mg/kg	1.1		0.3	3.2	1.1		0.6
Chromium	DETSC 2301#	0.15	mg/kg	1100		66	1300	1000		110
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0			< 1.0	< 1.0		
Copper	DETSC 2301#	0.2	mg/kg	130		22	71	64		31
Iron	DETSC 2301	25	mg/kg				130000			
Lead	DETSC 2301#	0.3	mg/kg	63		15	120	69		57
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05		< 0.05	< 0.05	0.07		0.40
Molybdenum	DETSC 2301#	0.4	mg/kg	7.1			6.7	5.8		
Nickel	DETSC 2301#	1	mg/kg	28		27	13	16		14
Vanadium	DETSC 2301	0.8	mg/kg	2300			2500	3000		
Zinc	DETSC 2301#	1	mg/kg	190		61	420	150		220
Inorganics										
Loss on Ignition at 440oC	DETSC 2003#	0.01	%			30				
pH	DETSC 2008#			12.7	12.6	11.1	12.5	12.2	12.4	11.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.2		0.2	< 0.1	0.4		3.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1			< 0.1	< 0.1		
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	< 0.2			< 0.2	0.4		
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6			1.8	< 0.6		
Organic matter	DETSC 2002#	0.1	%	0.6		> 25	0.8	1.5		2.1
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	< 10	< 10	27	< 10	< 10	12	< 10
Sulphur as S, Total	DETSC 2320	0.01	%		0.16				0.17	0.33
Sulphate as SO4, Total	DETSC 2321#	0.01	%		0.38				0.33	0.84
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01		< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01		< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01		< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5		< 1.5	< 1.5	< 1.5		< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	2.7		< 1.2	< 1.2	< 1.2		< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	14		< 1.5	< 1.5	9.2		< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	54		< 3.4	< 3.4	40		< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	70		< 10	< 10	50		< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01		< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01		< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01		< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9		< 0.9	< 0.9	< 0.9		< 0.9

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-97916-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1163524	1163525	1163526	1163527	1163528	1163529	1163530
			Sample ID	TPE75	TPE75	TPE73	TPE73	TPE66	TPE66	TPE38
			Depth	1.00	3.00	0.20	3.50	1.50	2.50	2.00
			Other ID	E1	E2	E1	E2	E1	E2	E1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	20/04/17	20/04/17	20/04/17	20/04/17	20/04/17	20/04/17	21/04/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	2.0		4.6	< 0.5	2.6		< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	9.3		18	< 0.6	17		1.8
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	24		22	< 1.4	34		6.0
Aromatic C5-C35	DETSC 3072*	10	mg/kg	35		45	< 10	53		< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	110		45	< 10	100		< 10
PAHs										
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03		1.6	< 0.03	0.03		0.12
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03		0.89	< 0.03	0.10		0.04
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03		0.11	< 0.03	< 0.03		< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03		0.35	< 0.03	< 0.03		0.04
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.93		3.9	< 0.03	2.6		0.29
Anthracene	DETSC 3303	0.03	mg/kg	0.07		1.2	< 0.03	0.10		0.10
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.79		6.6	0.12	2.2		0.39
Pyrene	DETSC 3303#	0.03	mg/kg	0.50		5.3	0.11	1.4		0.28
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.21		2.1	0.05	0.63		0.15
Chrysene	DETSC 3303	0.03	mg/kg	0.29		2.1	0.05	0.74		0.15
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.30		2.5	0.08	0.87		0.16
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.13		0.90	0.03	0.37		0.07
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.14		1.4	0.03	0.33		0.09
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.11		0.63	< 0.03	0.28		0.06
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03		0.18	< 0.03	0.08		< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.11		0.65	< 0.03	0.31		0.06
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	3.6		30	0.48	10		2.0
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3		< 0.3	< 0.3	< 0.3		< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-97916-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1163528
Sample ID	TPE66
Depth	1.50
Other ID	E1
Sample Type	ES
Sampling Date	20/04/17
Sampling Time	n/s

Test	Method	LOD	Units	
VOCs				
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-97916-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1163528
Sample ID	TPE66
Depth	1.50
Other ID	E1
Sample Type	ES
Sampling Date	20/04/17
Sampling Time	n/s

Test	Method	LOD	Units	
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01
SVOCs				
Phenol	DETSC 3433	0.1	mg/kg	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-97916-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1163528
Sample ID	TPE66
Depth	1.50
Other ID	E1
Sample Type	ES
Sampling Date	20/04/17
Sampling Time	n/s

Test	Method	LOD	Units	
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-97916-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1163531
Sample ID	TPE73
Depth	3.50
Other ID	E2
Sample Type	ES
Sampling Date	20/04/17
Sampling Time	n/s

Test	Method	LOD	Units	
Preparation				
Leachate 10:1	DETS 036*			Y
Metals				
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	1.2
Barium, Dissolved	DETSC 2306	0.26	ug/l	13
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1
Boron	DETSC 2123	100	ug/l	< 100
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	11
Copper, Dissolved	DETSC 2306	0.4	ug/l	7.7
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.21
Manganese, Dissolved	DETSC 2306	0.22	ug/l	< 0.22
Mercury, Dissolved	DETSC 2306	0.01	ug/l	0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	8.7
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	15
Zinc, Dissolved	DETSC 2306	1.3	ug/l	< 1.3
Inorganics				
pH	DETSC 2008			11.8
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	0.017
Chloride	DETSC 2055	0.1	mg/l	4.6

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-97916-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1163524	TPE75 E1 1.00	SOIL	NAD	none	Michael Kay
1163526	TPE73 E1 0.20	SOIL	NAD	none	Michael Kay
1163527	TPE73 E2 3.50	SOIL	NAD	none	Michael Kay
1163528	TPE66 E1 1.50	SOIL	Chrysotile	Small bundle of Chrysotile	Michael Kay
1163530	TPE38 E1 2.00	SOIL	NAD	none	Michael Kay

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.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 17-97916-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1163528
Sample ID	TPE66
Depth	1.50
Other ID	E1
Sample Type	SOIL
Sampling Date	20/04/17
Sampling Time	

Test	**Method**	**Units**	
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**< 0.001**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	<0.001
Quantification by PCOM (c)	DETSC 1102	Mass %	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na
Breakdown of Gravimetric Analysis (a)			
Mass of Sample		g	1456.63
ACMs present*		type	
Mass of ACM in sample		g	
% ACM by mass		%	
% asbestos in ACM		%	
% asbestos in sample		%	
Breakdown of Detailed Gravimetric Analysis (b)			
% Amphibole bundles in sample		Mass %	na
% Chrysotile bundles in sample		Mass %	<0.001
Breakdown of PCOM Analysis (c)			
% Amphibole fibres in sample		Mass %	na
% Chrysotile fibres in sample		Mass %	na
Breakdown of Potentially Respirable Fibre Analysis (d)			
Amphibole fibres		Fibres/g	na
Chrysotile fibres		Fibres/g	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Information in Support of the Analytical Results

Our Ref 17-97916-1
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1163524	TPE75 1.00 SOIL	20/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1163525	TPE75 3.00 SOIL	20/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1163526	TPE73 0.20 SOIL	20/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1163527	TPE73 3.50 SOIL	20/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1163528	TPE66 1.50 SOIL	20/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1163529	TPE66 2.50 SOIL	20/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1163530	TPE38 2.00 SOIL	21/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1163531	TPE73 3.50 LEACHATE	20/04/17	GJ 250ml x2, GJ 60ml x2, 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

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Certificate of Analysis

Certificate Number 17-97921-1

05-May-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-97921-1

Client Reference SLS1015

Order No CH-1332

Contract Title Redcar Site

Description 7 Soil samples, 3 Leachate samples.

Date Received 25-Apr-17

Date Started 25-Apr-17

Date Completed 05-May-17

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

Notes **This report supersedes 17-97521, Extra Testing**

Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

mCERTS
THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 17-97921-1
Client Ref SLS1015
Contract Title Redcar Site

Sample ID	Other ID	Depth	Lab No	Completed	Matrix Description
TPE54	E3	2.80-2.90	1163536	02/05/2017	Brown sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TPE76	E1	1.50-1.60	1163537	02/05/2017	Grey sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TPD06	E1	0.5	1163538	02/05/2017	Dark brown gravelly SAND
TPD06	E2	1.5	1163539	02/05/2017	Light brown slightly clayey SAND
TPD04	E1	0.40-0.50	1163540	02/05/2017	Black sandy GRAVEL (Made ground - slag, brick) (sample matrix outside MCERTS scope of accreditation)
TPD10	E2	2.00-2.30	1163541	02/05/2017	Brown slightly clayey SAND
TPD11	E1	0.50-0.90	1163542	02/05/2017	Dark brown sandy GRAVEL (Made ground - slag, brick) (sample matrix outside MCERTS scope of accreditation)

Summary of Chemical Analysis
Soil Samples

Our Ref 17-97921-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1163536	1163537	1163538	1163539	1163540	1163541	1163542
			Sample ID	TPE54	TPE76	TPD06	TPD06	TPD04	TPD10	TPD11
			Depth	2.80-2.90	1.50-1.60	0.50	1.50	0.40-0.50	2.00-2.30	0.50-0.90
			Other ID	E3	E1	E1	E2	E1	E2	E1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	19/04/17	19/04/17	18/04/17	18/04/17	11/04/17	11/04/17	13/04/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Asbestos Quantification	DETSC 1102	0		Y						
Metals										
Antimony	DETSC 2301*	1	mg/kg	< 1.0	12	1.0	2.2		1.2	
Arsenic	DETSC 2301#	0.2	mg/kg	6.6	6.2	30	5.4		9.4	18
Barium	DETSC 2301#	1.5	mg/kg	370	650	62	200		170	
Beryllium	DETSC 2301#	0.2	mg/kg	6.0	0.8	3.1	0.4		0.4	
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	2.7	2.5	1.9	1.3		2.1	3.3
Cadmium	DETSC 2301#	0.1	mg/kg	0.4	1.0	3.3	0.3		0.2	0.3
Chromium	DETSC 2301#	0.15	mg/kg	61	1000	37	170		85	88
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	
Copper	DETSC 2301#	0.2	mg/kg	20	74	58	15		13	17
Iron	DETSC 2301	25	mg/kg	19000	110000				20000	
Lead	DETSC 2301#	0.3	mg/kg	44	67	130	28		30	17
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.06	0.18	< 0.05		< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	0.9	6.3	2.0	1.2		0.8	
Nickel	DETSC 2301#	1	mg/kg	4.6	13	14	5.8		6.6	6.2
Vanadium	DETSC 2301	0.8	mg/kg	160	2600	100	320		160	
Zinc	DETSC 2301#	1	mg/kg	94	170	520	69		58	65
Inorganics										
pH	DETSC 2008#			11.0	12.3	10.0	12.0	8.0	11.6	10.6
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.1	0.2	82	1.8		1.1	1.0
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	0.4	< 0.1		< 0.1	
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	< 0.2	< 0.2	82	1.8		1.1	
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6	< 0.6	0.8	< 0.6		< 0.6	
Organic matter	DETSC 2002#	0.1	%	1.7	0.9	18	1.3		4.2	2.3
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1500	16	1700	330	2300	370	1600
Sulphur as S, Total	DETSC 2320	0.01	%		0.13	2.2	0.15	3.9		0.93
Sulphate as SO4, Total	DETSC 2321#	0.01	%		0.27	3.2	0.25	4.4		1.8
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5		< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	2.0	< 1.2	< 1.2		< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	5.1	11	< 1.5	< 1.5		< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	25	45	< 3.4	< 3.4		< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	30	58	< 10	< 10		< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9		< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	1.2	< 0.5	< 0.5		< 0.5	< 0.5

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-97921-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1163536	1163537	1163538	1163539	1163540	1163541	1163542
			Sample ID	TPE54	TPE76	TPD06	TPD06	TPD04	TPD10	TPD11
			Depth	2.80-2.90	1.50-1.60	0.50	1.50	0.40-0.50	2.00-2.30	0.50-0.90
			Other ID	E3	E1	E1	E2	E1	E2	E1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	19/04/17	19/04/17	18/04/17	18/04/17	11/04/17	11/04/17	13/04/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	8.8	6.5	< 0.6		< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	19	6.4	< 1.4		< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	29	13	< 10		< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	31	87	13	< 10		< 10	< 10
PAHs										
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.05	< 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
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03		< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.07	1.0	0.31	< 0.03		< 0.03	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	0.04	0.05	< 0.03		< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.13	0.73	0.26	< 0.03		< 0.03	0.05
Pyrene	DETSC 3303#	0.03	mg/kg	0.15	0.44	0.21	< 0.03		< 0.03	0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.07	0.18	0.10	< 0.03		< 0.03	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	0.07	0.25	0.10	< 0.03		< 0.03	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.11	0.27	0.09	< 0.03		< 0.03	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.04	0.11	0.03	< 0.03		< 0.03	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.05	0.11	0.05	< 0.03		< 0.03	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.04	0.08	< 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
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.04	0.08	< 0.03	< 0.03		< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.79	3.3	1.3	< 0.10		< 0.10	< 0.10
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3		< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-97921-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1163543	1163544	1163545
			Sample ID	TPE54	TPE76	TPD10
			Depth	2.80-2.90	1.50-1.60	2.00-2.30
			Other ID	E3	E1	E2
			Sample Type	ES	ES	ES
			Sampling Date	19/04/17	19/04/17	11/04/17
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Preparation						
Leachate 10:1	DETS 036*			Y	Y	Y
Metals						
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	1.9	0.77	0.87
Barium, Dissolved	DETSC 2306	0.26	ug/l	29	200	21
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1	< 0.1
Boron	DETSC 2123	100	ug/l	< 100	< 100	180
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	1.2	21	1.7
Copper, Dissolved	DETSC 2306	0.4	ug/l	1.7	9.2	1.1
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	0.92	0.16
Manganese, Dissolved	DETSC 2306	0.22	ug/l	1.5	0.36	3.3
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	1.2	4.2	1.1
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	9.7	8.4	2.2
Zinc, Dissolved	DETSC 2306	1.3	ug/l	< 1.3	2.2	< 1.3
Inorganics						
pH	DETSC 2008			9.7	12.2	8.4
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	< 0.015	0.017	0.029
Chloride	DETSC 2055	0.1	mg/l	1.6	5.7	3.7

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-97921-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1163536	TPE54 E3 2.80-2.90	SOIL	Chrysotile	Small bundle of Chrysotile	Michael Kay
1163537	TPE76 E1 1.50-1.60	SOIL	NAD	none	Michael Kay
1163538	TPD06 E1 0.50	SOIL	NAD	none	Michael Kay
1163539	TPD06 E2 1.50	SOIL	NAD	none	Michael Kay
1163541	TPD10 E2 2.00-2.30	SOIL	NAD	none	Michael Kay
1163542	TPD11 E1 0.50-0.90	SOIL	NAD	none	Michael Kay

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.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 17-97921-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1163536
Sample ID	TPE54
Depth	2.80-2.90
Other ID	E3
Sample Type	SOIL
Sampling Date	19/04/17
Sampling Time	

Test	**Method**	**Units**	
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**< 0.001**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	<0.001
Quantification by PCOM (c)	DETSC 1102	Mass %	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na
Breakdown of Gravimetric Analysis (a)			
Mass of Sample		g	805.35
ACMs present*		type	
Mass of ACM in sample		g	
% ACM by mass		%	
% asbestos in ACM		%	
% asbestos in sample		%	
Breakdown of Detailed Gravimetric Analysis (b)			
% Amphibole bundles in sample		Mass %	na
% Chrysotile bundles in sample		Mass %	<0.001
Breakdown of PCOM Analysis (c)			
% Amphibole fibres in sample		Mass %	na
% Chrysotile fibres in sample		Mass %	na
Breakdown of Potentially Respirable Fibre Analysis (d)			
Amphibole fibres		Fibres/g	na
Chrysotile fibres		Fibres/g	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Information in Support of the Analytical Results

Our Ref 17-97921-1
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1163536	TPE54 2.80-2.90 SOIL	19/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1163537	TPE76 1.50-1.60 SOIL	19/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1163538	TPD06 0.50 SOIL	18/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1163539	TPD06 1.50 SOIL	18/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1163540	TPD04 0.40-0.50 SOIL	11/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L	pH + Conductivity (7 days)	
1163541	TPD10 2.00-2.30 SOIL	11/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L	pH + Conductivity (7 days)	
1163542	TPD11 0.50-0.90 SOIL	13/04/17	GJ 250ml x2, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1163543	TPE54 2.80-2.90 LEACHATE	19/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1163544	TPE76 1.50-1.60 LEACHATE	19/04/17	GJ 250ml x2, GJ 60ml x2, PT 1L		
1163545	TPD10 2.00-2.30 LEACHATE	11/04/17	GJ 250ml x2, GJ 60ml x2, 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

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Certificate of Analysis

Certificate Number 17-98147

02-May-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-98147

Client Reference (not supplied)

Order No (not supplied)

Contract Title Redcar Site

Description 2 Soil samples, 1 Leachate sample.

Date Received 27-Apr-17

Date Started 27-Apr-17

Date Completed 02-May-17

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

Notes Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

mCERTS
THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 17-98147
Client Ref
Contract Title Redcar Site

Sample ID	Depth	Lab No	Completed	Matrix Description
TPD34	0.20-0.80	1164624	02/05/2017	Dark brown gravelly SAND (Made ground - breezeblock/brick)
TPD23	0.90-1.40	1164625	02/05/2017	Dark grey slightly gravelly SAND

Summary of Chemical Analysis
Soil Samples

Our Ref 17-98147
Client Ref
Contract Title Redcar Site

			Lab No	1164624	1164625
			Sample ID	TPD34	TPD23
			Depth	0.20-0.80	0.90-1.40
			Other ID		
			Sample Type	ES	ES
			Sampling Date	05/04/17	05/04/17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Metals					
Antimony	DETSC 2301*	1	mg/kg	2.4	< 1.0
Arsenic	DETSC 2301#	0.2	mg/kg	42	8.3
Barium	DETSC 2301#	1.5	mg/kg	210	200
Beryllium	DETSC 2301#	0.2	mg/kg	5.4	0.4
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	5.5	2.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.6	< 0.1
Chromium	DETSC 2301#	0.15	mg/kg	72	8.9
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	25	8.3
Iron	DETSC 2301	25	mg/kg	40000	
Lead	DETSC 2301#	0.3	mg/kg	44	22
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	1.4	< 0.4
Nickel	DETSC 2301#	1	mg/kg	27	5.6
Vanadium	DETSC 2301	0.8	mg/kg	260	20
Zinc	DETSC 2301#	1	mg/kg	320	37
Inorganics					
pH	DETSC 2008#			9.7	8.8
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.3	< 0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	0.3	< 0.2
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6	< 0.6
Organic matter	DETSC 2002#	0.1	%	1.9	1.4
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1800	700
Sulphur as S, Total	DETSC 2320	0.01	%	0.85	0.09
Sulphate as SO4, Total	DETSC 2321#	0.01	%	2.2	0.16
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	18
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	18
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-98147
Client Ref
Contract Title Redcar Site

			Lab No	1164624	1164625
			Sample ID	TPD34	TPD23
			Depth	0.20-0.80	0.90-1.40
			Other ID		
			Sample Type	ES	ES
			Sampling Date	05/04/17	05/04/17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	18
PAHs					
Naphthalene	DETSC 3303#	0.03	mg/kg	2.0	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	0.58	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.56	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	0.97	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	5.8	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	1.7	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	7.5	< 0.03
Pyrene	DETSC 3303#	0.03	mg/kg	5.8	< 0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	3.5	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	3.4	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	4.3	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	1.9	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	2.7	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	1.3	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	0.45	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	1.4	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	44	< 0.10
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-98147
Client Ref
Contract Title Redcar Site

Lab No	1164625
Sample ID	TPD23
Depth	0.90-1.40
Other ID	
Sample Type	ES
Sampling Date	05/04/17
Sampling Time	n/s

Test	Method	LOD	Units	
VOCs				
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-98147
Client Ref
Contract Title Redcar Site

Lab No	1164625
Sample ID	TPD23
Depth	0.90-1.40
Other ID	
Sample Type	ES
Sampling Date	05/04/17
Sampling Time	n/s

Test	Method	LOD	Units	
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01
SVOCs				
Phenol	DETSC 3433	0.1	mg/kg	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-98147
Client Ref
Contract Title Redcar Site

Lab No	1164625
Sample ID	TPD23
Depth	0.90-1.40
Other ID	
Sample Type	ES
Sampling Date	05/04/17
Sampling Time	n/s

Test	Method	LOD	Units	
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-98147
Client Ref
Contract Title Redcar Site

Lab No	1164626
Sample ID	TPD34
Depth	0.20-0.80
Other ID	
Sample Type	ES
Sampling Date	05/04/17
Sampling Time	n/s

Test	Method	LOD	Units	
Preparation				
Leachate 10:1	DETS 036*			Y
Metals				
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.96
Barium, Dissolved	DETSC 2306	0.26	ug/l	29
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1
Boron	DETSC 2123	100	ug/l	280
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25
Copper, Dissolved	DETSC 2306	0.4	ug/l	1.0
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09
Manganese, Dissolved	DETSC 2306	0.22	ug/l	230
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	1.0
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.91
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	2.4
Zinc, Dissolved	DETSC 2306	1.3	ug/l	9.5
Inorganics				
pH	DETSC 2008			6.8
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	< 0.015
Chloride	DETSC 2055	0.1	mg/l	1.4

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-98147
Client Ref
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1164624	TPD34 0.20-0.80	SOIL	NAD	none	Colin Patrick
1164625	TPD23 0.90-1.40	SOIL	NAD	none	Colin Patrick

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 17-98147
Client Ref
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1164624	TPD34 0.20-0.80 SOIL	05/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1164625	TPD23 0.90-1.40 SOIL	05/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1164626	TPD34 0.20-0.80 LEACHATE	05/04/17	GJ 250ml x2, 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

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Certificate of Analysis

Certificate Number 17-98272

05-May-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-98272

Client Reference SLS1015

Order No CH-1332

Contract Title Redcar Site

Description 14 Soil samples, 5 Leachate samples.

Date Received Friday, April 28, 2017

Date Started Friday, April 28, 2017

Date Completed Friday, May 5, 2017

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

Notes Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

mCERTS
THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 17-98272
Client Ref SLS1015
Contract Title Redcar Site

Sample ID	Other ID	Depth	Lab No	Completed	Matrix Description
TPH04	1	0.9	1165305	05-May-17	Brown sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TPH04	2	2.4	1165306	05-May-17	Brown gravelly, sandy CLAY
TPH06	1	0.5	1165307	05-May-17	Brown sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TPH06	2	2.50-3.00	1165308	05-May-17	Brown sandy CLAY
TPE27	1	0.20-0.50	1165309	05-May-17	Brown gravelly, sandy CLAY
TPE36	2	2.70-3.70	1165310	05-May-17	Brown gravelly, sandy CLAY
TPE46	2	1.5	1165311	05-May-17	Brown gravelly, sandy CLAY
TPE46	3	3.4	1165312	05-May-17	Brown gravelly, sandy CLAY
TPH05	1	0.40-1.10	1165313	05-May-17	Brown gravelly, sandy CLAY
TPH05	2	1.10-1.80	1165314	05-May-17	White sandy CLAY
TPI30	1	1.00-1.50	1165315	05-May-17	Brown gravelly, sandy CLAY
TPE26	1	1.4	1165316	05-May-17	Brown gravelly, sandy CLAY
TPE26	3	2.8	1165317	05-May-17	Brown gravelly SAND
TPE55	3	3.8	1165318	05-May-17	Brown sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)

Summary of Chemical Analysis
Soil Samples

Our Ref 17-98272
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1165305	1165306	1165307	1165308	1165309	1165310
			Sample ID	TPH04	TPH04	TPH06	TPH06	TPE27	TPE36
			Depth	0.90	2.40	0.50	2.50-3.00	0.20-0.50	2.70-3.70
			Other ID	1	2	1	2	1	2
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	25-Apr-17	25-Apr-17	25-Apr-17	25-Apr-17	24-Apr-17	24-Apr-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Metals									
Antimony	DETSC 2301*	1	mg/kg	13		3.9			
Arsenic	DETSC 2301#	0.2	mg/kg	8.3		12	11	37	120
Barium	DETSC 2301#	1.5	mg/kg	960		280			
Beryllium	DETSC 2301#	0.2	mg/kg	0.7		1.9			
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	3.9		2.5	2.1	4.2	2.9
Cadmium	DETSC 2301#	0.1	mg/kg	0.7		1.2	0.5	7.6	0.5
Chromium	DETSC 2301#	0.15	mg/kg	1200		120	48	39	69
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0		< 1.0	< 1.0		
Copper	DETSC 2301#	0.2	mg/kg	39		45	28	54	19
Iron	DETSC 2301	25	mg/kg	94000		48000			
Lead	DETSC 2301#	0.3	mg/kg	37		79	41	450	76
Mercury	DETSC 2325#	0.05	mg/kg	0.06		< 0.05	< 0.05	< 0.05	0.26
Molybdenum	DETSC 2301#	0.4	mg/kg	5.4		1.9			
Nickel	DETSC 2301#	1	mg/kg	11		19	26	40	16
Vanadium	DETSC 2301	0.8	mg/kg	2000		130			
Zinc	DETSC 2301#	1	mg/kg	110		310	110	1900	310
Inorganics									
pH	DETSC 2008#			12.4	11.9	11.2	10.0	9.8	10.4
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.4		9.6	1.8	46	0.4
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1		< 0.1			
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	0.4		9.6			
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6		< 0.6			
Organic matter	DETSC 2002#	0.1	%	0.9		4.1	5.6	1.2	0.9
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	< 10	140	330	270	400	1500
Sulphur as S, Total	DETSC 2320	0.01	%		0.01			0.04	0.12
Sulphate as SO4, Total	DETSC 2321#	0.01	%		1.2			0.20	2.2
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5		< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2		1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5		26	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4		370	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10		390	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9		< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5		0.6	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6		13	< 0.6	< 0.6	< 0.6

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-98272
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1165305	1165306	1165307	1165308	1165309	1165310
			Sample ID	TPH04	TPH04	TPH06	TPH06	TPE27	TPE36
			Depth	0.90	2.40	0.50	2.50-3.00	0.20-0.50	2.70-3.70
			Other ID	1	2	1	2	1	2
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	25-Apr-17	25-Apr-17	25-Apr-17	25-Apr-17	24-Apr-17	24-Apr-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4		220	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10		230	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10		630	< 10	< 10	< 10
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03		< 0.03	< 0.03	0.15	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03		0.07	< 0.03	0.05	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03		0.08	< 0.03	0.06	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03		0.11	< 0.03	0.03	0.06
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.14		0.46	0.15	0.21	0.20
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03		0.24	< 0.03	0.08	0.07
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.28		0.75	0.19	0.25	0.24
Pyrene	DETSC 3303#	0.03	mg/kg	0.22		0.64	0.13	0.17	0.18
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.09		0.23	0.05	0.10	0.11
Chrysene	DETSC 3303	0.03	mg/kg	0.10		0.29	0.04	0.11	0.11
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.11		0.36	< 0.03	0.12	0.12
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.04		0.14	< 0.03	0.03	0.05
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.06		0.23	< 0.03	0.06	0.08
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.04		0.14	< 0.03	0.05	0.05
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03		< 0.03	< 0.03	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.04		0.18	< 0.03	0.06	0.05
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	1.1		3.9	0.57	1.5	1.3
PCBs									
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01			
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01			
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01			
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01			
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01			
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01			
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01			
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01			
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3		< 0.3	< 0.3	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-98272
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1165311	1165312	1165313	1165314	1165315	1165316
			Sample ID	TPE46	TPE46	TPH05	TPH05	TPI30	TPE26
			Depth	1.50	3.40	0.40-1.10	1.10-1.80	1.00-1.50	1.40
			Other ID	2	3	1	2	1	1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	24-Apr-17	24-Apr-17	25-Apr-17	25-Apr-17	26-Apr-17	24-Apr-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Metals									
Antimony	DETSC 2301*	1	mg/kg	1.1			< 1.0		
Arsenic	DETSC 2301#	0.2	mg/kg	7.8	7.1	22	3.2	8.5	39
Barium	DETSC 2301#	1.5	mg/kg	120			170		
Beryllium	DETSC 2301#	0.2	mg/kg	0.9			< 0.2		
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	2.3	4.6	1.8	2.3	3.6	1.3
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.6	0.5	0.4	0.1	1.5
Chromium	DETSC 2301#	0.15	mg/kg	23	770	66	18	15	540
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0			< 1.0		
Copper	DETSC 2301#	0.2	mg/kg	11	31	16	5.0	6.0	86
Iron	DETSC 2301	25	mg/kg					14000	82000
Lead	DETSC 2301#	0.3	mg/kg	23	34	33	6.7	6.0	230
Mercury	DETSC 2325#	0.05	mg/kg	0.17	0.09	0.22	< 0.05	0.05	0.12
Molybdenum	DETSC 2301#	0.4	mg/kg	0.6			1.3		
Nickel	DETSC 2301#	1	mg/kg	11	7.8	22	4.7	22	23
Vanadium	DETSC 2301	0.8	mg/kg	57			40		
Zinc	DETSC 2301#	1	mg/kg	89	160	110	22	24	310
Inorganics									
pH	DETSC 2008#			9.4	12.4	11.7	12.6	12.6	11.1
Cyanide, Total	DETSC 2130#	0.1	mg/kg	1.2	0.3	0.5	< 0.1	0.2	0.4
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1			< 0.1	< 0.1	< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	1.2			< 0.2	0.2	0.4
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6			< 0.6	1.6	< 0.6
Organic matter	DETSC 2002#	0.1	%	1.1	0.4	1.3	1.8	1.6	0.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	320	190	440	35	100	1500
Sulphur as S, Total	DETSC 2320	0.01	%						
Sulphate as SO4, Total	DETSC 2321#	0.01	%						
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	2.4	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	19	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	93	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	120	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	1.7	< 0.6

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-98272
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1165311	1165312	1165313	1165314	1165315	1165316
			Sample ID	TPE46	TPE46	TPH05	TPH05	TPI30	TPE26
			Depth	1.50	3.40	0.40-1.10	1.10-1.80	1.00-1.50	1.40
			Other ID	2	3	1	2	1	1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	24-Apr-17	24-Apr-17	25-Apr-17	25-Apr-17	26-Apr-17	24-Apr-17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	16	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	18	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	130	< 10
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 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	0.08	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 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
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.17	0.43	< 0.03	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.22	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.06	< 0.03	0.28	4.1	< 0.03	0.05
Pyrene	DETSC 3303#	0.03	mg/kg	0.05	< 0.03	0.22	5.6	< 0.03	0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.04	< 0.03	0.12	2.0	< 0.03	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	0.04	< 0.03	0.13	1.8	< 0.03	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.05	< 0.03	0.16	4.8	< 0.03	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.06	2.1	< 0.03	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.03	< 0.03	0.09	3.2	< 0.03	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.03	< 0.03	0.07	2.2	< 0.03	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.38	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.03	< 0.03	0.09	2.2	< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.35	< 0.10	1.4	29	< 0.10	< 0.10
PCBs									
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01			< 0.01		< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01			< 0.01		< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01			< 0.01		< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01			< 0.01		< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01			< 0.01		< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01			< 0.01		< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01			< 0.01		< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01			< 0.01		< 0.01
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-98272
Client Ref SLS1015
Contract Title Redcar Site

	Lab No	1165317	1165318
	Sample ID	TPE26	TPE55
	Depth	2.80	3.80
	Other ID	3	3
	Sample Type	ES	ES
	Sampling Date	24-Apr-17	24-Apr-17
	Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Metals					
Antimony	DETSC 2301*	1	mg/kg		
Arsenic	DETSC 2301#	0.2	mg/kg	43	7.0
Barium	DETSC 2301#	1.5	mg/kg		
Beryllium	DETSC 2301#	0.2	mg/kg		
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	3.5	4.8
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.7
Chromium	DETSC 2301#	0.15	mg/kg	42	760
Chromium, Hexavalent	DETSC 2204*	1	mg/kg		
Copper	DETSC 2301#	0.2	mg/kg	13	48
Iron	DETSC 2301	25	mg/kg		
Lead	DETSC 2301#	0.3	mg/kg	42	50
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg		
Nickel	DETSC 2301#	1	mg/kg	9.2	10
Vanadium	DETSC 2301	0.8	mg/kg		
Zinc	DETSC 2301#	1	mg/kg	200	85
Inorganics					
pH	DETSC 2008#			11.3	12.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.1	1.6
Cyanide, Free	DETSC 2130#	0.1	mg/kg		
Cyanide, Complex	DETSC 2130*	0.2	mg/kg		
Thiocyanate	DETSC 2130#	0.6	mg/kg		
Organic matter	DETSC 2002#	0.1	%	0.6	0.3
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1600	92
Sulphur as S, Total	DETSC 2320	0.01	%	< 0.01	
Sulphate as SO4, Total	DETSC 2321#	0.01	%	1.7	
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	3.6
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	16
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	72
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	92
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	4.3
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	24

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-98272
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1165317	1165318
			Sample ID	TPE26	TPE55
			Depth	2.80	3.80
			Other ID	3	3
			Sample Type	ES	ES
			Sampling Date	24-Apr-17	24-Apr-17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	71
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	99
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	190
PAHs					
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	0.04
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	0.25
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.04
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	0.23
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	1.8
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	0.74
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.03	3.1
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	2.7
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	1.3
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	1.3
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	1.5
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.63
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.88
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.53
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	0.16
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	0.53
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10	16
PCBs					
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg		
PCB 52	DETSC 3401#	0.01	mg/kg		
PCB 101	DETSC 3401#	0.01	mg/kg		
PCB 118	DETSC 3401#	0.01	mg/kg		
PCB 153	DETSC 3401#	0.01	mg/kg		
PCB 138	DETSC 3401#	0.01	mg/kg		
PCB 180	DETSC 3401#	0.01	mg/kg		
PCB 7 Total	DETSC 3401#	0.01	mg/kg		
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3

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Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-98272
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1165308
Sample ID	TPH06
Depth	2.50-3.00
Other ID	2
Sample Type	ES
Sampling Date	25-Apr-17
Sampling Time	n/s

Test	Method	LOD	Units	
VOCs				
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-98272
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1165308
Sample ID	TPH06
Depth	2.50-3.00
Other ID	2
Sample Type	ES
Sampling Date	25-Apr-17
Sampling Time	n/s

Test	Method	LOD	Units	
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01
SVOCs				
Phenol	DETSC 3433	0.1	mg/kg	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-98272
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1165308
Sample ID	TPH06
Depth	2.50-3.00
Other ID	2
Sample Type	ES
Sampling Date	25-Apr-17
Sampling Time	n/s

Test	Method	LOD	Units	
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-98272
Client Ref SLS1015
Contract Title Redcar Site

	Lab No	1165319	1165320	1165321	1165322	1165323
	Sample ID	TPH04	TPH06	TPE36	TPI30	TPE26
	Depth	0.90	0.50	2.70-3.70	1.00-1.50	1.40
	Other ID	1	1	2	1	1
	Sample Type	ES	ES	ES	ES	ES
	Sampling Date	25-Apr-17	25-Apr-17	24-Apr-17	26-Apr-17	24-Apr-17
	Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Preparation						
Leachate 10:1	DETS 036*			Y	Y	Y	Y	Y
Metals								
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	1.3	4.0	3.2	4.4	1.5
Barium, Dissolved	DETSC 2306	0.26	ug/l	6.5	12		25	40
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1		< 0.1	< 0.1
Boron	DETSC 2123	100	ug/l	180	140	100	160	150
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	16	1.4	< 0.25	10	0.32
Copper, Dissolved	DETSC 2306	0.4	ug/l	4.8	2.1	1.4	7.9	1.0
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.27	0.16	< 0.09	0.69	< 0.09
Manganese, Dissolved	DETSC 2306	0.22	ug/l	0.27	2.3		12	13
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	0.01	< 0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5	0.6	2.2	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	2.3	1.6	0.48	0.29	< 0.25
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	14	18		22	< 0.6
Zinc, Dissolved	DETSC 2306	1.3	ug/l	< 1.3	< 1.3	2.8	7.4	1.6
Inorganics								
pH	DETSC 2008			11.5	9.8	6.6	10.9	7.9
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	37	< 0.015		0.11	0.026
Chloride	DETSC 2055	0.1	mg/l	2.7	1.7		2.0	1.6

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-98272
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1165305	TPH04 1 0.90	SOIL	NAD	none	Steven Lambert
1165307	TPH06 1 0.50	SOIL	NAD	none	Steven Lambert
1165308	TPH06 2 2.50-3.00	SOIL	NAD	none	Steven Lambert
1165309	TPE27 1 0.20-0.50	SOIL	Chrysotile	Small bundle of Chrysotile	Steven Lambert
1165310	TPE36 2 2.70-3.70	SOIL	Chrysotile	Bundle of Chrysotile	Steven Lambert
1165311	TPE46 2 1.50	SOIL	NAD	none	Steven Lambert
1165312	TPE46 3 3.40	SOIL	NAD	none	Steven Lambert
1165313	TPH05 1 0.40-1.10	SOIL	NAD	none	Steven Lambert
1165314	TPH05 2 1.10-1.80	SOIL	NAD	none	Steven Lambert
1165315	TPI30 1 1.00-1.50	SOIL	NAD	none	Steven Lambert
1165316	TPE26 1 1.40	SOIL	NAD	none	Steven Lambert
1165317	TPE26 3 2.80	SOIL	NAD	none	Steven Lambert
1165318	TPE55 3 3.80	SOIL	Chrysotile	Bundle of Chrysotile	Steven Lambert

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 17-98272
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1165305	TPH04 0.90 SOIL	25/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165306	TPH04 2.40 SOIL	25/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165307	TPH06 0.50 SOIL	25/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165308	TPH06 2.50-3.00 SOIL	25/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165309	TPE27 0.20-0.50 SOIL	24/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165310	TPE36 2.70-3.70 SOIL	24/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165311	TPE46 1.50 SOIL	24/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165312	TPE46 3.40 SOIL	24/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165313	TPH05 0.40-1.10 SOIL	25/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165314	TPH05 1.10-1.80 SOIL	25/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165315	TPI30 1.00-1.50 SOIL	26/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165316	TPE26 1.40 SOIL	24/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165317	TPE26 2.80 SOIL	24/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165318	TPE55 3.80 SOIL	24/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165319	TPH04 0.90 LEACHATE	25/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165320	TPH06 0.50 LEACHATE	25/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165321	TPE36 2.70-3.70 LEACHATE	24/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165322	TPI30 1.00-1.50 LEACHATE	26/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165323	TPE26 1.40 LEACHATE	24/04/17	GJ 250ml x2, 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

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Certificate of Analysis

Certificate Number 17-98272-1

02-Jun-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-98272-1

Client Reference SLS1015

Order No CH-1332

Contract Title Redcar Site

Description 14 Soil samples, 5 Leachate samples.

Date Received 28-Apr-17

Date Started 28-Apr-17

Date Completed 02-Jun-17

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

Notes **This report supersedes 17-98272. Extra testing.**

Opinions and interpretations are outside the laboratory's scope of ISO 10725 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

Adam Fenwick
Contracts Manager

mCERTS
THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 17-98272-1
Client Ref SLS1015
Contract Title Redcar Site

Sample ID	Other ID	Depth	Lab No	Completed	Matrix Description
TPH04	1	0.9	1165305	05/05/2017	Brown sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TPH04	2	2.4	1165306	05/05/2017	Brown gravelly, sandy CLAY
TPH06	1	0.5	1165307	05/05/2017	Brown sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TPH06	2	2.50-3.00	1165308	05/05/2017	Brown sandy CLAY
TPE27	1	0.20-0.50	1165309	05/05/2017	Brown gravelly, sandy CLAY
TPE36	2	2.70-3.70	1165310	05/05/2017	Brown gravelly, sandy CLAY
TPE46	2	1.5	1165311	05/05/2017	Brown gravelly, sandy CLAY
TPE46	3	3.4	1165312	05/05/2017	Brown gravelly, sandy CLAY
TPH05	1	0.40-1.10	1165313	05/05/2017	Brown gravelly, sandy CLAY
TPH05	2	1.10-1.80	1165314	05/05/2017	White sandy CLAY
TPI30	1	1.00-1.50	1165315	05/05/2017	Brown gravelly, sandy CLAY
TPE26	1	1.4	1165316	05/05/2017	Brown gravelly, sandy CLAY
TPE26	3	2.8	1165317	05/05/2017	Brown gravelly SAND
TPE55	3	3.8	1165318	05/05/2017	Brown sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)

Summary of Chemical Analysis
Soil Samples

Our Ref 17-98272-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1165305	1165306	1165307	1165308	1165309	1165310
			Sample ID	TPH04	TPH04	TPH06	TPH06	TPE27	TPE36
			Depth	0.90	2.40	0.50	2.50-3.00	0.20-0.50	2.70-3.70
			Other ID	1	2	1	2	1	2
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	25/04/17	25/04/17	25/04/17	25/04/17	24/04/17	24/04/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Asbestos Quantification	DETSC 1102	0						Y	Y
Metals									
Antimony	DETSC 2301*	1	mg/kg	13		3.9			
Arsenic	DETSC 2301#	0.2	mg/kg	8.3		12	11	37	120
Barium	DETSC 2301#	1.5	mg/kg	960		280			
Beryllium	DETSC 2301#	0.2	mg/kg	0.7		1.9			
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	3.9		2.5	2.1	4.2	2.9
Cadmium	DETSC 2301#	0.1	mg/kg	0.7		1.2	0.5	7.6	0.5
Chromium	DETSC 2301#	0.15	mg/kg	1200		120	48	39	69
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0		< 1.0	< 1.0		
Copper	DETSC 2301#	0.2	mg/kg	39		45	28	54	19
Iron	DETSC 2301	25	mg/kg	94000		48000			
Lead	DETSC 2301#	0.3	mg/kg	37		79	41	450	76
Mercury	DETSC 2325#	0.05	mg/kg	0.06		< 0.05	< 0.05	< 0.05	0.26
Molybdenum	DETSC 2301#	0.4	mg/kg	5.4		1.9			
Nickel	DETSC 2301#	1	mg/kg	11		19	26	40	16
Vanadium	DETSC 2301	0.8	mg/kg	2000		130			
Zinc	DETSC 2301#	1	mg/kg	110		310	110	1900	310
Inorganics									
pH	DETSC 2008#			12.4	11.9	11.2	10.0	9.8	10.4
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.4		9.6	1.8	46	0.4
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1		< 0.1			
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	0.4		9.6			
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6		< 0.6			
Organic matter	DETSC 2002#	0.1	%	0.9		4.1	5.6	1.2	0.9
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	< 10	140	330	270	400	1500
Sulphur as S, Total	DETSC 2320	0.01	%		0.01			0.04	0.12
Sulphate as SO4, Total	DETSC 2321#	0.01	%		1.2			0.20	2.2
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5		< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2		1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5		26	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4		370	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10		390	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9		< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5		0.6	< 0.5	< 0.5	< 0.5

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-98272-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1165305	1165306	1165307	1165308	1165309	1165310
			Sample ID	TPH04	TPH04	TPH06	TPH06	TPE27	TPE36
			Depth	0.90	2.40	0.50	2.50-3.00	0.20-0.50	2.70-3.70
			Other ID	1	2	1	2	1	2
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	25/04/17	25/04/17	25/04/17	25/04/17	24/04/17	24/04/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6		13	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4		220	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10		230	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10		630	< 10	< 10	< 10
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03		< 0.03	< 0.03	0.15	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03		0.07	< 0.03	0.05	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03		0.08	< 0.03	0.06	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03		0.11	< 0.03	0.03	0.06
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.14		0.46	0.15	0.21	0.20
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03		0.24	< 0.03	0.08	0.07
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.28		0.75	0.19	0.25	0.24
Pyrene	DETSC 3303#	0.03	mg/kg	0.22		0.64	0.13	0.17	0.18
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.09		0.23	0.05	0.10	0.11
Chrysene	DETSC 3303	0.03	mg/kg	0.10		0.29	0.04	0.11	0.11
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.11		0.36	< 0.03	0.12	0.12
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.04		0.14	< 0.03	0.03	0.05
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.06		0.23	< 0.03	0.06	0.08
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.04		0.14	< 0.03	0.05	0.05
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03		< 0.03	< 0.03	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.04		0.18	< 0.03	0.06	0.05
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	1.1		3.9	0.57	1.5	1.3
PCBs									
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01			
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01			
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01			
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01			
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01			
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01			
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01			
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01		< 0.01			
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3		< 0.3	< 0.3	< 0.3	< 0.3

Summary of Chemical Analysis
Soil Samples

Our Ref 17-98272-1
Client Ref SLS1015
Contract Title Redcar Site

	Lab No	1165311	1165312	1165313	1165314	1165315	1165316
	Sample ID	TPE46	TPE46	TPH05	TPH05	TPI30	TPE26
	Depth	1.50	3.40	0.40-1.10	1.10-1.80	1.00-1.50	1.40
	Other ID	2	3	1	2	1	1
	Sample Type	ES	ES	ES	ES	ES	ES
	Sampling Date	24/04/17	24/04/17	25/04/17	25/04/17	26/04/17	24/04/17
	Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Asbestos Quantification	DETSC 1102	0					
Metals							
Antimony	DETSC 2301*	1	mg/kg	1.1			< 1.0		
Arsenic	DETSC 2301#	0.2	mg/kg	7.8	7.1	22	3.2	8.5	39
Barium	DETSC 2301#	1.5	mg/kg	120			170		
Beryllium	DETSC 2301#	0.2	mg/kg	0.9			< 0.2		
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	2.3	4.6	1.8	2.3	3.6	1.3
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.6	0.5	0.4	0.1	1.5
Chromium	DETSC 2301#	0.15	mg/kg	23	770	66	18	15	540
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0			< 1.0		
Copper	DETSC 2301#	0.2	mg/kg	11	31	16	5.0	6.0	86
Iron	DETSC 2301	25	mg/kg					14000	82000
Lead	DETSC 2301#	0.3	mg/kg	23	34	33	6.7	6.0	230
Mercury	DETSC 2325#	0.05	mg/kg	0.17	0.09	0.22	< 0.05	0.05	0.12
Molybdenum	DETSC 2301#	0.4	mg/kg	0.6			1.3		
Nickel	DETSC 2301#	1	mg/kg	11	7.8	22	4.7	22	23
Vanadium	DETSC 2301	0.8	mg/kg	57			40		
Zinc	DETSC 2301#	1	mg/kg	89	160	110	22	24	310
Inorganics									
pH	DETSC 2008#			9.4	12.4	11.7	12.6	12.6	11.1
Cyanide, Total	DETSC 2130#	0.1	mg/kg	1.2	0.3	0.5	< 0.1	0.2	0.4
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1			< 0.1	< 0.1	< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	1.2			< 0.2	0.2	0.4
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6			< 0.6	1.6	< 0.6
Organic matter	DETSC 2002#	0.1	%	1.1	0.4	1.3	1.8	1.6	0.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	320	190	440	35	100	1500
Sulphur as S, Total	DETSC 2320	0.01	%						
Sulphate as SO4, Total	DETSC 2321#	0.01	%						
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	2.4	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	19	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	93	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	120	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-98272-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1165311	1165312	1165313	1165314	1165315	1165316
			Sample ID	TPE46	TPE46	TPH05	TPH05	TPI30	TPE26
			Depth	1.50	3.40	0.40-1.10	1.10-1.80	1.00-1.50	1.40
			Other ID	2	3	1	2	1	1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	24/04/17	24/04/17	25/04/17	25/04/17	26/04/17	24/04/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	1.7	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	16	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	18	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	130	< 10
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 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	0.08	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 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
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.17	0.43	< 0.03	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.22	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.06	< 0.03	0.28	4.1	< 0.03	0.05
Pyrene	DETSC 3303#	0.03	mg/kg	0.05	< 0.03	0.22	5.6	< 0.03	0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.04	< 0.03	0.12	2.0	< 0.03	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	0.04	< 0.03	0.13	1.8	< 0.03	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.05	< 0.03	0.16	4.8	< 0.03	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.06	2.1	< 0.03	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.03	< 0.03	0.09	3.2	< 0.03	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.03	< 0.03	0.07	2.2	< 0.03	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.38	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.03	< 0.03	0.09	2.2	< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.35	< 0.10	1.4	29	< 0.10	< 0.10
PCBs									
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01			< 0.01		< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01			< 0.01		< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01			< 0.01		< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01			< 0.01		< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01			< 0.01		< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01			< 0.01		< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01			< 0.01		< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01			< 0.01		< 0.01
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-98272-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1165317	1165318
			Sample ID	TPE26	TPE55
			Depth	2.80	3.80
			Other ID	3	3
			Sample Type	ES	ES
			Sampling Date	24/04/17	24/04/17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Asbestos Quantification	DETSC 1102	0			Y
Metals					
Antimony	DETSC 2301*	1	mg/kg		
Arsenic	DETSC 2301#	0.2	mg/kg	43	7.0
Barium	DETSC 2301#	1.5	mg/kg		
Beryllium	DETSC 2301#	0.2	mg/kg		
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	3.5	4.8
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.7
Chromium	DETSC 2301#	0.15	mg/kg	42	760
Chromium, Hexavalent	DETSC 2204*	1	mg/kg		
Copper	DETSC 2301#	0.2	mg/kg	13	48
Iron	DETSC 2301	25	mg/kg		
Lead	DETSC 2301#	0.3	mg/kg	42	50
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg		
Nickel	DETSC 2301#	1	mg/kg	9.2	10
Vanadium	DETSC 2301	0.8	mg/kg		
Zinc	DETSC 2301#	1	mg/kg	200	85
Inorganics					
pH	DETSC 2008#			11.3	12.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.1	1.6
Cyanide, Free	DETSC 2130#	0.1	mg/kg		
Cyanide, Complex	DETSC 2130*	0.2	mg/kg		
Thiocyanate	DETSC 2130#	0.6	mg/kg		
Organic matter	DETSC 2002#	0.1	%	0.6	0.3
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1600	92
Sulphur as S, Total	DETSC 2320	0.01	%	< 0.01	
Sulphate as SO4, Total	DETSC 2321#	0.01	%	1.7	
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	3.6
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	16
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	72
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	92
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	4.3

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Summary of Chemical Analysis
Soil Samples

Our Ref 17-98272-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1165317	1165318
			Sample ID	TPE26	TPE55
			Depth	2.80	3.80
			Other ID	3	3
			Sample Type	ES	ES
			Sampling Date	24/04/17	24/04/17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	24
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	71
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	99
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	190
PAHs					
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	0.04
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	0.25
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.04
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	0.23
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	1.8
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	0.74
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.03	3.1
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	2.7
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	1.3
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	1.3
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	1.5
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.63
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.88
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.53
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	0.16
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	0.53
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10	16
PCBs					
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg		
PCB 52	DETSC 3401#	0.01	mg/kg		
PCB 101	DETSC 3401#	0.01	mg/kg		
PCB 118	DETSC 3401#	0.01	mg/kg		
PCB 153	DETSC 3401#	0.01	mg/kg		
PCB 138	DETSC 3401#	0.01	mg/kg		
PCB 180	DETSC 3401#	0.01	mg/kg		
PCB 7 Total	DETSC 3401#	0.01	mg/kg		
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-98272-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1165308
Sample ID	TPH06
Depth	2.50-3.00
Other ID	2
Sample Type	ES
Sampling Date	25/04/17
Sampling Time	n/s

Test	Method	LOD	Units	
VOCs				
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-98272-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1165308
Sample ID	TPH06
Depth	2.50-3.00
Other ID	2
Sample Type	ES
Sampling Date	25/04/17
Sampling Time	n/s

Test	Method	LOD	Units	
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01
SVOCs				
Phenol	DETSC 3433	0.1	mg/kg	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-98272-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1165308
Sample ID	TPH06
Depth	2.50-3.00
Other ID	2
Sample Type	ES
Sampling Date	25/04/17
Sampling Time	n/s

Test	Method	LOD	Units	
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1

Summary of Chemical Analysis
Leachate Samples

Our Ref 17-98272-1
Client Ref SLS1015
Contract Title Redcar Site

	Lab No	1165319	1165320	1165321	1165322	1165323
	Sample ID	TPH04	TPH06	TPE36	TPI30	TPE26
	Depth	0.90	0.50	2.70-3.70	1.00-1.50	1.40
	Other ID	1	1	2	1	1
	Sample Type	ES	ES	ES	ES	ES
	Sampling Date	25/04/17	25/04/17	24/04/17	26/04/17	24/04/17
	Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Preparation						
Leachate 10:1	DETS 036*			Y	Y	Y	Y	Y
Metals								
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	1.3	4.0	3.2	4.4	1.5
Barium, Dissolved	DETSC 2306	0.26	ug/l	6.5	12		25	40
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1	< 0.1		< 0.1	< 0.1
Boron	DETSC 2123	100	ug/l	180	140	100	160	150
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	16	1.4	< 0.25	10	0.32
Copper, Dissolved	DETSC 2306	0.4	ug/l	4.8	2.1	1.4	7.9	1.0
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.27	0.16	< 0.09	0.69	< 0.09
Manganese, Dissolved	DETSC 2306	0.22	ug/l	0.27	2.3		12	13
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	0.01	< 0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5	0.6	2.2	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	2.3	1.6	0.48	0.29	< 0.25
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	14	18		22	< 0.6
Zinc, Dissolved	DETSC 2306	1.3	ug/l	< 1.3	< 1.3	2.8	7.4	1.6
Inorganics								
pH	DETSC 2008			11.5	9.8	6.6	10.9	7.9
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	37	< 0.015		0.11	0.026
Chloride	DETSC 2055	0.1	mg/l	2.7	1.7		2.0	1.6

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-98272-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1165305	TPH04 1 0.90	SOIL	NAD	none	Steven Lambert
1165307	TPH06 1 0.50	SOIL	NAD	none	Steven Lambert
1165308	TPH06 2 2.50-3.00	SOIL	NAD	none	Steven Lambert
1165309	TPE27 1 0.20-0.50	SOIL	Chrysotile	Small bundle of Chrysotile	Steven Lambert
1165310	TPE36 2 2.70-3.70	SOIL	Chrysotile	Bundle of Chrysotile	Steven Lambert
1165311	TPE46 2 1.50	SOIL	NAD	none	Steven Lambert
1165312	TPE46 3 3.40	SOIL	NAD	none	Steven Lambert
1165313	TPH05 1 0.40-1.10	SOIL	NAD	none	Steven Lambert
1165314	TPH05 2 1.10-1.80	SOIL	NAD	none	Steven Lambert
1165315	TPI30 1 1.00-1.50	SOIL	NAD	none	Steven Lambert
1165316	TPE26 1 1.40	SOIL	NAD	none	Steven Lambert
1165317	TPE26 3 2.80	SOIL	NAD	none	Steven Lambert
1165318	TPE55 3 3.80	SOIL	Chrysotile	Bundle of Chrysotile	Steven Lambert

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.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 17-98272-1
Client Ref SLS1015
Contract Title Redcar Site

		Lab No	1165309	1165310	1165318
		Sample ID	TPE27	TPE36	TPE55
		Depth	0.20-0.50	2.70-3.70	3.80
		Other ID	1	2	3
		Sample Type	SOIL	SOIL	SOIL
		Sampling Date	24/04/17	24/04/17	24/04/17
		Sampling Time			
Test	**Method**	**Units**			
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**< 0.001**	**0.006**	**0.005**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na	na	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	<0.001	0.006	0.005
Quantification by PCOM (c)	DETSC 1102	Mass %	na	na	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na	na	na
Breakdown of Gravimetric Analysis (a)					
Mass of Sample		g	980.75	716.09	1010.61
ACMs present*		type			
Mass of ACM in sample		g			
% ACM by mass		%			
% asbestos in ACM		%			
% asbestos in sample		%			
Breakdown of Detailed Gravimetric Analysis (b)					
% Amphibole bundles in sample		Mass %	na	na	na
% Chrysotile bundles in sample		Mass %	<0.001	0.006	0.005
Breakdown of PCOM Analysis (c)					
% Amphibole fibres in sample		Mass %	na	na	na
% Chrysotile fibres in sample		Mass %	na	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)					
Amphibole fibres		Fibres/g	na	na	na
Chrysotile fibres		Fibres/g	na	na	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Information in Support of the Analytical Results

Our Ref 17-98272-1
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1165305	TPH04 0.90 SOIL	25/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165306	TPH04 2.40 SOIL	25/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165307	TPH06 0.50 SOIL	25/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165308	TPH06 2.50-3.00 SOIL	25/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165309	TPE27 0.20-0.50 SOIL	24/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165310	TPE36 2.70-3.70 SOIL	24/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165311	TPE46 1.50 SOIL	24/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165312	TPE46 3.40 SOIL	24/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165313	TPH05 0.40-1.10 SOIL	25/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165314	TPH05 1.10-1.80 SOIL	25/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165315	TPI30 1.00-1.50 SOIL	26/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165316	TPE26 1.40 SOIL	24/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165317	TPE26 2.80 SOIL	24/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165318	TPE55 3.80 SOIL	24/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165319	TPH04 0.90 LEACHATE	25/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165320	TPH06 0.50 LEACHATE	25/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165321	TPE36 2.70-3.70 LEACHATE	24/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165322	TPI30 1.00-1.50 LEACHATE	26/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1165323	TPE26 1.40 LEACHATE	24/04/17	GJ 250ml x2, 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

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Certificate of Analysis

Certificate Number 17-98534-1

01-Jun-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-98534-1

Client Reference SLS1015

Order No CH-1332

Contract Title Redcar Site

Description 5 Soil samples.

Date Received 02-May-17

Date Started 03-May-17

Date Completed 01-Jun-17

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

Notes **This report supersedes 17-98534. Extra testing.**

Opinions and interpretations are outside the laboratory's scope of ISO 10725 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

Adam Fenwick
Contracts Manager

mCERTS
THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 17-98534-1
Client Ref SLS1015
Contract Title Redcar Site

Sample ID	Other ID	Depth	Lab No	Completed	Matrix Description
TPC11	E2	2.00-2.50	1166961	09/05/2017	Black gravelly, sandy CLAY hydrocarbon odour
TPC11	E3	2.00-2.50	1166962	09/05/2017	Dark grey sandy CLAY
TPC03	E1	0.00-0.40	1166963	09/05/2017	Brown gravelly, sandy CLAY (Made ground - brick, coal)
TPE21	E1	0.10-0.40	1166964	09/05/2017	Dark brown gravelly SAND (Made ground - brick)
TPE21	E4	4.00-4.50	1166965	09/05/2017	Brown sandy CLAY

Summary of Chemical Analysis
Soil Samples

Our Ref 17-98534-1
Client Ref SLS1015
Contract Title Redcar Site

	Lab No	1166961	1166962	1166963	1166964	1166965
	Sample ID	TPC11	TPC11	TPC03	TPE21	TPE21
	Depth	2.00-2.50	2.00-2.50	0.00-0.40	0.10-0.40	4.00-4.50
	Other ID	E2	E3	E1	E1	E4
	Sample Type	ES	ES	ES	ES	ES
	Sampling Date	27/04/17	27/04/17	27/04/17	28/04/17	28/04/17
	Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Asbestos Quantification	DETSC 1102	0				Y		
Metals								
Antimony	DETSC 2301*	1	mg/kg				2.4	1.8
Arsenic	DETSC 2301#	0.2	mg/kg	45	15	9.6	8.7	3.5
Barium	DETSC 2301#	1.5	mg/kg				140	72
Beryllium	DETSC 2301#	0.2	mg/kg				0.8	0.4
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	4.7	2.7	3.6	3.7	1.3
Cadmium	DETSC 2301#	0.1	mg/kg	0.8	1.6	1.7	0.4	0.5
Chromium	DETSC 2301#	0.15	mg/kg	25	89	52	36	22
Chromium, Hexavalent	DETSC 2204*	1	mg/kg				< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	59	40	36	72	16
Lead	DETSC 2301#	0.3	mg/kg	65	44	55	30	32
Mercury	DETSC 2325#	0.05	mg/kg	0.16	5.4	0.20	0.70	0.18
Molybdenum	DETSC 2301#	0.4	mg/kg				1.2	1.2
Nickel	DETSC 2301#	1	mg/kg	28	27	61	28	7.9
Vanadium	DETSC 2301	0.8	mg/kg				35	37
Zinc	DETSC 2301#	1	mg/kg	150	180	250	92	130
Inorganics								
pH	DETSC 2008#			8.5	9.2	11.7	8.3	8.7
Cyanide, Total	DETSC 2130#	0.1	mg/kg	1.9	2.6	0.5	0.6	46
Cyanide, Free	DETSC 2130#	0.1	mg/kg			< 0.1	< 0.1	3.8
Cyanide, Complex	DETSC 2130*	0.2	mg/kg			0.5	0.6	42
Thiocyanate	DETSC 2130#	0.6	mg/kg			< 0.6	< 0.6	1.4
Organic matter	DETSC 2002#	0.1	%	5.6	5.3	3.2	2.9	23
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	37	94	27	330	15
Petroleum Hydrocarbons								
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	0.02	0.03	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	2100	38	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	2500	23	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	3000	58	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	1000	33	< 3.4	37	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	8600	150	< 10	38	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	0.51	0.61	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	0.28	0.13	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	1.3	0.70	< 0.01	< 0.01	0.03
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	800	6.0	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	1100	5.7	< 0.5	3.8	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	2500	19	< 0.6	8.7	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	1800	29	< 1.4	24	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	6100	61	< 10	37	< 10

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-98534-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1166961	1166962	1166963	1166964	1166965
			Sample ID	TPC11	TPC11	TPC03	TPE21	TPE21
			Depth	2.00-2.50	2.00-2.50	0.00-0.40	0.10-0.40	4.00-4.50
			Other ID	E2	E3	E1	E1	E4
			Sample Type	ES	ES	ES	ES	ES
			Sampling Date	27/04/17	27/04/17	27/04/17	28/04/17	28/04/17
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	15000	210	< 10	74	< 10
PAHs								
Naphthalene	DETSC 3303#	0.03	mg/kg	4100	39	0.18	0.87	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	930	1.1	0.29	0.16	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	500	1.4	0.03	1.0	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	970	1.3	0.07	0.40	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	2900	2.9	0.27	1.4	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	750	0.47	0.10	0.30	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	1800	1.5	0.41	0.71	< 0.03
Pyrene	DETSC 3303#	0.03	mg/kg	1200	0.92	0.34	0.46	< 0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	460	0.24	0.24	0.23	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	380	0.24	0.32	0.25	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	420	0.24	0.41	0.26	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	180	0.08	0.07	0.10	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	290	0.15	0.16	0.16	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	130	0.08	0.09	0.10	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	41	< 0.03	0.05	0.04	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	130	0.08	0.10	0.11	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	15000	49	3.1	6.5	< 0.10
PCBs								
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg					< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg					< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg					< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg					< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg					< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg					< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg					< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg					< 0.01
Phenols								
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	1.0	1.1	< 0.3	< 0.3	14

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-98534-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1166961	1166962
			Sample ID	TPC11	TPC11
			Depth	2.00-2.50	2.00-2.50
			Other ID	E2	E3
			Sample Type	ES	ES
			Sampling Date	27/04/17	27/04/17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
VOCs					
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	0.01	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	2.8	0.64
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	1.3	0.18
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	0.07	0.12
m+p-Xylene	DETSC 3431	0.01	mg/kg	1.7	0.56
o-Xylene	DETSC 3431	0.01	mg/kg	0.82	0.54
Styrene	DETSC 3431*	0.01	mg/kg	0.58	0.07
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	0.01	0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	0.02	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	2.0	0.45
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	0.35	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	2.0	1.2

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-98534-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1166961	1166962
			Sample ID	TPC11	TPC11
			Depth	2.00-2.50	2.00-2.50
			Other ID	E2	E3
			Sample Type	ES	ES
			Sampling Date	27/04/17	27/04/17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	0.02	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	0.14	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
SVOCs					
Phenol	DETSC 3433	0.1	mg/kg	13	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	0.4	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	9.8	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	18	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	12	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	600	2.2
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	960	3.5
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 17-98534-1
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1166961	1166962
			Sample ID	TPC11	TPC11
			Depth	2.00-2.50	2.00-2.50
			Other ID	E2	E3
			Sample Type	ES	ES
			Sampling Date	27/04/17	27/04/17
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	180	2.7

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-98534-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1166961	TPC11 E2 2.00-2.50	SOIL	NAD	none	Colin Patrick
1166962	TPC11 E3 2.00-2.50	SOIL	NAD	none	Colin Patrick
1166963	TPC03 E1 0.00-0.40	SOIL	Amosite Chrysotile	bundle of Amosite+ Chrysotile fibres	Colin Patrick
1166964	TPE21 E1 0.10-0.40	SOIL	NAD	none	Colin Patrick
1166965	TPE21 E4 4.00-4.50	SOIL	NAD	none	Colin Patrick

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.

Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref 17-98534-1
Client Ref SLS1015
Contract Title Redcar Site

Lab No	1166963
Sample ID	TPC03
Depth	0.00-0.40
Other ID	E1
Sample Type	SOIL
Sampling Date	27/04/17
Sampling Time	

Test	**Method**	**Units**	
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**0.010**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	0.010
Quantification by PCOM (c)	DETSC 1102	Mass %	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na
Breakdown of Gravimetric Analysis (a)			
Mass of Sample		g	677.56
ACMs present*		type	
Mass of ACM in sample		g	
% ACM by mass		%	
% asbestos in ACM		%	
% asbestos in sample		%	
Breakdown of Detailed Gravimetric Analysis (b)			
% Amphibole bundles in sample		Mass %	0.005
% Chrysotile bundles in sample		Mass %	0.004
Breakdown of PCOM Analysis (c)			
% Amphibole fibres in sample		Mass %	na
% Chrysotile fibres in sample		Mass %	na
Breakdown of Potentially Respirable Fibre Analysis (d)			
Amphibole fibres		Fibres/g	na
Chrysotile fibres		Fibres/g	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Information in Support of the Analytical Results

Our Ref 17-98534-1
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1166961	TPC11 2.00-2.50 SOIL	27/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1166962	TPC11 2.00-2.50 SOIL	27/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1166963	TPC03 0.00-0.40 SOIL	27/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1166964	TPE21 0.10-0.40 SOIL	28/04/17	GJ 250ml x2, GJ 60ml, PT 1L		
1166965	TPE21 4.00-4.50 SOIL	28/04/17	GJ 250ml x2, 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

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Geotechnical laboratory results

TRS REPORT

Report Ref: BG7F/AEG/RED/TRS/07/17/RP1
Date Issued: 21 July 2017
TRS Sample Refs: BG7F01-14
Order No: LA1855

EXAMINATION OF FOURTEEN BULK SAMPLES

FROM REDCAR SLS1015

FOR

ALLIED EXPLORATION & GEOTECHNICS LTD

Thomas Research Services Ltd.
Tel: +44 (0) 1469 532 929
www.slagtest.co.uk
Unit 7, Tattershall Castle Court, Morgan Way, New Holland,
North Lincolnshire, DN19 7PZ, United Kingdom
A Limited Company registered in England. Company Registration No: 251842

EXAMINATION OF FOURTEEN BULK SAMPLES FROM REDCAR SLS1015 FOR ALLIED EXPLORATION & GEOTECHNICS LTD

1. BACKGROUND

Fourteen bulk samples were received from the above site on 6th June 2017. Each sample was weighed and allocated a unique TRS reference number, the details of which are recorded below:-

TRS Ref	Site Ref	Depth/m	Mass/kg
BG7F01	TP22 LB4	1.5	14.2
BG7F02	TP26 LB3	2.0	24.7
BG7F03	TP41 LB1	0.2	30.0
BG7F04	TPC23 LB2	0.3	13.9
BG7F05	TPD10 LB1	0.5	20.0
BG7F06	TPD32 LB2	1.3	13.5
BG7F07	TPD33 LB2	1.0	15.1
BG7F08	TPD44 LB1	0.5	14.4
BG7F09	TPE09 LB1	1.0	19.9
BG7F10	TPE11 LB2	1.7	16.1
BG7F11	TPE31 LB3	3.6	16.3
BG7F12	TPE46 LB1	0.3	16.7
BG7F13	TPE76 LB2	2.1	26.5
BG7F14	TPI36 LB2	2.0	21.0

The purpose of the exercise was to identify the range and relative concentrations of any iron and steelmaking slags present in the samples, and whether there was any potential for volumetric instability from the materials.

2. SAMPLE PREPARATION & PROGRAMME OF ANALYSIS

The fourteen samples were primary crushed to reduce particle size down to <50mm, portions then being selected and dried at low temperature to constant weight. The dried material was subjected to a regime of stage crushing and quartering to further reduce particle size down to <5mm. Portions of this <5mm material were made up into resin bound blocks, one face of which was ground flat and polished using diamond pastes. Further portions of the <5mm material were milled to a fine powder. Fractions of material were extraction throughout the preparation procedure to provide the materials necessary for the tests and analyses required in the programme.

A petrological examination was made of the polished blocks using reflected light microscopy, the complete findings of which are recorded in appendix A. On the basis of these results, and after discussions with the client, the following tests were carried out on samples BG7F 01, 06, 10, 11, 12, 13 & 14:-

- Water & acid soluble sulphates (table 1)
- Total sulphur (table 1)
- Free CaO & free MgO (samples BG7F 13 & 14 only) (table 2)
- Thermal analysis (DTA & TGA) (table 3)
- TRS accelerated expansion test (table 4)

3. DISCUSSION OF RESULTS

3.1 Petrology

A petrological examination was made of the fourteen samples using reflected light microscopy. The complete findings of this examination are recorded in appendix A.

All of the samples except BG7F13 contained large or very large amounts of blast furnace slag. Basic steel slag was the dominant constituent in sample BG7F13, as was present in medium amounts in sample 14, and small amounts in samples 3 and 4. Very small amounts of basic refractory material were seen in samples 8 and 14.

Some of the samples, especially sample 4, contained loosely compacted fume/dust. Other constituents seen, generally in minor amounts, included quartz, iron ore, ooidal (local) ironstone, metallic iron, clay, coal, coke and used Portland cement.

The blast furnace slag was predominantly crystalline with a mineralogy dominated by melilite, although some glassy or ceramic material was seen. The slag was moderately altered due to weathering. Old weathered blast furnace slag may contain pockets of potentially expansive material. Potential for expansion can only be assessed with direct expansion testing (see sections 3.2 to 3.5).

The basic steel slag was fairly significantly altered due to weathering. The mineralogy of the material would suggest that there may be significant potential for expansion. Potential for expansion can only be assessed with direct expansion testing (see sections 3.2 to 3.5).

The basic refractory material, if present in greater concentrations on the site, could have significant potential for expansion.

3.2 Sulphur Species

The following range of analyses were performed on samples BG7F 01, 06, 10, 11, 12, 13 & 14. The results are recorded in table 1:-

- Water soluble sulphate
- Acid soluble sulphate
- Total sulphur

Total sulphur values were in the range 0.19 to 1.13 percent. Acid soluble sulphates were in the range 0.10 to 2.21 percent, with corresponding water soluble sulphates of 0.03 to 1.70 g/l. The lower sulphate and sulphur values were generally in samples with lower blast furnace slag contents. However,

some values were very high, and consequently, care should be taken when specifying concrete that may come into contact with the slag. Calculations show that between 4 and 78 percent of the available sulphur is present as sulphate.

3.3 Thermal Analysis

Simultaneous differential thermal analysis (DTA) and thermo-gravimetric analysis (TGA) were performed on samples BG7F 01, 06, 10, 11, 12, 13 & 14. The results are recorded in table three.

Ettringite was seen in all but two of the samples examined, at levels between 0.6 and 1.6 percent. Gypsum was seen in all but one of the samples, at between 0.3 and 3.3 percent. The presence of ettringite would suggest past expansion has occurred in the blast furnace slag.

Both calcium hydroxide and magnesium hydroxide were measured in sample BG7F13 at 0.6 and 0.5 percent. These values were used to correct the free CaO and free MgO analyses recorded in table 2.

Calcite was present in all of the samples examined at between 0.1 and 1.6 percent.

3.4 Free CaO & Free MgO

Free CaO & free MgO analyses were carried out on samples BG7F 13 & 14. The results are recorded in table 2. Both original and corrected values are recorded. The original values include both the oxide **(**CaO and MgO**)** and the hydroxide **(**($Ca(OH)_2$ and $Mg(OH)_2$)**)** contents. The corrected values report only the oxide content **(**CaO and MgO**)** after correction using the hydroxide values from the thermal analyses. These corrected values are the more significant, as it is only the oxides that are still free to hydrate, i.e. expand.

Free lime was recorded in the samples at 1.8 and 0.4 percent. Free magnesia was recorded at 0.3 and 0.3 percent. These corrected free lime and free magnesia levels record oxides that are potentially still free to hydrate (i.e. expand).

3.5 TRS Accelerated Expansion Test

The TRS accelerated expansion test was performed on samples BG7F 01, 06, 10, 11, 12, 13 & 14. The results are recorded in table four. The samples were subjected to the test for a period of 14 days, this being extended to 28 days for samples 13 & 14 due to the presence of basic steel slag. Note that the test measures potential for future expansion, and is not a measure of expansion that may have taken place in the past.

Most of the blast furnace slag samples recorded modest expansions, the exception being sample 1 that recorded 0.34% at 14 days. Sample 13, which was predominantly basic steel slag, recorded 1.55 % at 28 days. Sample 14, which was mixed slag, reached 0.36 % at 28 days.

4. CONCLUSIONS & RECOMMENDATIONS

The following conclusions can be drawn:-

- All but one of the samples contained significant amounts of blast furnace slag. The blast furnace slag was mainly crystalline and showed some alteration due to weathering. Old weathered blast furnace slag may contain pockets of potentially expansive material. Potential for expansion can only be assessed with direct expansion testing.
- Basic steel slag was the dominant constituent of one sample, and a more minor constituent of three. The basic steel slag, which was substantially altered due to weathering, could be a significant source of expansion. Potential for expansion can only be assessed with direct expansion testing.
- Minor amounts of basic refractory material were seen in two of the samples. If pockets of this material were to be present on the site, there could be significant risk of expansion.
- Other materials present, generally in minor concentrations, included quartz, iron ore, ooidal (local) ironstone, metallic iron, clay, coal, coke and used Portland cement.
- Some of the samples, especially sample 4, contained loosely compacted fume/dust.
- Further testing of the blast furnace slag indicated some high sulphate levels which should be taken into account when specifying concrete that may come into contact with the slag. There was also some evidence of past expansion with the presence of ettringite. Expansion testing recorded some potential for expansion, with one sample recording 0.34 percent

- Significant potential for expansion was recorded for the sample that was predominantly basic steel slag, with 1.55 percent recorded. Again, there was also evidence of past expansion with this material.

The following recommendations are made:-

The site from which these samples were taken is of significant size, potentially containing huge amounts of iron and steel industry slag. To date, only 14 samples have been examined, with expansion testing carried out on only 7. A much more significant site investigation, commensurate with the volume of material on site, should now be undertaken. This should aim to determine the distribution of slag types across the site, and further assess the expansive properties of the slag.

It is highly likely that material will be present on the site with far greater potential for expansion than that recorded in this small batch of samples.

<u>Note</u>
These conclusions apply only to the samples tested and may not represent the bulk of the material on the site from which they were taken.

Ian D. Thomas

Ian D Thomas BSc(Hons) **21 July 2017**

TABLE 1 **SULPHUR SPECIES ANALYSES**

TRS Ref	Site Ref	Water Sol. SO_3 (g/l)	Acid Sol. SO_3 (%)	Total S (%)
BG7F01	**TP22 - 1.5m**	0.97	2.21	1.13
BG7F06	**TPD32 - 1.3m**	1.00	0.96	0.94
BG7F10	**TPE11 - 1.7m**	1.70	1.22	1.13
BG7F11	**TPE31 - 3.6m**	1.33	1.15	0.89
BG7F12	**TPE46 - 0.3m**	0.49	0.49	0.80
BG7F13	**TPE76 - 2.1m**	0.03	0.12	0.19
BG7F14	**TPI36 - 2.0m**	0.28	0.1	0.95

TABLE 2 **ANALYSIS FOR FREE CaO AND FREE MgO**

TRS Ref	Site Ref	Free CaO Original (%)	Free CaO Corrected (%)	Free MgO Original (%)	Free MgO Corrected (%)
BG7F13	**TPE76 - 2.1m**	2.3	1.8	0.6	0.3
BG7F14	**TPI36 - 2.0m**	0.4	0.4	0.3	0.3

TABLE 3 **RESULTS FROM THERMAL ANALYSIS**

TRS Ref	Site Ref	Mass % by Thermal Analysis L.O.I.	Ettringite	Gypsum	Calcite	$Ca(OH)_2$	$Mg(OH)_2$	Others
BG7F01	**TP22 - 1.5m**	3.42	1.4	3.3	0.1	0.0	0.0	-
BG7F06	**TPD32 - 1.3m**	2.93	1.6	1.0	0.4	0.0	0.0	-
BG7F10	**TPE11 - 1.7m**	2.87	1.0	1.5	0.3	0.0	0.0	-
BG7F11	**TPE31 - 3.6m**	2.40	0.9	1.3	0.1	0.0	0.0	quartz
BG7F12	**TPE46 - 0.3m**	2.21	0.6	0.6	0.5	0.0	0.0	-
BG7F13	**TPE76 - 2.1m**	2.74	0.0	0.0	1.6	0.6	0.5	-
BG7F14	**TPI36 - 2.0m**	1.66	0.0	0.3	0.5	0.0	0.0	-

TABLE 4 **TRS ACCELERATED EXPANSION TEST**

TRS Ref	Site Ref	7 day (%)	14 day (%)	21 day (%)	28 day (%)
BG7F01	**TP22 - 1.5m**	0.22	0.34	-	-
BG7F06	**TPD32 - 1.3m**	0.01	0.03	-	-
BG7F10	**TPE11 - 1.7m**	0.00	0.00	-	-
BG7F11	**TPE31 - 3.6m**	0.00	0.00	-	-
BG7F12	**TPE46 - 0.3m**	0.01	0.02	-	-
BG7F13	**TPE76 - 2.1m**	0.72	1.05	1.39	1.55
BG7F14	**TPI36 - 2.0m**	0.22	0.31	0.34	0.36

APPENDIX A

PETROLOGICAL REPORT ON SAMPLES BG7F 01-14

A petrological examination has been carried out of fourteen samples, BG7F 01 to 14.

Polished blocks were prepared using particulate material crushed to a nominal size of –5mm. Representative material was made up into resin-bonded blocks. One face of each of these was ground flat and polished using diamond pastes. In addition, when appropriate, the surfaces were selectively etched with water, 10% $MgSO_4$ solution and 0.1%N HCl in order to help with the phase identification.

The detailed results are given in the accompanying Table.

Blast furnace slag occurs in large to very large amounts in all the samples except no. 13. Basic steel slag occurs in small amounts in samples 03 and 04 and in medium to large amounts in samples 13 and 14. A little basic refractory material (dolomet) was seen in samples 08 and 14. Several samples contain small amounts of particles consisting of loosely compacted fume/dust. Sample 04 has a medium amount of this material.

The blast furnace slag is mostly vesicular and crystalline with vesicles infilled by secondary material. It is mostly dark grey or greenish in colour.

The unaltered slag consists mainly of melilite (Ca,Mg,Al silicate) with spinel ($MgAl_2O_4$) as a second principle phase. Minor amounts of merwinite (Ca,Mg silicate) and dicalcium silicate (e.g. larnite (ß-Ca_2SiO_4) and bredigite (Ca_2SiO_4 with some Mg in solid solution)) are present and other silicates such as wollastonite (Ca silicate). These form a matrix to the melilite crystals. Some glassy slag is present, again mostly as a matrix phase. There is also some finely crystalline ceramic slag. Very small amounts of Ca, Mn and Fe sulphides are present and graphitic iron occurs as minute spherules and occasional larger prills. Secondary alteration is moderate in amount mainly infilling pores and occurring as surface rinds. Some has replaced the original phases especially the calcium-rich silicates. It consists mainly of granular material and aggregates of needle shaped crystals that are probably silicate and sulpho-aluminate hydrates such as ettringite. Calcite ($CaCO_3$) occurs in some samples and most samples have copious amounts of well-crystallised gypsum ($CaSO_4.2H_2O$).

The unaltered basic steel slag consists mainly of dicalcium silicate, RO and R_3O_4 phases (FeO and Fe_3O_4 with some Al, Mn, Mg and Ca in solid solution) and CaF phases (complex Ca alumino-ferrites). There are minor amounts of another

silicate, probably melilite (Ca,Mg,Al silicate). There are small amounts of lime phase (CaO with some Fe, Mn and Mg in solid solution) and periclase (MgO with some Fe in solid solution). The lime phase mostly forms spongy grains up to about 0.3 mm in size or is finely crystalline, well dispersed at other phase boundaries. The periclase occurs mostly as rounded grains up to about 0.1 mm in size that are often encapsulated in RO phase. The slag is extensively altered with the formation of secondary phases difficult to identify specifically under the microscope.

A little basic refractory material is present. This consists of partly hydrated dolomet (originally finely crystalline periclase and lime phase bonded by minor amounts of silicates).

The compacted fume/dust is made up of particles ranging in size from less than 1 to about 100 microns of iron oxides, glass, coke, etc. embedded in an extremely fine-grained matrix.

Other constituents include quartz (as sand, sandstone and silt), iron ore, ooidal (local) ironstone, metallic iron with associated rust, clay, coal, coke and used Portland cement. There are small to medium amounts of cementitious material binding the smaller and adherent to the larger particles. This appears to be similar to the slag alteration products but may also include clay.

TRS SAMPLES BG7F 01-14 (Sheet 1 of 2)

	1	2	3	4	5	6	7	8	9	10
BLAST FURNACE SLAG										
Amount	***L***	***L***	***L***	***l***	***L***	***L***	***l***	***L***	***L***	***L***
Phases present:-										
Melilite	L	L	L	L	L	L	L	L	L	L
Merwinite	-	-	-	-	vs	vs	-	-	-	-
Larnite & bredigite	-	vs	-	-	vs	-	vs	-	-	vs
Matrix & other silicates	s	s	s	s	s	s	s	s	s	s
Ca & Fe,Mn sulphides	vs	vs	vs	vs	vs	vs	vs	vs	vs	vs
Metal, rust, scale etc.	vs	vs	vs	vs	s	vs	s	s	vs	vs
Spinel	s	s	s	s	s	s	s	s	s	s
RO phase (R mainly Fe)	-	-	-	-	s	-	-	-	-	-
Glassy slag	s	vs	vs	s	vs	vs	vs	vs	vs	vs
Ceramic slag	vs	vs	vs	vs	vs	vs	vs	vs	vs	vs
Alteration products	m	m	m	m	m	m	m	m	m	m
Calcite	-	-	-	-	-	-	-	s	-	-
Gypsum	s	s	m	m	m	s	s	s	m	s
BASIC STEEL SLAG										
Amount	***-***	***-***	***s***	***s***	***-***	***-***	***-***	***-***	***-***	***-***
Phases present:-										
Dicalcium silicate	-	-	l	s	-	-	-	-	-	-
Unetched silicates	-	-	s	-	-	-	-	-	-	-
RO phase	-	-	m	m	-	-	-	-	-	-
CaF phase	-	-	vs	s	-	-	-	-	-	-
R3O4 phase	-	-	s	s	-	-	-	-	-	-
Metal & rust	-	-	-	-	-	-	-	-	-	-
Spinel	-	-	vs	-	-	-	-	-	-	-
Lime phase	-	-	vs	-	-	-	-	-	-	-
Periclase	-	-	vs	-	-	-	-	-	-	-
Fluorite	-	-	vs	-	-	-	-	-	-	-
Alteration products	-	-	m	l	-	-	-	-	-	-
BASIC REFRACTORIES										
Amount	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***vs***	***-***	***-***
OTHER CONSTITUENTS										
Quartz, sandstone, etc.	s	vs	vs	vs	-	vs	s	vs	-	s
Acid steel slag	-	-	-	-	-	-	s	-	-	-
Metal, rust & scale	vs	vs	vs	vs	vs	-	vs	vs	vs	vs
Fume	-	-	-	m	vs	-	-	-	-	-
Iron ore, ironstone, sinter, etc.	vs	-	-	-	-	vs	-	vs	-	s
Shale, clay & ash	-	-	-	-	vs	vs	s	vs	-	s
Coke	s	vs	vs	s	vs	vs	s	vs	vs	s
Coal & char	vs	-	-	-	-	-	vs	vs	-	vs
Cementitious material & clay	s	s	s	s	s	s	s	s	s	s
Used Portland cement	vs	-	-	-	-	-	vs	-	-	-

L = very large, l = large, m = medium, s = small and vs = very small amounts

TRS SAMPLES BG7F 01-14 (Sheet 2 of 2)

	11	12	13	14
BLAST FURNACE SLAG				
Amount	***L***	***L***	***s***	***l***
Phases present:-				
Melilite	L	L	L	L
Merwinite	-	vs	-	-
Larnite & bredigite	-	vs	-	-
Matrix & other silicates	s	s	s	s
Ca & Fe,Mn sulphides	vs	vs	vs	s
Metal, rust, scale etc.	vs	vs	vs	vs
Spinel	s	s	s	vs
RO phase (R mainly Fe)	vs	-	-	s
Glassy slag	vs	vs	-	-
Ceramic slag	vs	vs	-	-
Alteration products	m	m	s	s
Calcite	-	s	-	s
Gypsum	s	s	-	s
BASIC STEEL SLAG				
Amount	***-***	***-***	***L***	***m***
Phases present:-				
Dicalcium silicate	-	-	l	l
Unetched silicates	-	-	s	s
RO phase	-	-	m	m
CaF phase	-	-	s	s
R3O4 phase	-	-	s	s
Metal & rust	-	-	s	vs
Spinel	-	-	-	-
Lime phase	-	-	s	s
Periclase	-	-	s	s
Fluorite	-	-	-	-
Alteration products	-	-	m	m
BASIC REFRACTORIES				
Amount	***-***	***-***	***-***	***vs***
OTHER CONSTITUENTS				
Quartz, sandstone, etc.	m	vs	s	-
Acid steel slag	-	-	-	m
Metal, rust & scale	vs	vs	vs	s
Fume	-	-	s	-
Iron ore, ironstone, sinter, etc.	vs	-	vs	vs
Shale, clay & ash	s	-	-	-
Coke	vs	vs	s	vs
Coal & char	-	-	vs	vs
Cementitious material & clay	s	s	s	s
Used Portland cement	-	-	-	-

L = very large, l = large, m = medium, s = small and vs = very small amounts

GENERAL EXPLANATION

L = very large, l = large, m = medium, s = small and vs = very small amounts.

Blast furnace slag. When present this consists mainly of melilite (Ca,Mg,Al silicate ranging in composition between $Ca_2Al_2SiO_7$ and $Ca_2MgSi_2O_7$). Other common phases are merwinite ($Ca_3MgSi_2O_8$), larnite (ß-Ca_2SiO_4) and bredigite (Ca_2SiO_4 with some Mg in solid solution). The matrix often consists of some of the above phases, especially melilite, but may also contain other phases such as wollastonite ($CaSiO_3$), anorthite ($CaAl_2Si_2O_8$) and pyroxene ($(CaMg)SiO_3$). Spinel ($MgAl_2O_4$) may be present. Sulphides and metal usually occur and are mostly finely dispersed, but the metal sometimes occurs as prills and may contain some graphite and Ti carbo-nitride (TiCN). Material reported as ceramic in appearance is very finely crystalline. The alteration products often include calcite and gypsum but are mostly silicate and/or sulpho-aluminate hydrates that are difficult to identify specifically under the microscope.

Basic steel slag. When present this consists mainly of dicalcium silicate, mostly the ß-form (larnite) but sometimes the alpha form. Phosphoric slags may contain nagelschmidtite (Ca_2SiO_4 with $Ca_3P_2O_8$ in solid solution). Other silicate often present in small amounts, unetched by dilute HCl, is probably melilite. RO, R_3O_4 and RF phases are typically present and are mainly FeO and Fe_3O_4 with some Mg, Mn, Ca, etc. in solid solution and complex Ca alumino-ferrites. There may also be some Fe_2O_3 and spinel ($(Mg,Fe)Al_2O_4$). The slag typically carries minor amounts of periclase (MgO with some Fe in solid solution) and lime phase (CaO with some Fe, Mn & Mg in solid solution). Other possible minor constituents include fluorite (CaF_2) and apatite (Ca fluoro-phosphate), the last present in phosphoric slags. The alteration products are, again, difficult to identify specifically but are probably, mainly, hydrated silicates. Portlandite ($Ca(OH)_2$) may be present.

Basic refractory material. When present, this is mainly magnesian and consists of granular periclase (MgO) with interstitial silicates. Sometimes samples contain chrome-magnesia material with chromite present in addition to the other phases. Hot face material (from close to the furnace) may also occur. The periclase and interstitial silicates show secondary alteration similar to that of the basic steel slag. Brucite ($Mg(OH)_2$ is likely.

Acid steel slag. When present this consists mainly of fayalite ($(Fe,Mn)_2SiO_4$), Fe,Mn oxides and cristobalite (high temperature SiO_2).

Other slags. The 'intermediate slag' (probably primary flush slags from steel furnaces) has a variable phase assemblage, being mainly formed of silicates, particularly dicalcium silicate, melilite, merwinite and a complex olivine phase together with spinel and wustite (FeO). Sometimes it contains significant amounts of periclase, well embedded in the slag. The 'ferrous slag' (probably from foundry operations) has similar silicates but much more substantial content of iron oxides, usually wustite. It is often associated with scale (iron oxides formed on the surface of steel during reheating/cooling). When present, the 'cindery slag' consists of various silicates and silicate glass with Fe oxides, hercynite ($FeAl_2O_4$) and, sometimes, corundum (Al_2O_3). It is usually derived from heating furnaces and is often associated with burnt shale. When present, the 'siliceous clinker' is similar but devoid of iron oxides.

Other constituents The alumino-silicate brick includes a range of refractory firebrick, common brick and alumina-rich refractories. The 'quartz, sandstone, etc.' may include used silica refractory material consisting of quartz and its high temperature forms. Sometimes there is a distinct granular texture and it is derived from silcrete, a kind of chert. Cementitious material may bond the finer particles together. It is similar to the other alteration products consisting mostly of complex hydrates difficult to identify under the microscope Sometimes some is used Portland cement recognised by the relict textures of the clinker and the embedded quartz sand.

APPENDIX B

MECHANISMS OF VOLUMETRIC INSTABILITY IN IRON AND STEEL INDUSTRY SLAGS

Volumetric change with time can occur in some types of iron and steel industry slags. These mechanisms are briefly described in this section.

Blast Furnace Slags

Fresh-make air-cooled, i.e. crystalline, blast furnace slags are almost always volumetrically stable after cooling. The two mechanisms for volumetric instability listed in BS1047:1983 – "Air Cooled Blast furnace Slag for use in Construction" are:-

a) Beta to gamma inversion of dicalcium silicate.

b) Iron unsoundness.

a) Research by G H Thomas on this phase transformation has shown the transformation to be athermal rather than isothermal. In practical terms this means that inversion, and the expansion associated with it, can only occur during the cooling cycle. In fully cooled material there would appear to be no further risk of instability from this mechanism.

b) Iron unsoundness is a very rare form of instability frequently associated with operating problems in the blast furnace. TRS know of only one instance in over 40 years. The mechanism, which is a hydrolysis reaction, is immediately triggered off by the presence of water. Once water has initiated the reaction, the mechanism proceeds to completion. It is impossible to arrest the process once started; at least by methods operating in normal ambient conditions.

It follows that the risk of late expansion from either of these mechanisms in blast furnace slag is remote.

c) Sulphoaluminate Type Activity

Some years ago, G. H. Thomas discovered a third mechanism that may give rise to volumetric instability. The process is possible only in some old blast furnace slag altered by weathering. When the sulphide sulphur in the blast furnace slags is oxidised during

weathering to sulphate, under some circumstances reactions can take place within the slag to produce an 'ettringite' type product. The process is somewhat analogous to sulphatic attack on concrete and has a similar result - expansion of the mass and associated disruption.

For the mechanism to have any significance, the slag needs to have residual potential for this reaction. Evidence of past activity does not necessarily indicate further reaction is possible.

The TRS accelerated expansion test is, we believe, uniquely capable of identifying such slags, as well as instability attributable to free CaO and free MgO in steel slag & etc.

Basic Steel Slags

Basic steel slags commonly contain significant quantities of free CaO and free MgO. These free oxides are well known for the massive expansion associated with their hydration. In practical terms, it is impossible to forecast when hydration will take place, but it can be up to decades after the material was cooled – or placed. The reasons are complex, but include the varying density of the oxides, due to the variation in temperatures at which the products have been held in the furnace. Other factors influencing rate of hydration include:-

- the protection of slags by a reaction product at the oxide interface with the slag.
- the presence of the oxides as lime or magnesia rich solid solutions instead of the pure oxide.

The result is potential future volumetric instability but at an unforeseeable date. Periclase, i.e. free MgO, is relatively much slower than free CaO to hydrate.

Scrap High Magnesia Refractories

These are particularly undesirable components in fill as they commonly result in high concentrations of free MgO. The problems associated with these concentrations are similar to those where periclase is found in basic steel slag.

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LABORATORY REPORT CERTIFICATE

UKAS TESTING
1367

Contract Title: Redcar Site

AEG Reference: SLS1015

Client Address: CH2M
Dunedin House
Riverside
Teesdale Business Park
TS17 6BJ

We certify that Laboratory testing was carried out on samples from the above contract in accordance with techniques outlined in BS 1377: 1990, BS EN ISO 17892:2014 or other appropriate standards as quoted. The samples were received from December 2016 and the following results, given on the attached enclosures, were obtained.

The tests carried out are indicated in the attached table showing the enclosure number and the total number of pages.

For and on behalf of Allied Exploration & Geotechnics Limited

- ☐ Nick Vater (Technical Director)
- ☐ Kevin Warriner (HSE & Quality Director)
- ☑ Michelle Selkirk (Laboratory Manager)

Signed _____ Date: 17 August 2017

Tests marked not UKAS accredited in this certificate are not included in the UKAS accreditation schedule for our laboratory. Any opinions and interpretations expressed herein are outside the scope of the laboratory's UKAS accreditation.

Please note the material was derived from samples taken outside the control of the laboratory.

LABORATORY REPORT CERTIFICATE

ENCLOSURES

Enclosure Number	Description	UKAS Accredited	Reference	No. of Pages
0	Laboratory Report Certificate	N/A		3
1	Sample Description Sheets	N/A		5
2	Moisture Content	Yes	BS 1377 Part 2 1990 (BS EN ISO 17892-1:2014)	1
2	Plasticity Index and Moisture Content	Yes	BS 1377 Part 2 1990 (BS EN ISO 17892-1:2014)	1
-	Determination of Density by Linear Measurement	Yes	BS 1377 Part 2 1990 (BS EN ISO 17892-2:2014)	-
3	Determination of Particle Density	Yes	BS 1377 Part 2 1990	1
4	Particle Size Distribution Sieving	Yes	BS 1377 Part 2 1990	52
4	Particle Size Distribution Sedimentation	No	BS 1377 Part 2 1990	7
5	Determination of Organic Content and Loss on Ignition (Tested externally)	No	See DETS certificates	3
6	Determination of Dry Density/Moisture Content Relationship	Yes	BS 1377 Part 4 1990	23
7	Determination of Resistance to Fragmentation (Tested externally)	No	BS EN 1097:2:2010	4
-	Determination of Moisture Condition Value	Yes	BS 1377 Part 4 1990	-
-	Determination of MCV / Moisture Relationship	Yes	BS 1377 Part 4 1990	-
-	Determination of California Bearing Ratio	Yes	BS 1377 Part 4 1990	-
-	Determination of One Dimensional Consolidation Properties	Yes	BS 1377 Part 5 1990	-
-	Determination of Permeability (Falling Head)	Yes	*In-house* Method	-
-	Determination of Permeability in a Triaxial Cell	Yes	BS 1377 Part 6 1990	-
-	Shear Strength by Hand Vane	No		-
8	Shear Strength by Direct Shear (Some tested externally)	Yes	BS 1377 Part 7 1990	40
-	Undrained Shear Strength in Triaxial Cell without Pore Water Pressure Measurement	Yes	BS 1377 Part 7 1990	-
-	Consolidated Undrained Shear Strength in Triaxial Cell with Measurement of Pore Pressure	No	BS 1377 Part 8 1990	-
-	Consolidated Drained Shear Strength in Triaxial Cell with Measurement of Volume Change	No	BS 1377 Part 8 1990	-
9	Asbestos Screening (Tested externally)	No		3
10	Slag Analysis (Tested externally)	No		16

LABORATORY REPORT CERTIFICATE

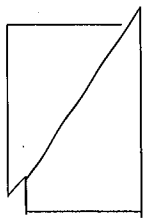
ABBREVIATIONS

All the abbreviations used on the laboratory certificates are given below:

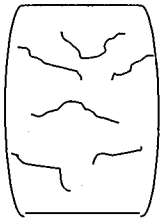
Br	Brittle	**PSD**	Particle Size Distribution by sieve analysis
C	Compound	**SB**	Shear Box
CBR	California Bearing Ratio	**SED**	Sedimentation Analysis
CDT	Consolidated Drained Triaxial	**SO4**	Sulphate (total, water extract, groundwater)
CL	Chloride content (water or soil)	**CP2**	Dry Density/Moisture Content 2.5kg rammer
US	Unsuitable sample for test	**CP4**	As above using 4.5kg rammer
UUT	Undrained Unconsolidated Triaxial	**CPV**	As above using vibrating hammer
HSV	Vane Test	**CUT**	Consolidated Undrained Triaxial
IS	Insufficient sample for test	**R**	Remoulded
LOI	Loss On Ignition	**U**	Undisturbed
M	Multi-stage testing	**MC**	Moisture Content
MCV	Moisture Content Value	**PL**	Point Load
NAT	Natural preparation method	**NMC**	Natural (or as received) moisture content
P	Plastic	**PFH**	Permeability Falling Head Method
OED	Oedometer	**PTXL**	Permeability in Triaxial Cell
OMC	Optimum Moisture Content	**ORG**	Organic content
B	Large disturbed (bulk) sample	**PD**	Particle Density (SG)
J	Small disturbed (jar) sample	**PI**	Liquid limit, plastic limit and plasticity index

Typical Mode of Failure for Triaxial Testing

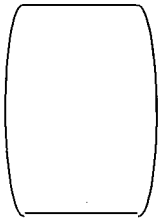
Brittle



Compound



Plastic



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LABORATORY SAMPLE DESCRIPTION SHEET

Exploratory Hole No.	Sample Depth	ID	Description	Laboratory Tests/Remarks
TP-06	1.10	B1	MADE GROUND (Brown clayey very sandy gravel with a medium cobble content. Gravel includes slag).	MC PSD Combined with B2 @ 3.10m US for CP4
TP-10	0.90	B1	MADE GROUND (Brown clayey very sandy gravel including slag).	PSD PD Combined with B3 @ 3.10m US for CP4
TP-10	0.90	D2	MADE GROUND (Dark brown slightly clayey sand and gravel).	MC
TP-11	0.50	D1	MADE GROUND (Dark brown slightly clayey sand and gravel.	MC
TP-11	0.50	B2	MADE GROUND (Dark brown slightly clayey sandy gravel with a high cobble content).	PSD US for CP4
TP-14	2.00	B	Brown clayey very sandy GRAVEL.	PSD PD CP4
TP-16	1.00	B1	MADE GROUND (Dark brown slightly clayey very sandy gravel).	PSD
TP-16	1.00	D2	MADE GROUND (Dark brown slightly clayey gravelly sand).	MC
TP-16	3.10	B3	MADE GROUND (Brown clayey very sandy gravel with a medium cobble content).	PSD
TP-16	3.10	D4	MADE GROUND (Brown slightly clayey sandy gravel).	MC
TP-18	1.50	B1	MADE GROUND (Brown slightly clayey sandy gravel with a low cobble content. Gravel includes slag and brick fragments).	PSD Combined with B3 @ 3.10m US for CPV and SB
TP-18	1.50	D2	MADE GROUND (Dark brown slightly clayey sand and gravel).	MC
TP-19	0.50	B1	MADE GROUND (Dark brown grey slightly clayey very sandy gravel with a medium cobble content. Gravel includes slag).	PSD Combined with B3 @ 2.00m & B4 @ 3.10m US for CPV
TP-19	0.50	D2	MADE GROUND (Dark brown slightly clayey sandy gravel).	MC
TP-20	1.10	B	Brown gravelly SAND.	ORG
TP-21	1.10	B1	MADE GROUND (Grey sandy gravel).	PD US for CP4
TP-21	2.20	B3	MADE GROUND (Grey sandy gravel).	PD
TP-22	0.70	B	MADE GROUND (Brown grey sandy gravel).	PD CP4
TP-23	0.80	B2	MADE GROUND (Brown clayey sandy gravel with a medium cobble content. Gravel includes slag).	MC PSD PD Combined with B3 @ 2.10m US for CP4
TP-24	2.70	B2	MADE GROUND (Brown slightly clayey sandy gravel with a medium cobble content. Gravel includes slag).	MC PSD US for CP4
TP-28	0.20	B	MADE GROUND (Dark brown slightly clayey very sandy gravel including ash and slag fragments).	PSD

Contract Title :-	Client :-
Redcar Site	CH2M

Signed :- msel	Name :- M. SELKIRK	Page 1 of 5	
Date of issue :- 17/08/2017	Certificate No :- SD/SLS1015/1	AEG Contract No. :- SLS1015	UKAS TESTING 1367

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LABORATORY SAMPLE DESCRIPTION SHEET

Exploratory Hole No.	Sample Depth	ID	Description	Laboratory Tests/Remarks
TP-29	0.50	B1	MADE GROUND (Dark brown grey slightly sandy cobbles).	US for MC PSD CP4
TP-29	0.80	B2	MADE GROUND (Grey slightly clayey sandy gravel with a high cobble content. Gravel includes ash and slag fragments).	PSD SB
TP-31	2.30	B	Brown slightly clayey sandy GRAVEL.	PSD
TP-36	0.70	B1	MADE GROUND (Brown clayey very sandy gravel including slag).	PSD PD US for CP4 and SB
TP-36	0.70	D2	MADE GROUND (Dark brown slightly clayey sandy gravel).	MC
TP-39	1.00	B	MADE GROUND (Brown slightly clayey sandy gravel including slag).	PSD
TP-42	0.50	B	MADE GROUND (Brown clayey very sandy gravel).	PSD CP4
TP-42	1.70	B2	MADE GROUND (Brown clayey very sandy gravel with a medium cobble content. Gravel includes ash, slag and brick fragments).	PSD SB
TP-42	3.40	B	MADE GROUND (Brown clayey very sandy gravel including ash and slag.(Clay of low to intermediate plasticity)).	MC PI PSD SED
TPB-01	3.70	B	Brown gravelly SAND with occasional clay pockets.	PSD
TPB-02	0.30	B	MADE GROUND (Brown slightly clayey very sandy gravel including slag fragments).	PSD CPV
TPB-06	1.30	B	Brown slightly clayey very sandy GRAVEL.	PSD
TPB-07	2.50	B	Brown clayey very sandy GRAVEL with occasional clay pockets.	PSD SB
TPB-12	1.00	B	Brown clayey very sandy GRAVEL.	PSD PD CP4
TPC-07	1.00	B	MADE GROUND (Grey gravelly sand. Gravel includes ash and coal fragments).	ORG
TPC-16	4.20	B	Grey sandy slightly gravelly SILT.	PSD SED
TPC-16	4.20	D	Grey organic SILT of high to very high plasticity.	MC PI
TPC-17	1.30	B	Brown slightly sandy CLAY.	ORG
TPC-19	0.80	B	Brown slightly sandy slightly gravelly CLAY.	PSD SED
TPC-22	3.00	B	Dark grey very silty SAND.	SB
TPC-27	1.50	B	Grey slightly sandy slightly gravelly SILT.	PSD SED

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Redcar Site	CH2M

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Date of issue :- 17/08/2017	Certificate No :- SD/SLS1015/2	AEG Contract No. :- SLS1015	UKAS TESTING 1367

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LABORATORY SAMPLE DESCRIPTION SHEET

Exploratory Hole No.	Sample Depth	ID	Description	Laboratory Tests/Remarks
TPC-29	1.00	B	Brown silty SAND.	MC PI(NP) CP4
TPC-32	3.70	B	Brown black gravelly SAND.	CP4
TPD-01	1.20	B	Brown slightly gravelly SAND. Gravel includes shell fragments.	PD CP4
TPD-02	0.20	B	MADE GROUND (Grey gravel and cobbles including slag).	PSD
TPD-19	1.50	B	Brown slightly clayey SAND.	PSD CP4
TPD-22	2.00	D	Brown slightly sandy CLAY of intermediate to high plasticity.	MC PI ORG
TPD-22	2.00	B	Brown slightly sandy slightly gravelly CLAY.	PSD SED CP4
TPD-23	0.90	B	Brown clayey slightly gravelly SAND with occasional clay pockets.	PSD SB
TPD-23	0.90	D	Brown slightly gravelly SAND with occasional clay pockets.	MC
TPD-24	0.80	B	MADE GROUND (Dark brown clayey very sandy gravel with a medium cobble content. Gravel includes ash and slag fragments).	PSD
TPD-25	1.70	D	Brown grey slightly sandy slightly gravelly CLAY of intermediate plasticity.	MC PI
TPD-28	1.20	D	Grey organic CLAY/SILT of high plasticity.	MC PI
TPD-30	1.70	B	Brown clayey very sandy GRAVEL.	PSD CP4
TPD-41	1.40	D	Brown slightly sandy slightly gravelly CLAY of intermediate plasticity.	MC PI
TPE-04	1.50	B	MADE GROUND (Brown clayey very sandy gravel including ash, clinker and slag fragments).	PSD PD SB
TPE-05	0.50	B	MADE GROUND (Brown sandy gravel).	CP4
TPE-07	2.20	B	MADE GROUND (Brown slightly clayey sandy gravel including slag).	PSD
TPE-12	0.60	B	MADE GROUND (Brown clayey sandy gravel with a high cobble content).	PSD US for CP4
TPE-12	1.00	B	Dark yellow brown slightly gravelly SAND. Gravel includes shell fragments.	SB
TPE-20	0.50	B	MADE GROUND (Brown slightly clayey very sandy gravel with a medium cobble content).	PSD CP4
TPE-22	0.50	B	MADE GROUND (Brown sandy gravel with a high cobble content).	US for CP4

Contract Title :-	Client :-
Redcar Site	CH2M

Signed :-	Name :-	Page 3 of 5	
Date of issue :- 17/08/2017	Certificate No :- SD/SLS1015/3	AEG Contract No. :- SLS1015	UKAS TESTING 1367

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LABORATORY SAMPLE DESCRIPTION SHEET

Exploratory Hole No.	Sample Depth	ID	Description	Laboratory Tests/Remarks
TPE-25	2.70	B	MADE GROUND (Grey cobbles of slag).	PSD
TPE-33	3.40	B	Brown very clayey very sandy GRAVEL.	PSD SED CP4
TPE-33	3.40	D	Brown very clayey very sandy GRAVEL. (Clay of of low plasticity).	MC PI
TPE-35	3.20	D	Grey slightly clayey sandy GRAVEL.	MC US for PI
TPE-38	2.50	B	Brown clayey very sandy GRAVEL.	PSD CP4
TPE-39	2.00	B	Brown clayey very sandy GRAVEL.	PSD CP4
TPE-53	3.80	B	Brown clayey very sandy GRAVEL.	PSD PD
TPE-55	1.50	B	MADE GROUND (Grey clayey sandy gravel including slag and concrete).	PSD
TPE-57	4.20	D	Brown CLAY/SILT of high plasticity.	MC PI
TPE-59	3.50	B	MADE GROUND (Brown slightly clayey sandy gravel including slag).	CP4
TPF-04	0.70	B	MADE GROUND (Brown sandy gravel).	CP4
TPF-11	2.00	B	Brown SAND.	PSD PD SB
TPH-01	1.00	B	MADE GROUND (Brown clayey very sandy gravel).	PSD CP4
TPH-10	1.70	B	Brown gravelly SAND with occasional clay pockets.	PSD SB
TPH-14	2.10	B	Brown clayey sandy GRAVEL.	MC PI(IS for LL) PSD ORG
TPH-23	2.50	B	Brown slightly sandy slightly gravelly CLAY.	CP4
TPH-30	1.80	B	Brown slightly clayey gravelly SAND.	PSD
TPI-02	2.70	B	Brown clayey very sandy GRAVEL.	PSD
TPI-03	0.40	B	Brown slightly sandy slightly gravelly CLAY.	PSD SED CP4
TPI-15	4.00	B	Brown slightly clayey gravelly SAND.	PSD
TPI-17	0.60	B	MADE GROUND (Brown very clayey very sandy gravel including metal fragments).	PSD CP4

Contract Title :- **Redcar Site**

Client :- **CH2M**

Signed :- MSelk

Name :- M. SELKIRK

Date of issue :- 17/08/2017

Certificate No :- SD/SLS1015/4

AEG Contract No. :- **SLS1015**

UKAS TESTING 1367

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LABORATORY SAMPLE DESCRIPTION SHEET

Exploratory Hole No.	Sample Depth	ID	Description	Laboratory Tests/Remarks
TPI-19	3.40	B	MADE GROUND (Grey sandy gravel including slag).	ORG
TPI-26	4.50	B	Brown gravelly SAND.	PSD CP4

Contract Title :-	Client :-
Redcar Site	CH2M

Signed :-	Name :- M. SELKIRK	Page 5 of 5	
Date of issue :- 17/08/2017	Certificate No :- SD/SLS1015/5	AEG Contract No. :- SLS1015	UKAS TESTING 1367

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MOISTURE CONTENT CERTIFICATE

BS 1377 : Part 2 : Clause 3.2 (BS EN ISO 17892-1:2014)

Exploratory Hole No.	Sample Depth (m)	Sample ID	Moisture Content (%)	Date Tested	Remarks
TP-06	1.10	B1	19.8	25/04/2017	
TP-10	0.90	D2	14.6	24/04/2017	
TP-11	0.50	D1	12.5	24/04/2017	
TP-16	1.00	D2	12.0	24/04/2017	
TP-16	3.10	D4	25.6	24/04/2017	
TP-18	1.50	D2	15.9	24/04/2017	
TP-19	0.50	D2	11.0	24/04/2017	
TP-23	0.80	B2	9.7	25/04/2017	
TP-24	2.70	B2	15.0	25/04/2017	
TP-36	0.70	D2	9.0	24/04/2017	
TPE-35	3.20	D	17.0	12/07/2017	

For description of sample please refer to the Laboratory Sample Description Sheet

Contract Title :- **Redcar Site**

Client :- **CH2M**

Signed :-

Name :- M. SELKIRK

Date of issue :- 08/08/2017

Certificate No :- MC/SLS1015/1

AEG Contract No. :- **SLS1015**

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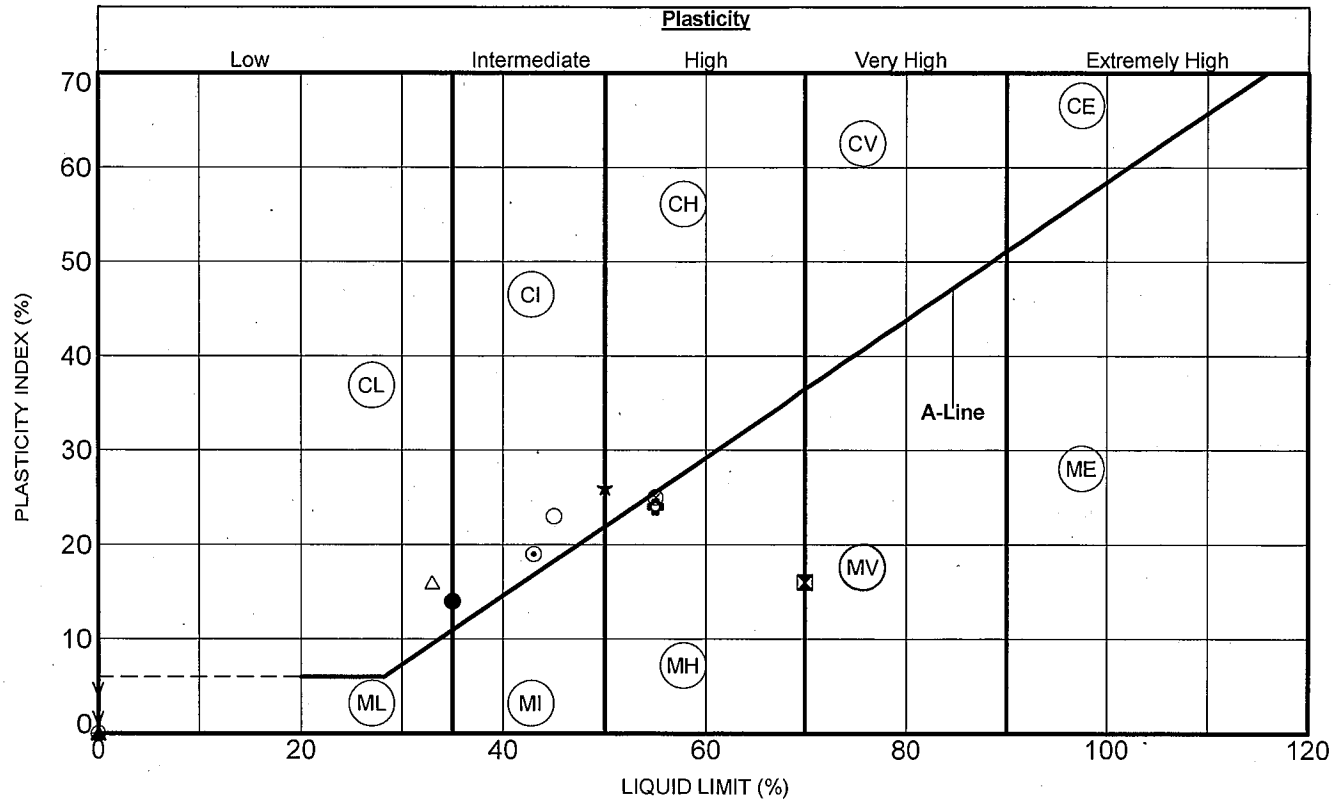
ATTERBERG LIMITS & NATURAL MOISTURE CONTENT

Test Method :- BS 1377 : Part 2 : Clause 3.2, 4.1 to 4.4 & 5 : 1990 (BS EN ISO 17892-1:2014)



	Specimen Identification			LL	PL	PI	I_c	<0.425mm (%)	m/c (%)	Date Tested	
●	TP-42	3.40	B	35	21	14	1.28	24.8	17.1	21/07/2017	
⊠	TPC-16	4.20	D	70	54	16	-3.55	NAT	126.8	11/07/2017	
▲	TPC-29	1.00	B	0	0	0		NAT	81.3	11/07/2017	NP
★	TPD-22	2.00	D	50	24	26	1.21	NAT	18.6	11/07/2017	
⊙	TPD-25	1.70	D	43	24	19	0.75	NAT	28.7	20/07/2017	
✿	TPD-28	1.20	D	55	31	24	0.55	NAT	41.9	11/07/2017	
○	TPD-41	1.40	D	45	22	23	0.08	NAT	43.2	20/07/2017	
△	TPE-33	3.40	D	33	17	16	1.19	29	14.0	12/07/2017	#
⊗	TPE-57	4.20	D	55	30	25	0.49	NAT	42.7	11/07/2017	
⊕	TPH-14	2.10	B		27		0.89	16	24.1	11/07/2017	#

For description of sample please refer to the Laboratory Sample Description Sheet. # = Insufficient for 4 point PI
NAT = Sample prepared in the natural state therefore we are unable to determine % retained on the 0.425mm test sieve.

Contract Title :-	Client :-
Redcar Site	**CH2M**

Signed :- M Selkirk	Name :- M. SELKIRK		Page 1 of 1
Date of issue :- 08/08/2017	Certificate No :- PI/SLS1015/1	AEG Contract No. :- **SLS1015**	UKAS TESTING 1367

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DETERMINATION OF PARTICLE DENSITY

BS1377 : Part 2 : Clause 8.2 : 1990

Exploratory Hole No.	Depth (m)	Sample Type & No.	Particle Density (Mg/m^3)	Date Tested
TP-10	0.90	B1	2.83	27/04/2017
TP-14	2.00	B	2.51	13/07/2017
TP-21	1.10	B1	2.61	25/04/2017
TP-21	2.20	B3	3.17	25/04/2017
TP-22	0.70	B	2.73	24/07/2017
TP-23	0.80	B2	2.67	25/04/2017
TP-36	0.70	B1	2.82	27/04/2017
TPB-12	1.00	B	2.72	17/07/2017
TPD-01	1.20	B	2.69	13/07/2017
TPE-04	1.50	B	2.73	03/08/2017
TPE-53	3.80	B	2.74	13/07/2017
TPF-11	2.00	B	2.58	01/07/2017

For description of sample please refer to the Laboratory Sample Description Sheet

Contract Title :- **Redcar Site**	Client :- **CH2M**

Signed :-	Name :-		Page 1 of 1
Date of issue :- 08/08/2017	Certificate No :- PD/SLS1015/1	AEG Contract No. :- **SLS1015**	

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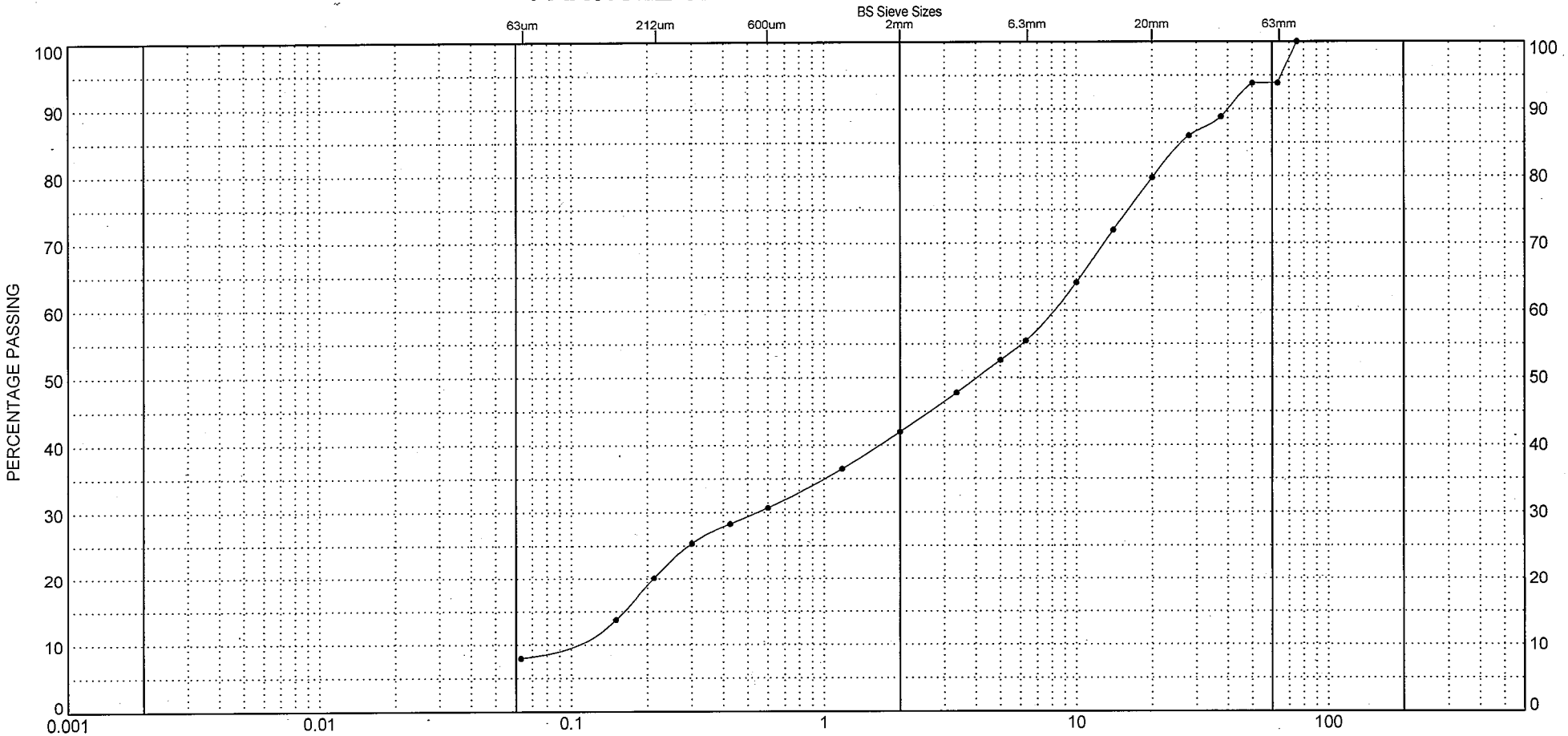
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TP-06**	Depth :- **1.10**	Sample Type & No :- **B1**	Date Tested :- **25/04/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/05/2017	PSD/SLS1015/TP-06/B1/1.10		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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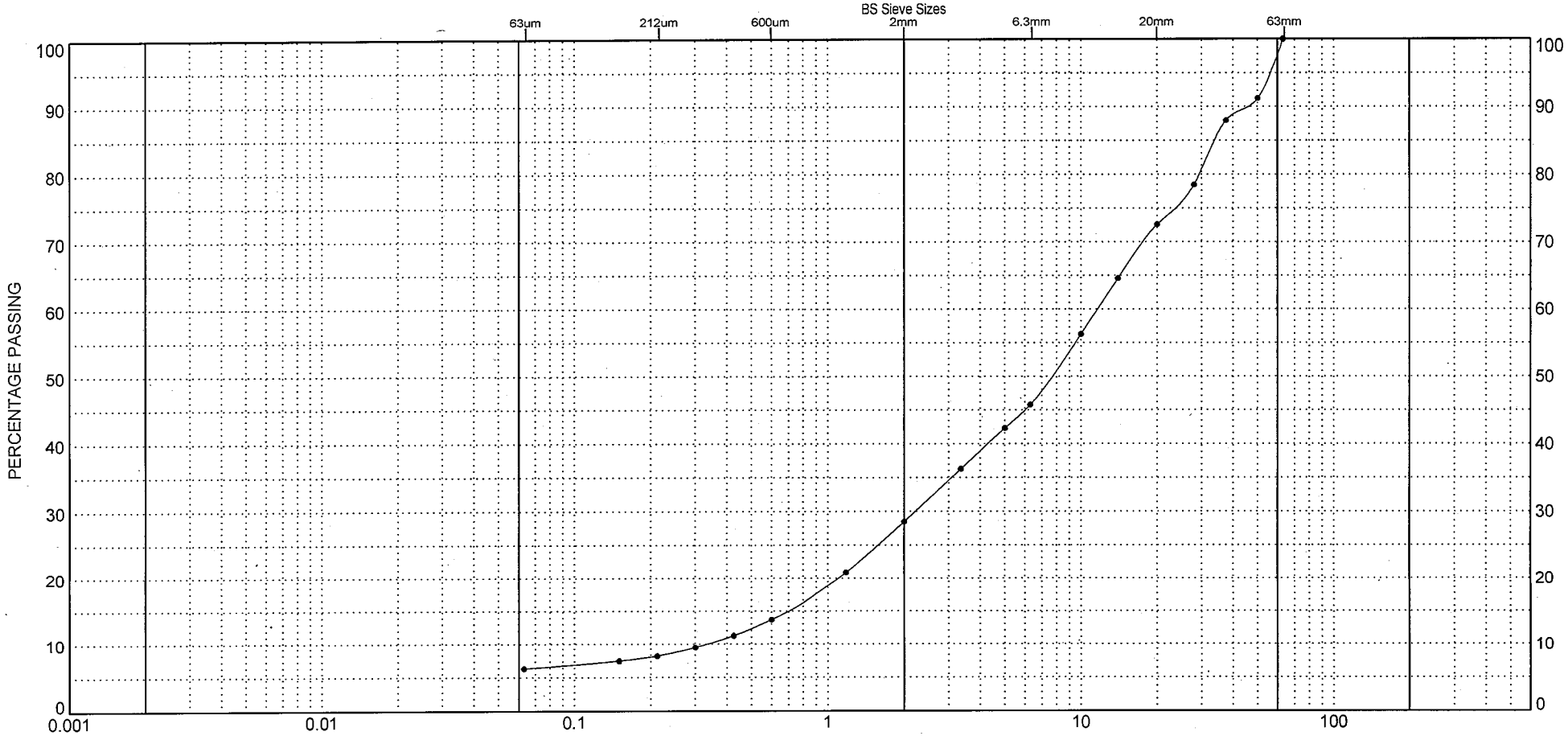
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TP-10**	Depth :- **0.90**	Sample Type & No :- **B1**	Date Tested :- **24/04/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/05/2017	PSD/SLS1015/TP-10/B1/0.90	MSelq	M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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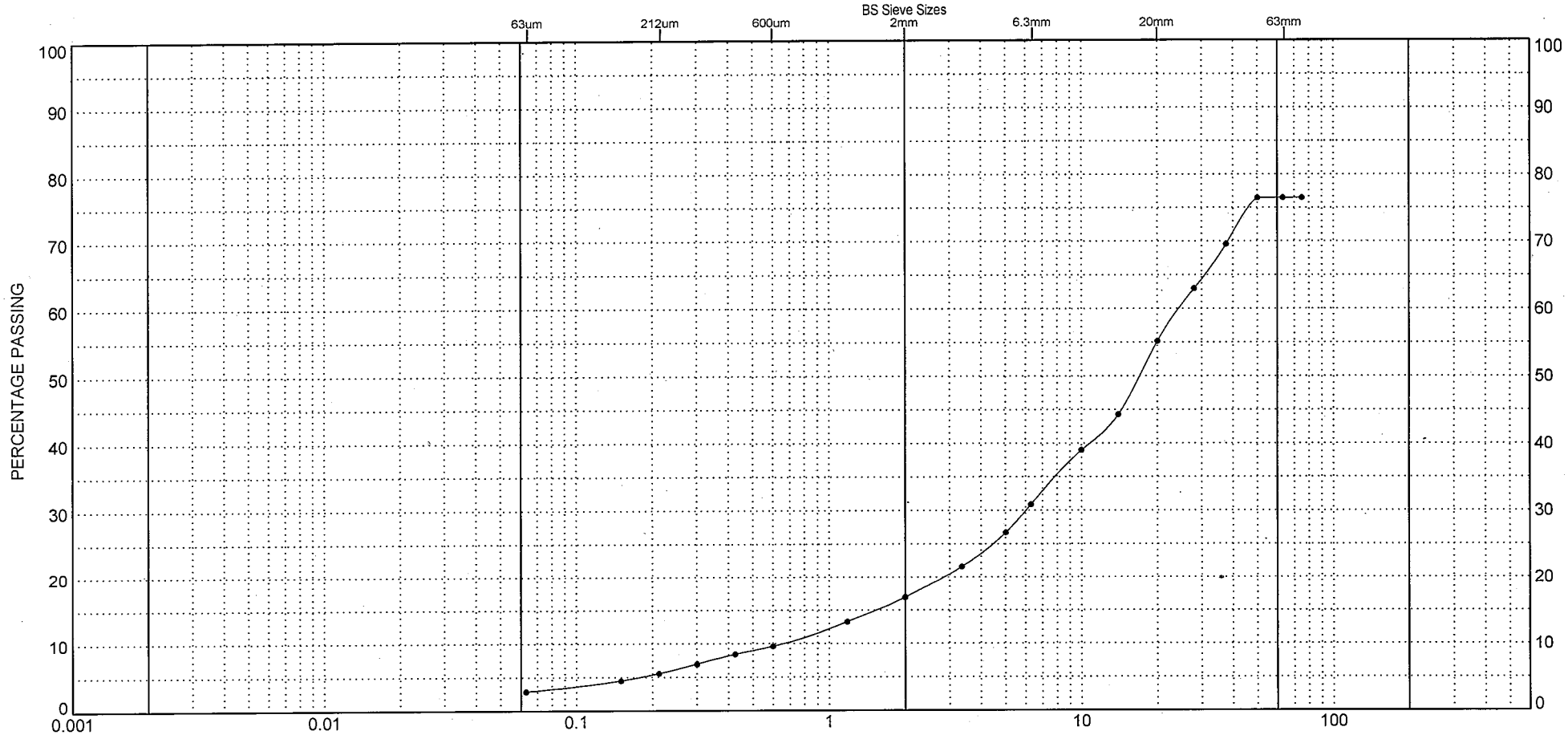
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990 #**	Exploratory Hole No :- **TP-11**	Depth :- **0.50**	Sample Type & No :- **B2**	Date Tested :- **25/04/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/05/2017	PSD/SLS1015/TP-11/B2/0.50	msene	M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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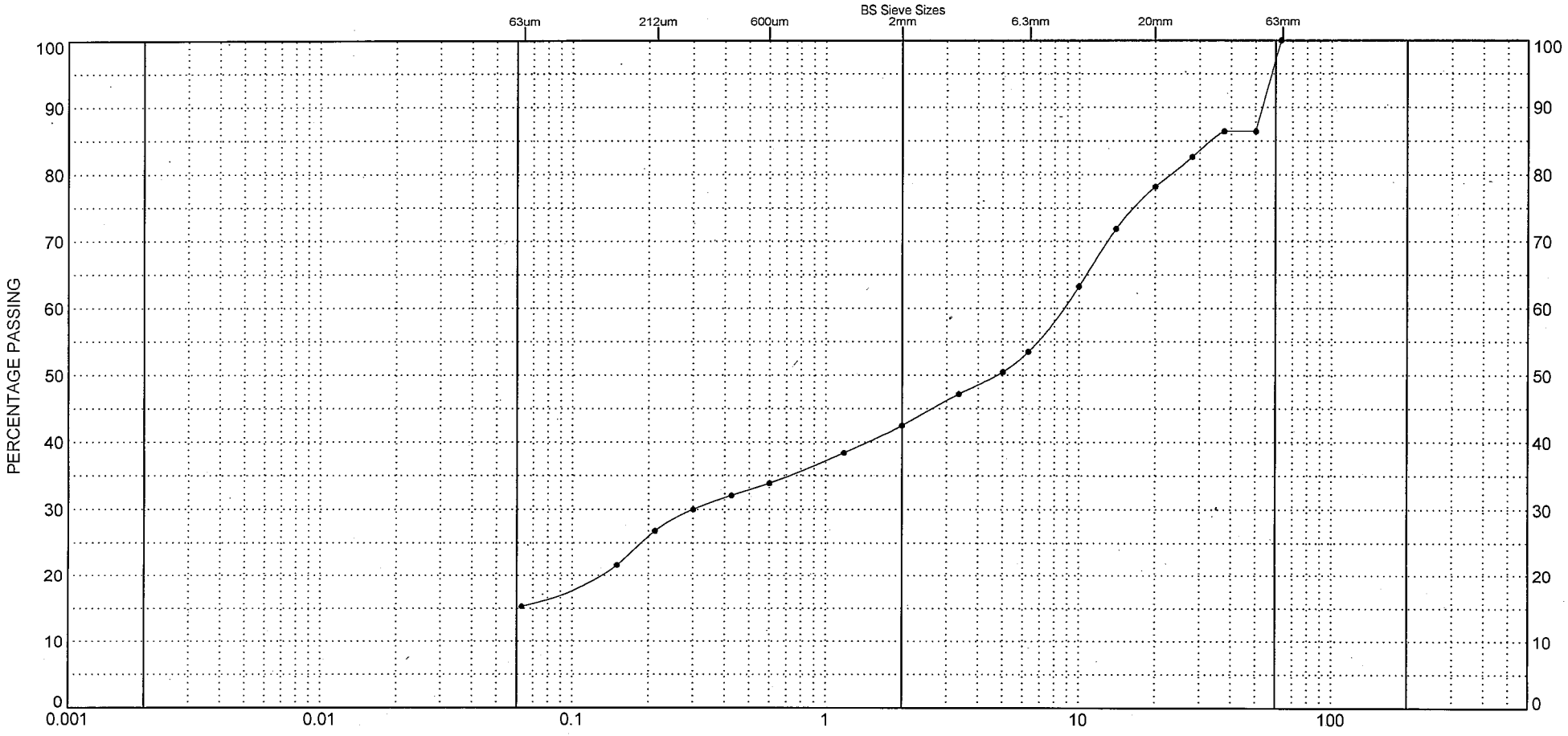
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TP-14**	Depth :- **2.00**	Sample Type & No :- **B**	Date Tested :- **11/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TP-14/B/2.00		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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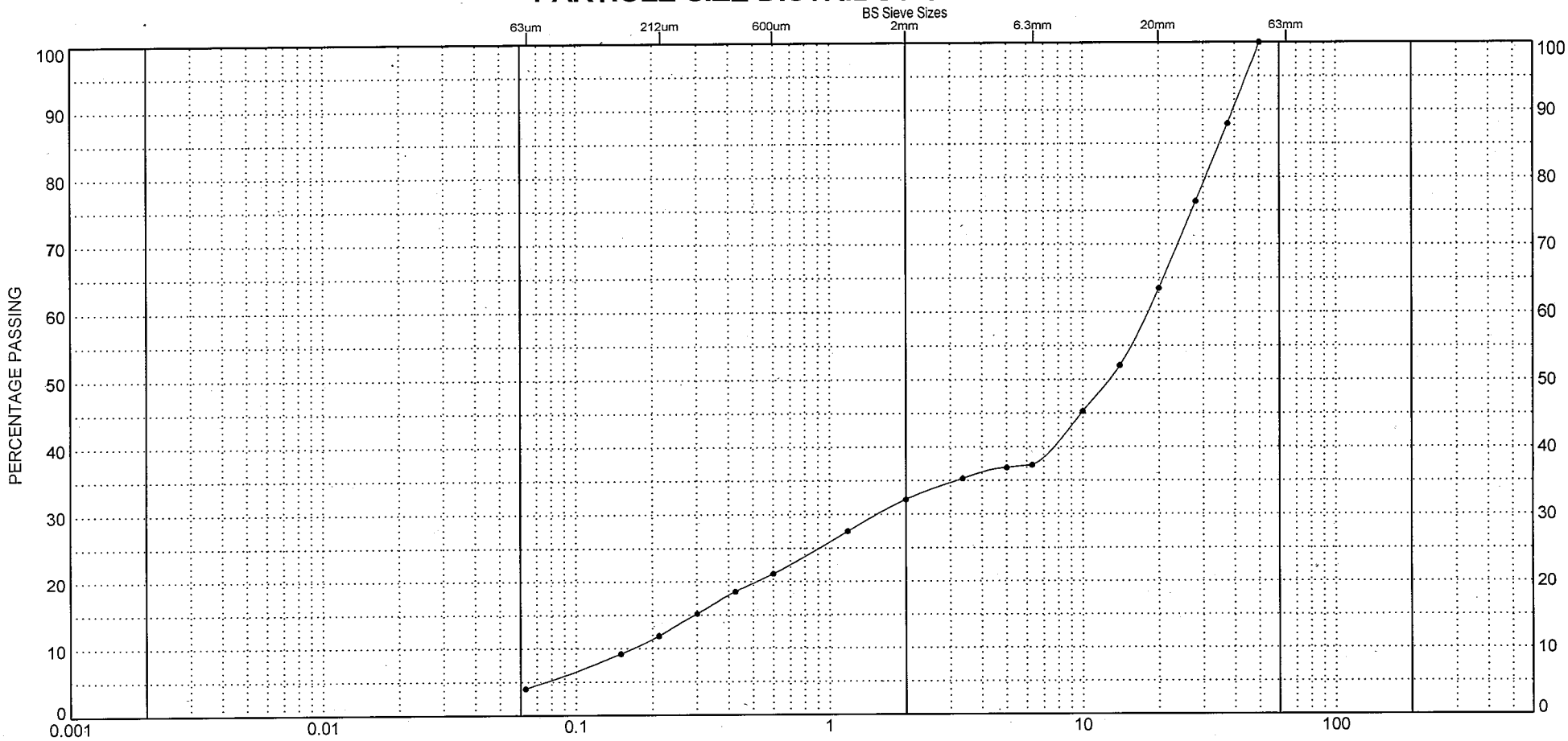
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TP-16**	Depth :- **1.00**	Sample Type & No :- **B1**	Date Tested :- **24/04/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/05/2017	PSD/SLS1015/TP-16/B1/1.00		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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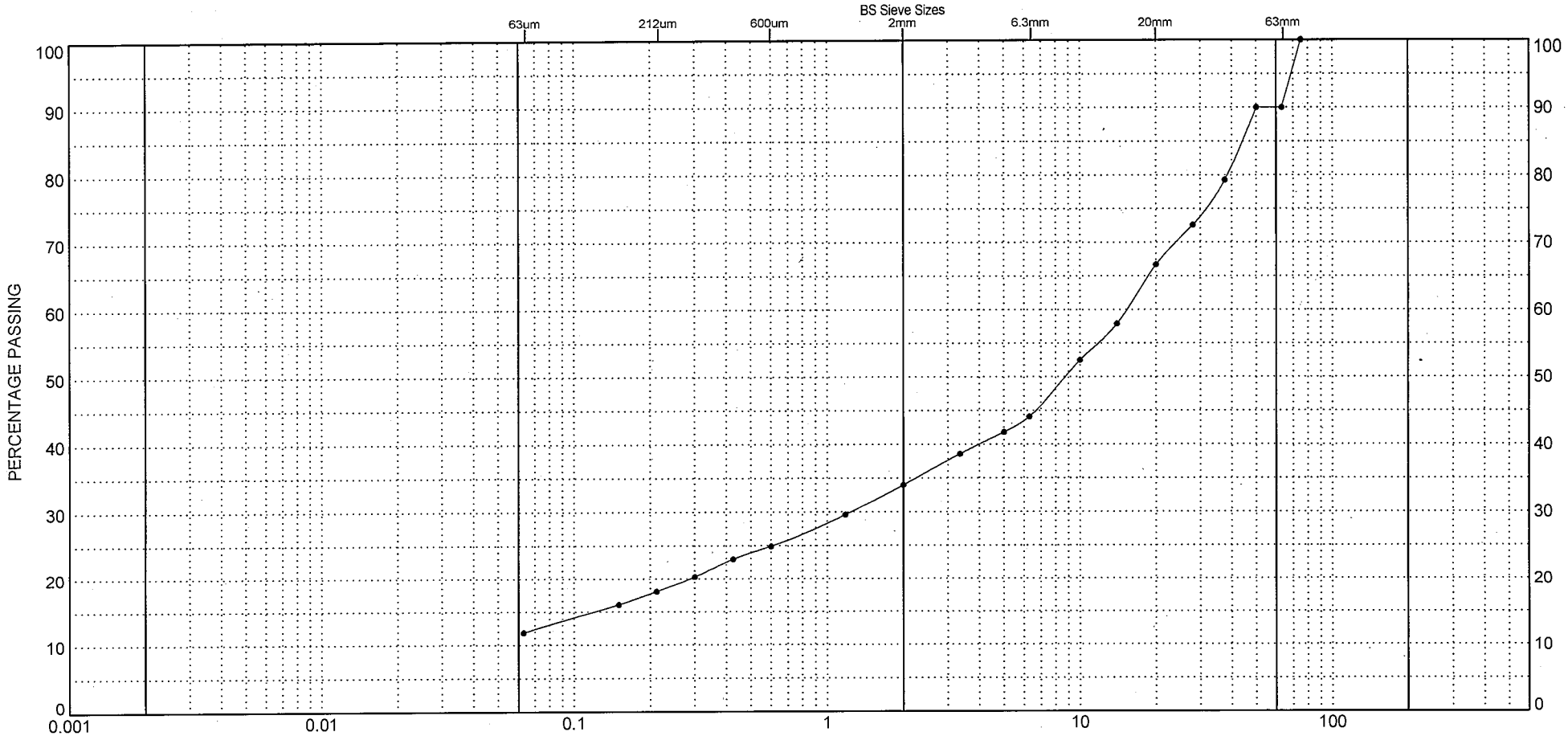
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990 #**	Exploratory Hole No :- **TP-16**	Depth :- **3.10**	Sample Type & No :- **B3**	Date Tested :- **24/04/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/05/2017	PSD/SLS1015/TP-16/B3/3.10	MSelk	M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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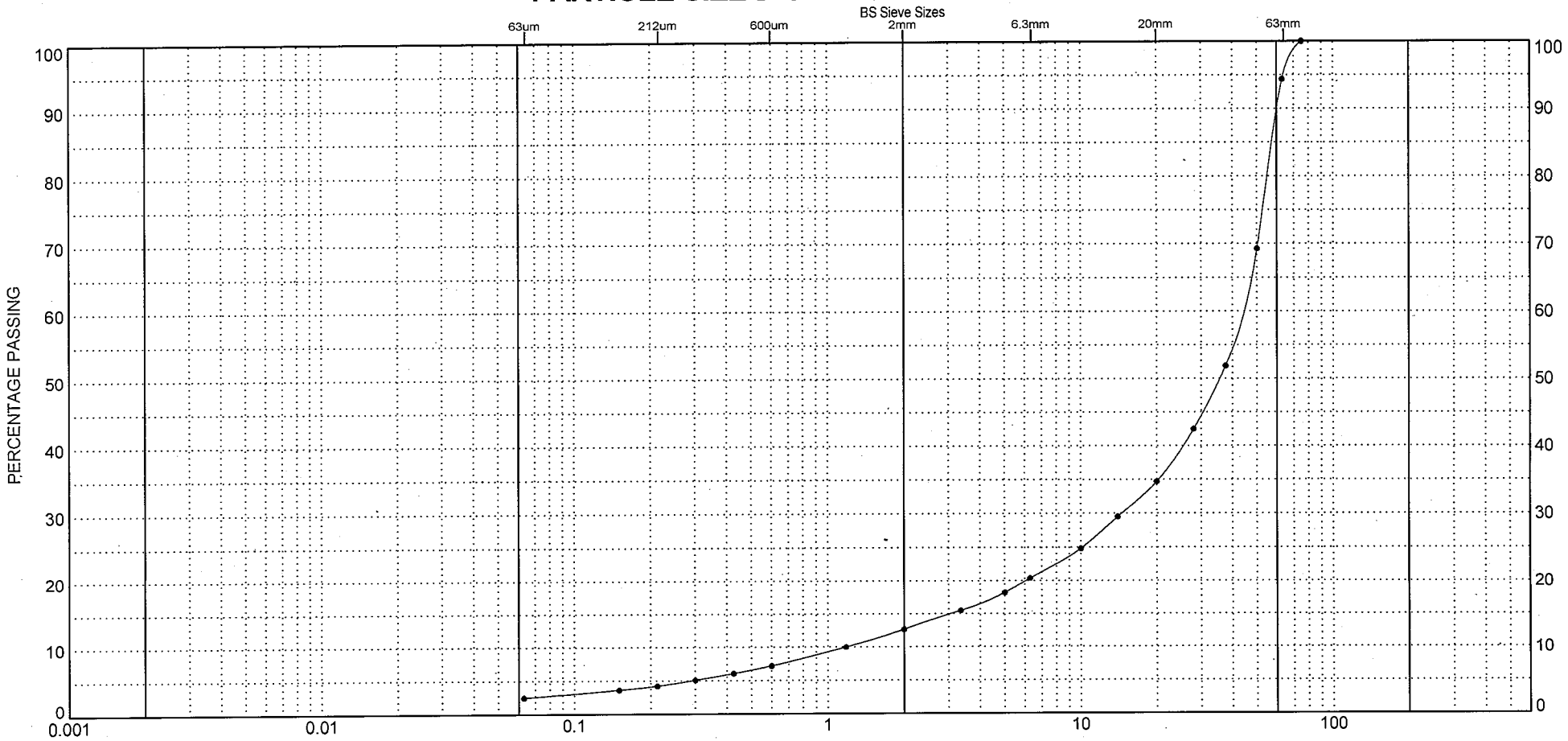
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990 #**	Exploratory Hole No :- **TP-18**	Depth :- **1.50**	Sample Type & No :- **B1**	Date Tested :- **25/04/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/05/2017	PSD/SLS1015/TP-18/B1/1.50	MSelkirk	M SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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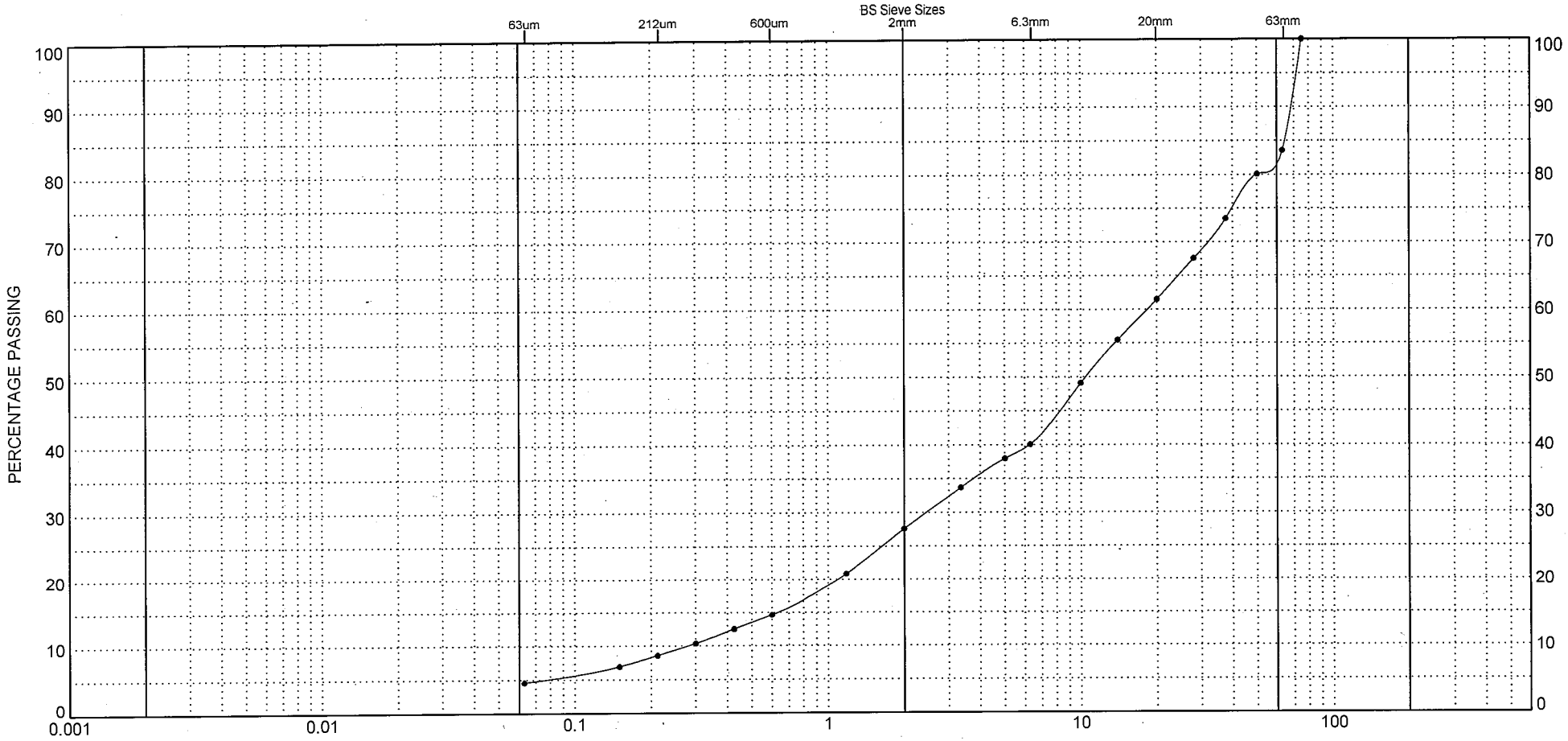
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990 #**	Exploratory Hole No :- **TP-19**	Depth :- **0.50**	Sample Type & No :- **B1**	Date Tested :- **24/04/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/05/2017	PSD/SLS1015/TP-19/B1/0.50			

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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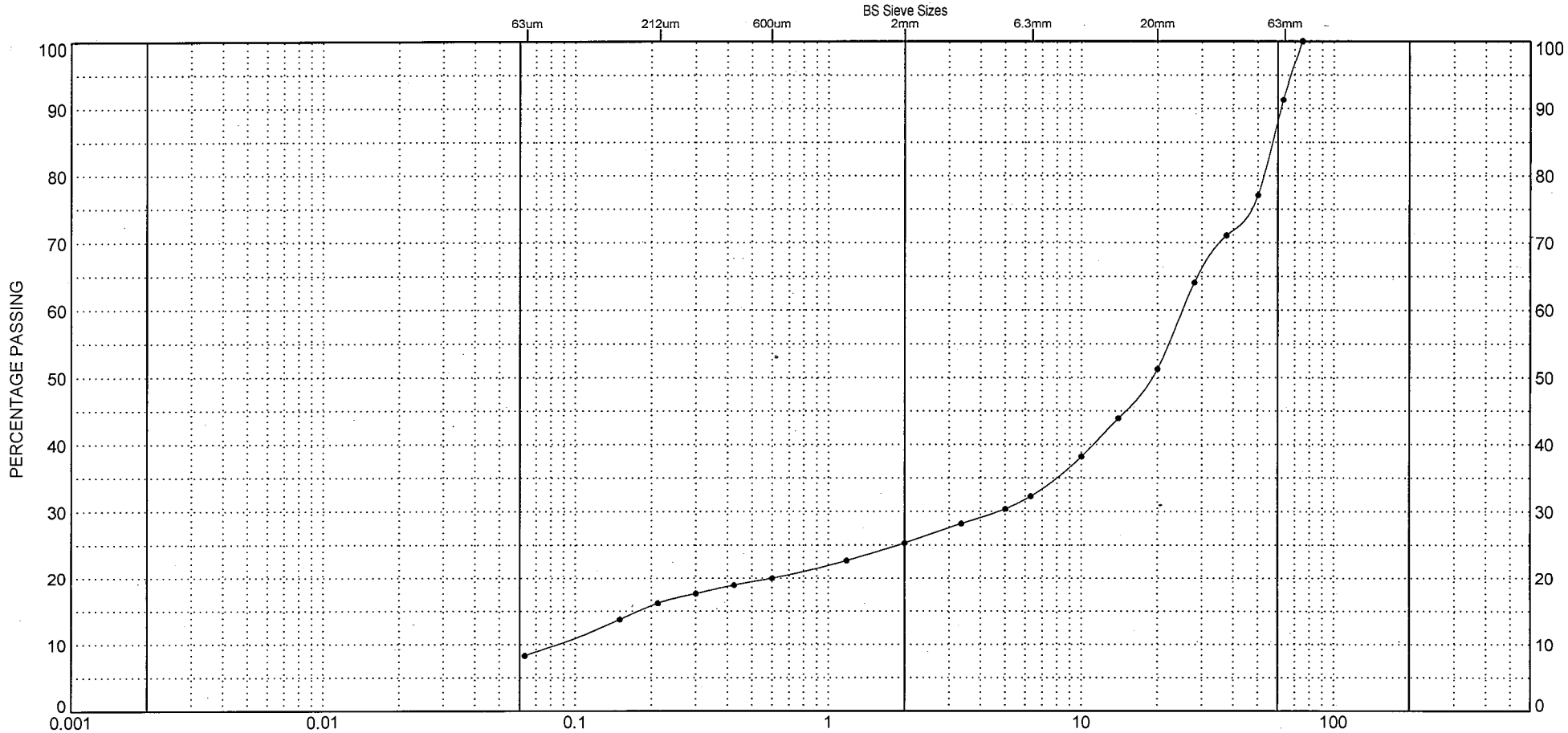
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990 #**	Exploratory Hole No :- **TP-23**	Depth :- **0.80**	Sample Type & No :- **B2**	Date Tested :- **25/04/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/05/2017	PSD/SLS1015/TP-23/B2/0.80			

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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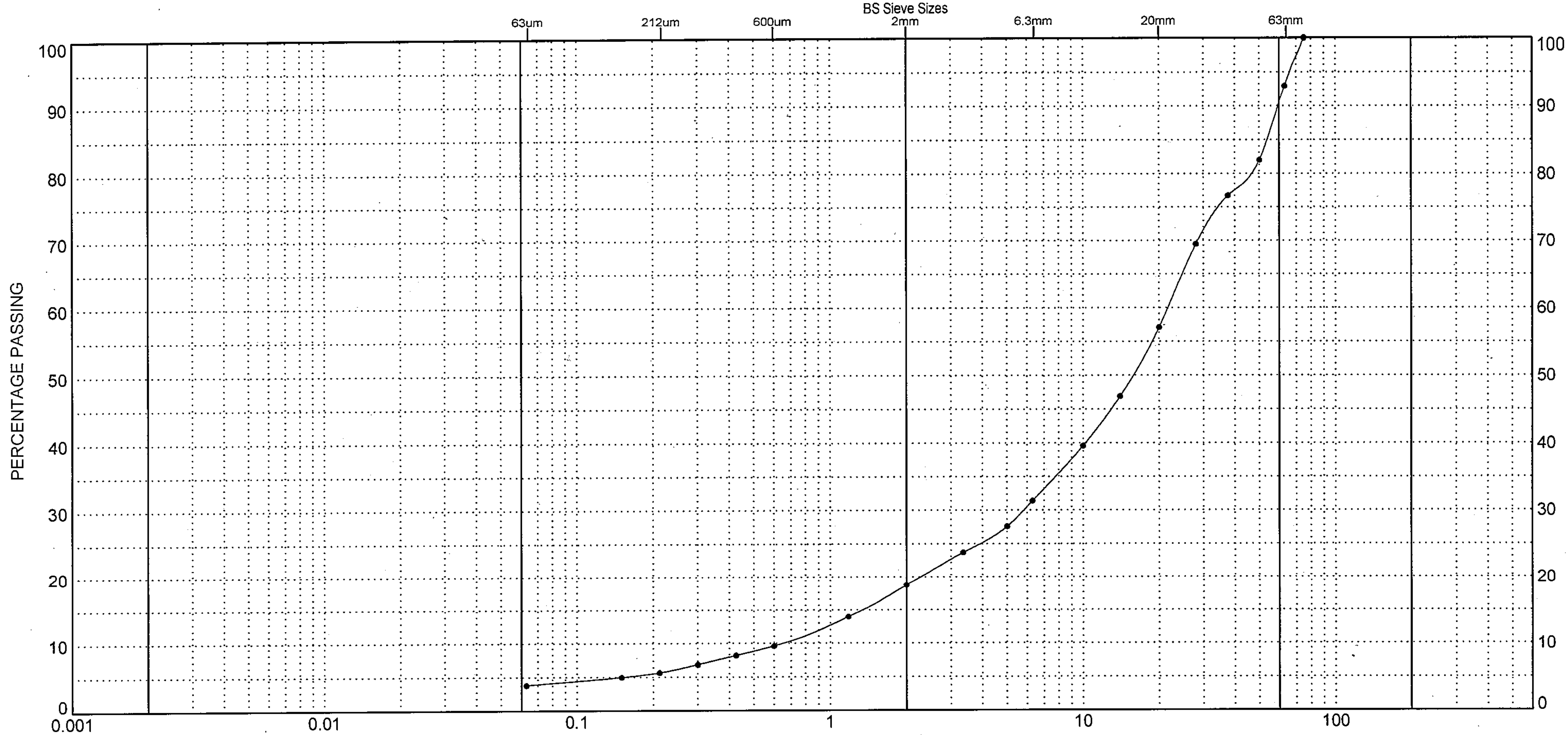
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990 #**	Exploratory Hole No :- **TP-24**	Depth :- **2.70**	Sample Type & No :- **B2**	Date Tested :- **25/04/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :- 08/05/2017	Certificate No :- PSD/SLS1015/TP-24/B2/2.70	Signed :-	Name :-	Page 1 of 1
Client :- CH2M	Contract Title :- Redcar Site			AEG Contract No :- SLS1015

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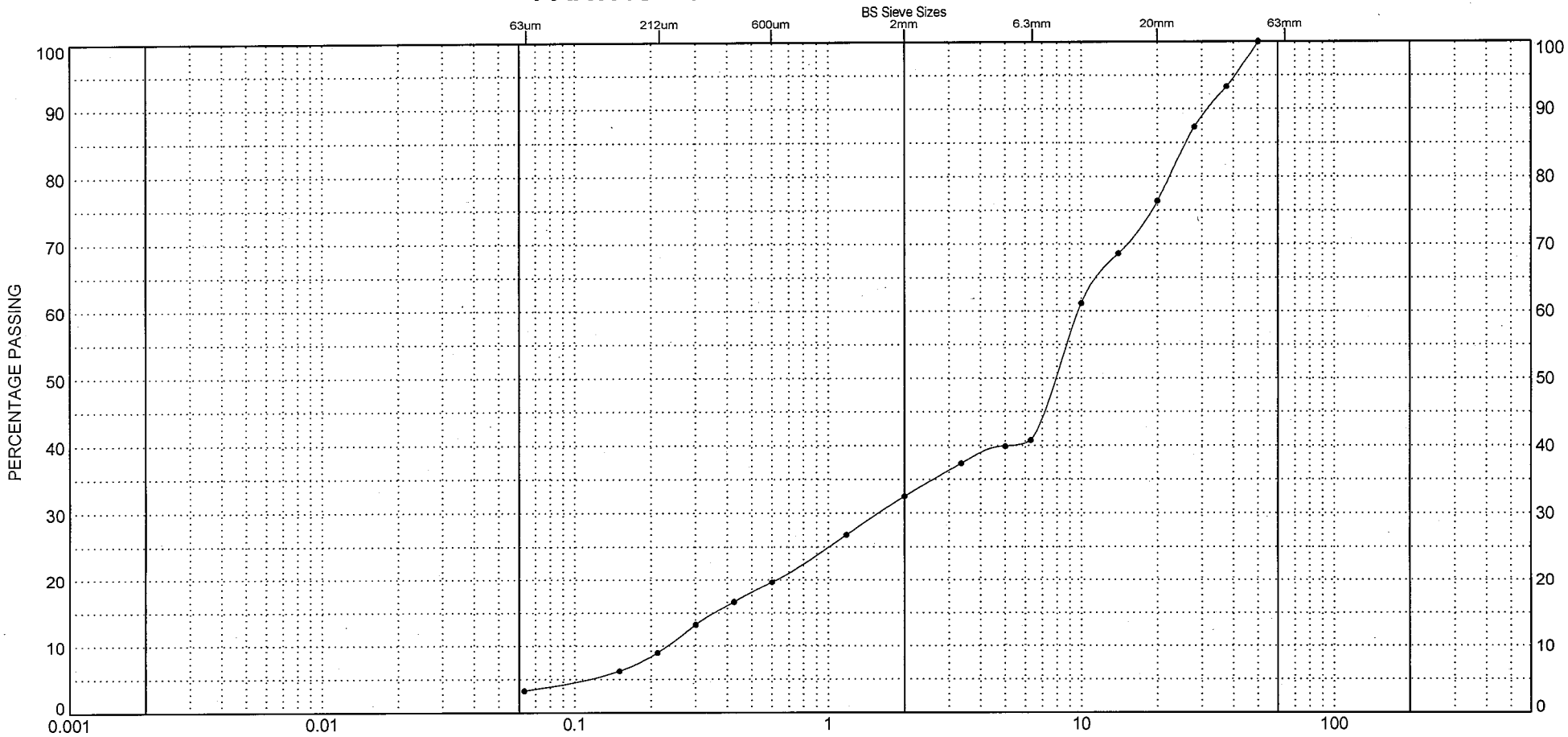
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TP-28**	Depth :- **0.20**	Sample Type & No :- **B**	Date Tested :- **12/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TP-28/B/0.20		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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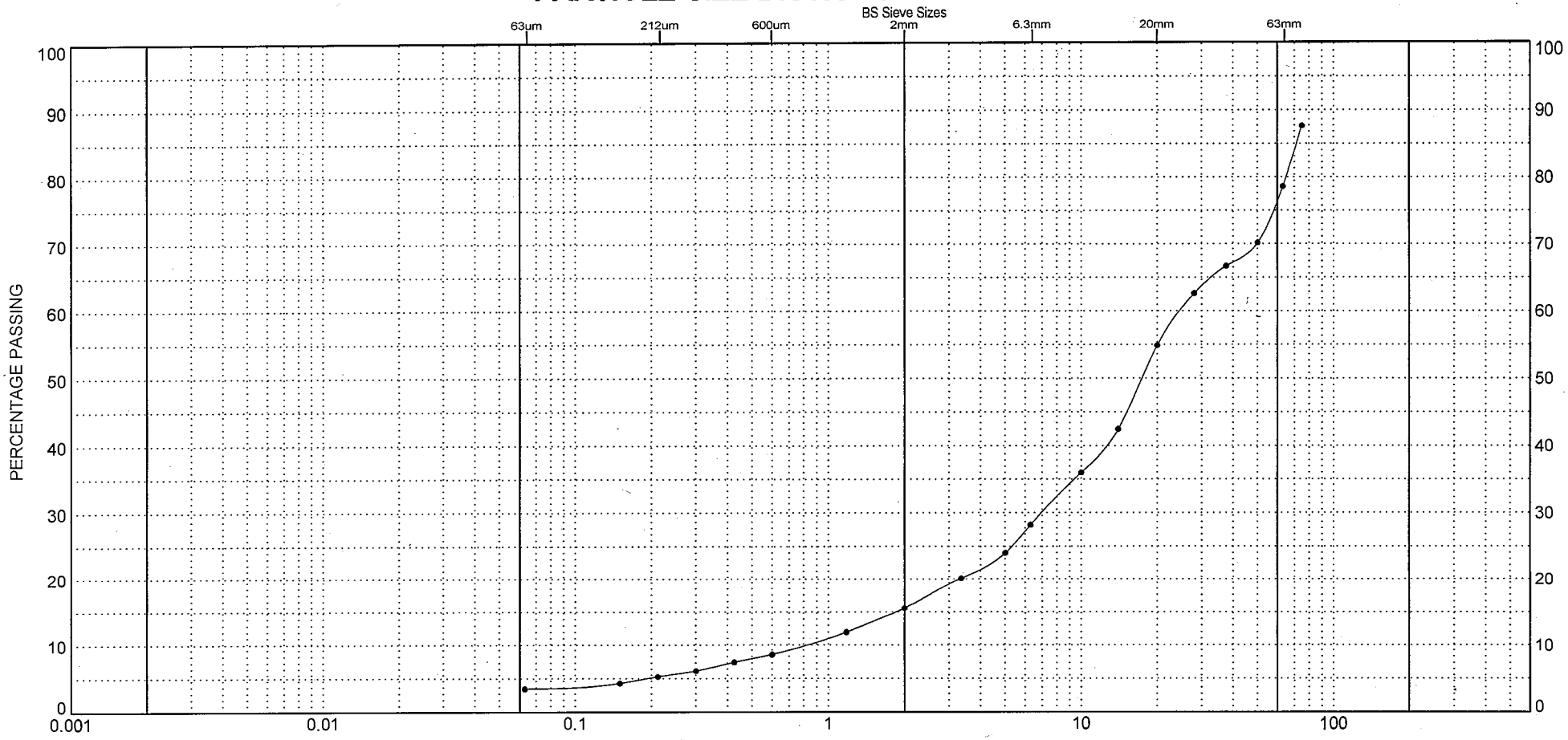
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TP-29**	Depth :- **0.80**	Sample Type & No :- **B2**	Date Tested :- **31/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TP-29/B2/0.80	MSene	[illegible]	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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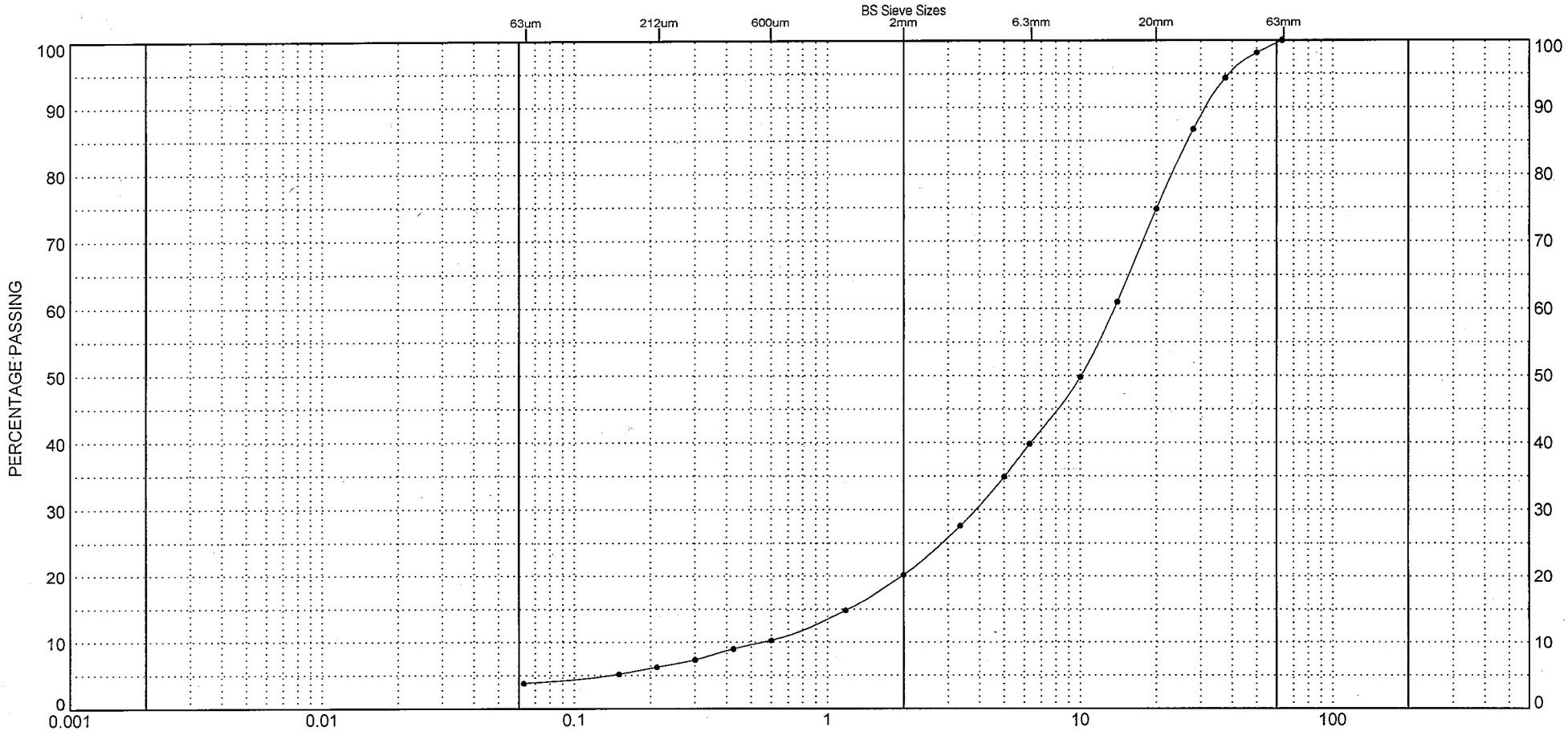
Regional Office: Unit 20, Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL - **Tel:** 01772 735 300 **Fax:** 01772 735 999

Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TP-31**	Depth :- **2.30**	Sample Type & No :- **B**	Date Tested :- **27/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TP-31/B/2.30	MSelkirk	M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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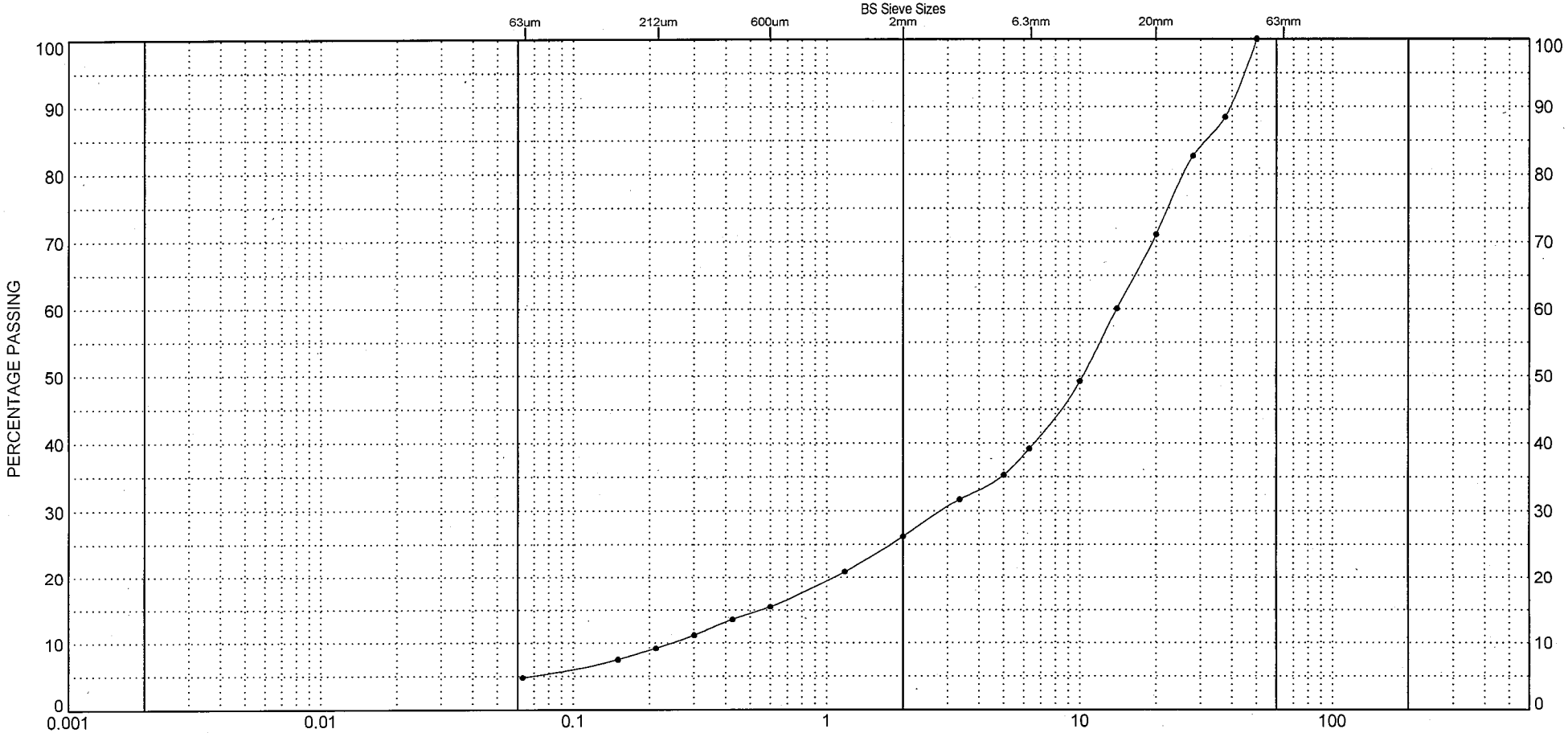
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990 #**	Exploratory Hole No :- **TP-36**	Depth :- **0.70**	Sample Type & No :- **B1**	Date Tested :- **24/04/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
09/05/2017	PSD/SLS1015/TP-36/B1/0.70	msone	[illegible]	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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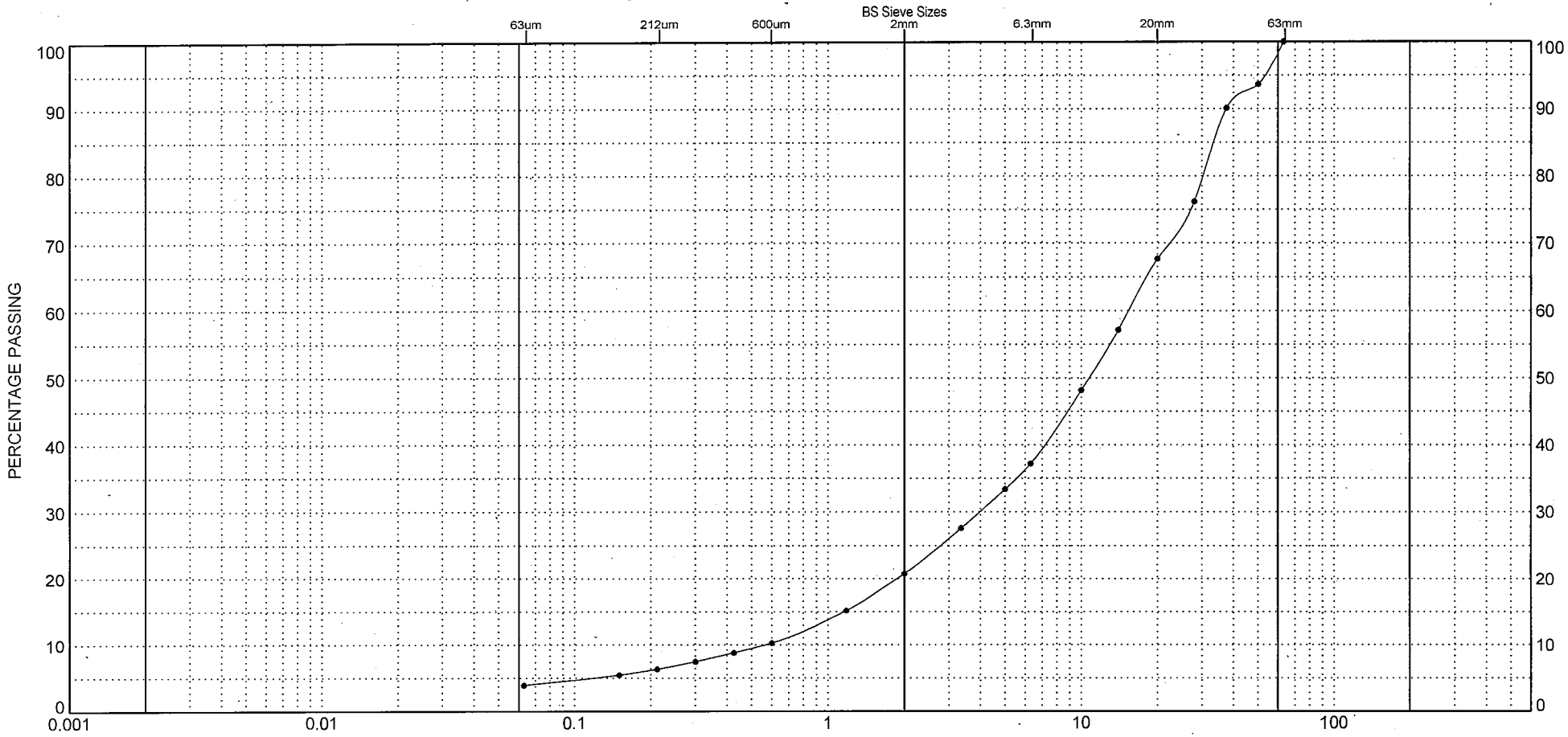
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990 #**	Exploratory Hole No :- **TP-39**	Depth :- **1.00**	Sample Type & No :- **B**	Date Tested :- **12/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TP-39/B/1.00		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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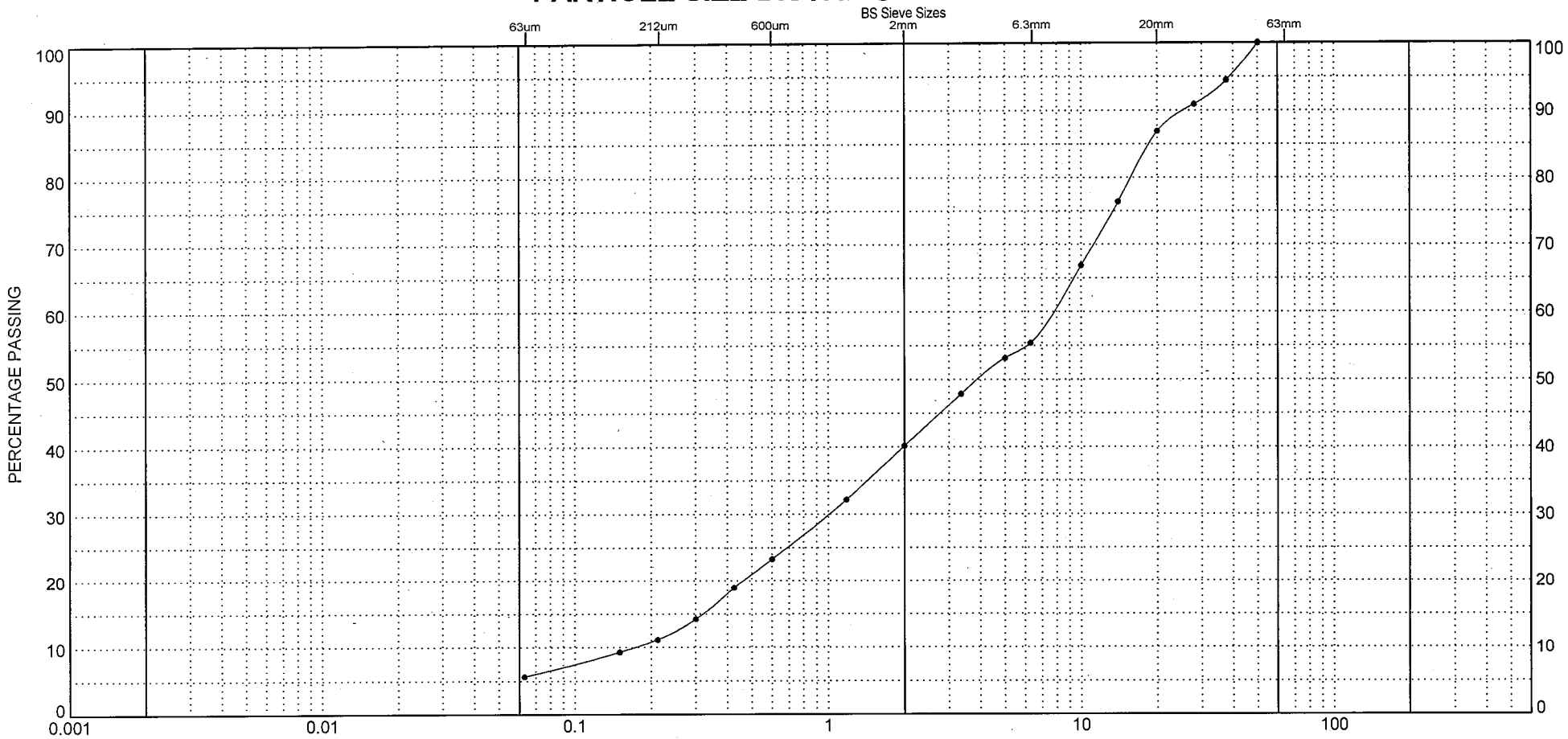
Regional Office: Unit 20, Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL - Tel: 01772 735 300 Fax: 01772 735 999

Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TP-42**	Depth :- **0.50**	Sample Type & No :- **B**	Date Tested :- **24/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TP-42/B/0.50		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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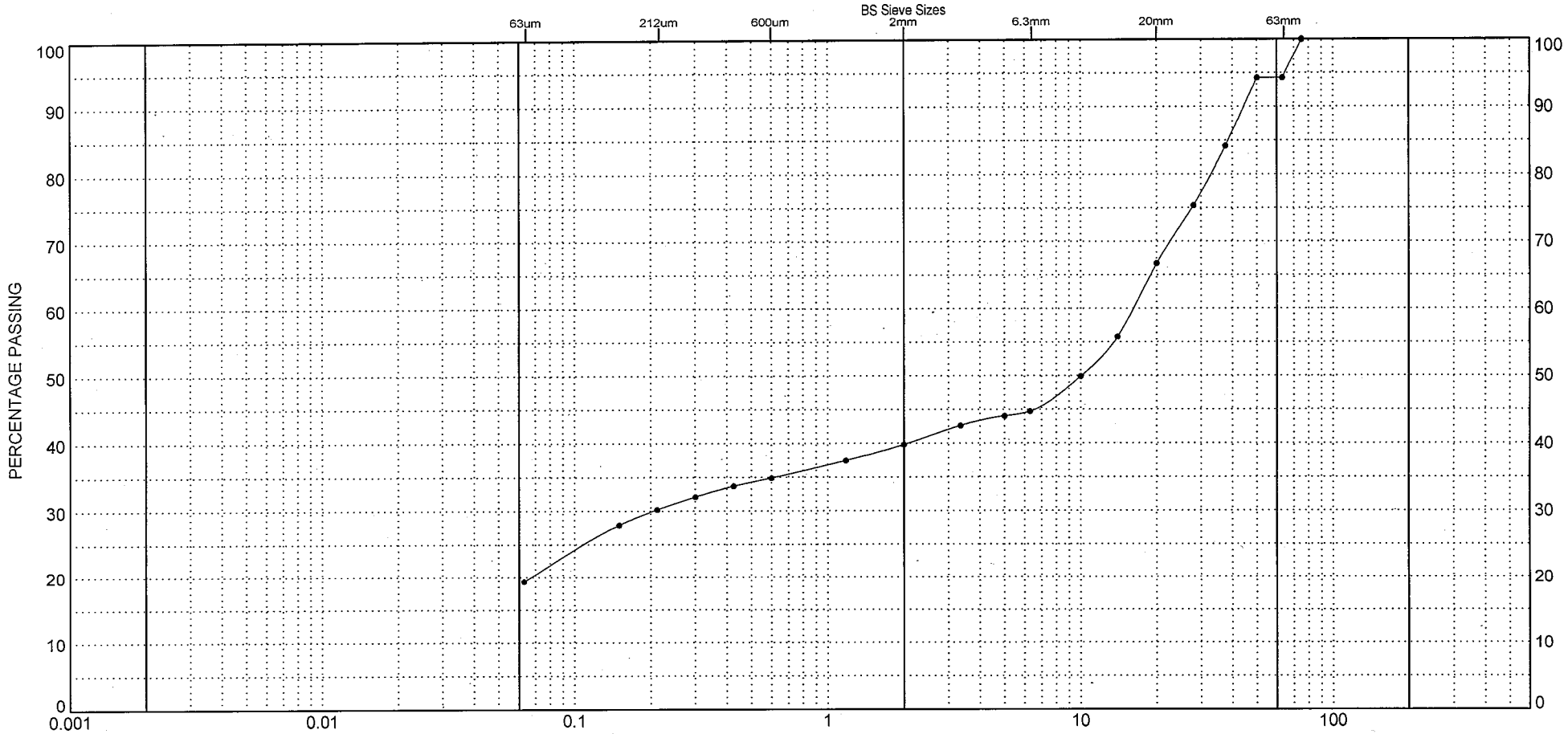
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990 #**	Exploratory Hole No :- **TP-42**	Depth :- **1.70**	Sample Type & No :- **B2**	Date Tested :- **31/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TP-42/B2/1.70		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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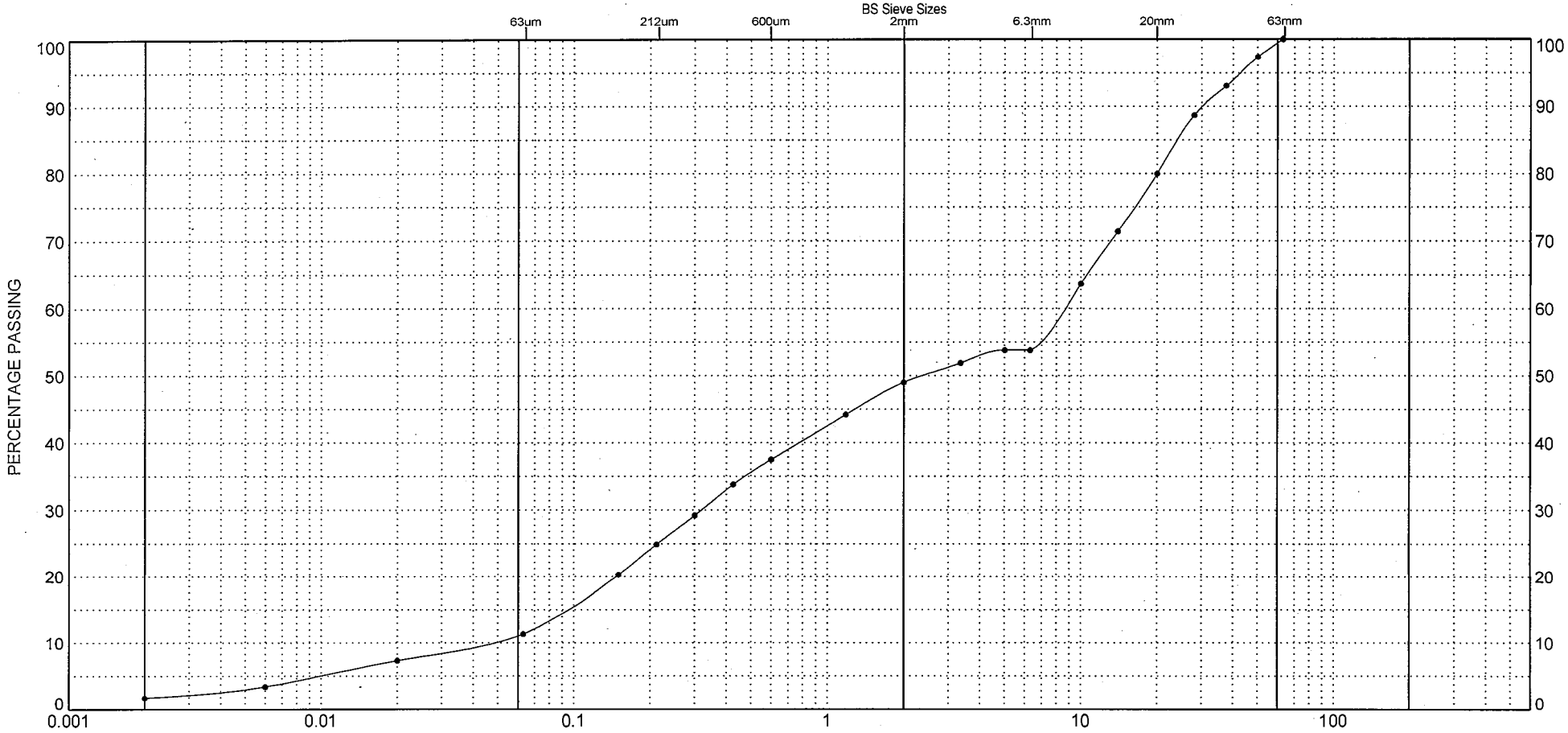
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990 #**	Exploratory Hole No :- **TP-42**	Depth :- **3.40**	Sample Type & No :- **B**	Date Tested :- **21/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TP-42/B/3.40			

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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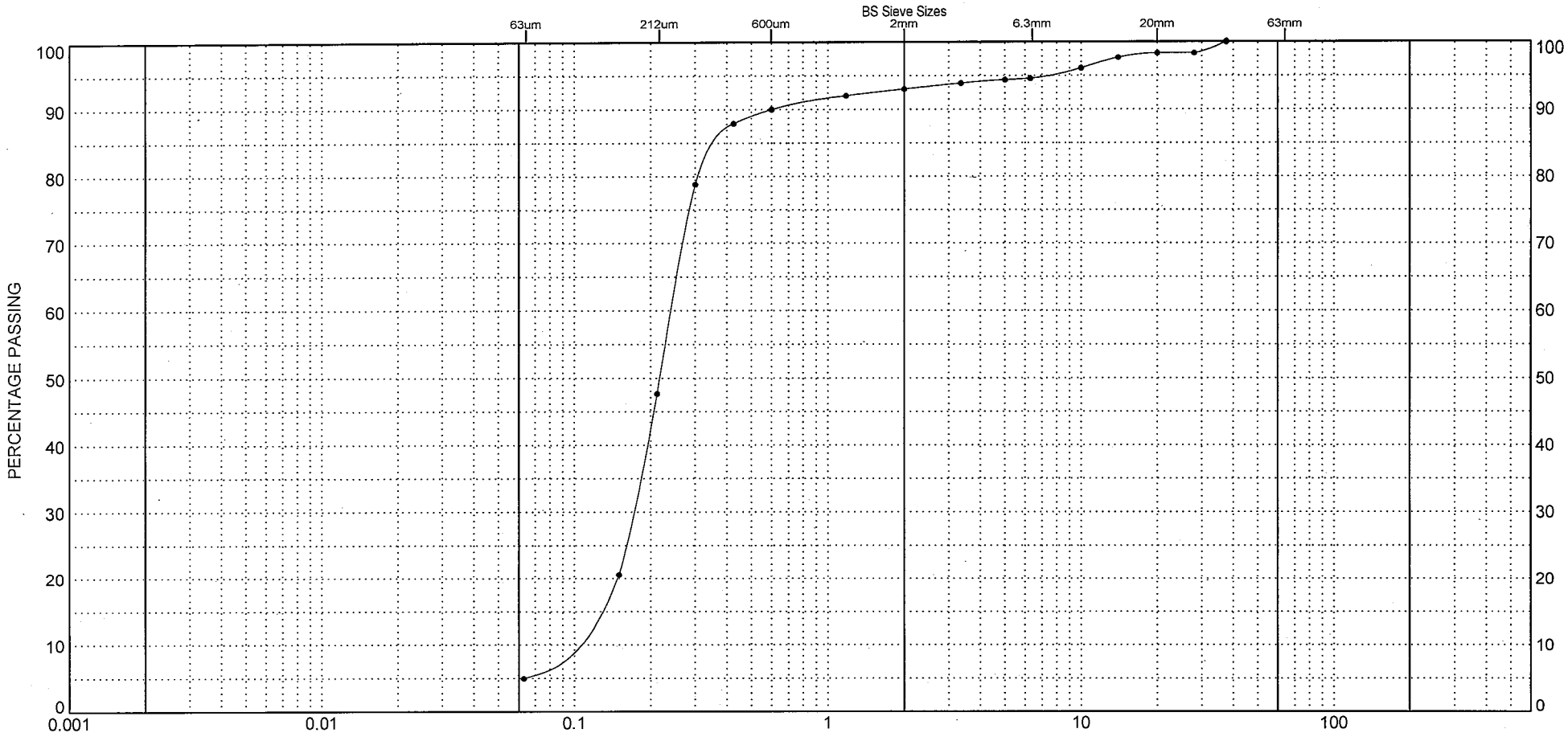
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPB-01**	Depth :- **3.70**	Sample Type & No :- **B**	Date Tested :- **11/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPB-01/B/3.70			

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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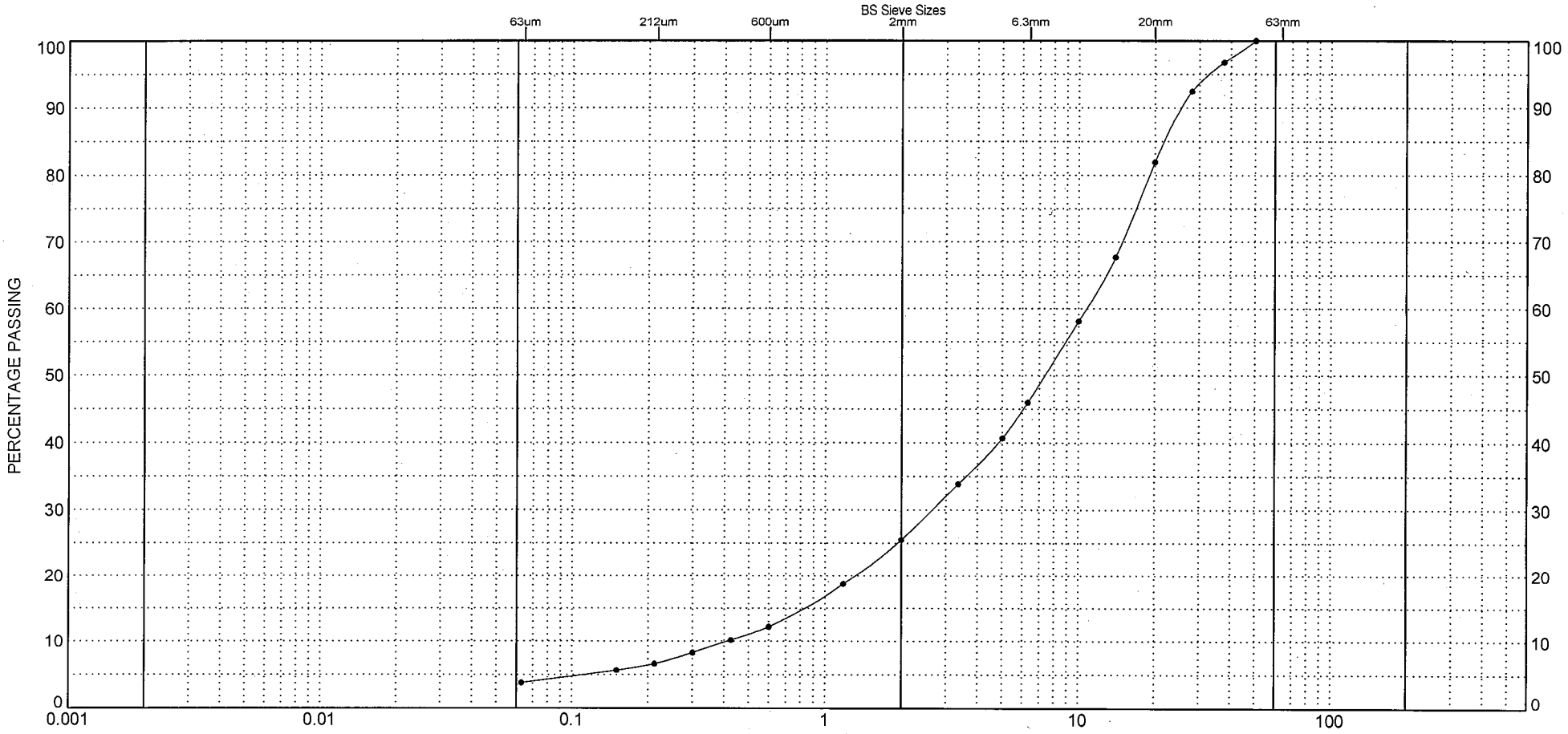
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPB-02**	Depth :- **0.30**	Sample Type & No :- **B**	Date Tested :- **11/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPB-02/B/0.30	M Selkirk	M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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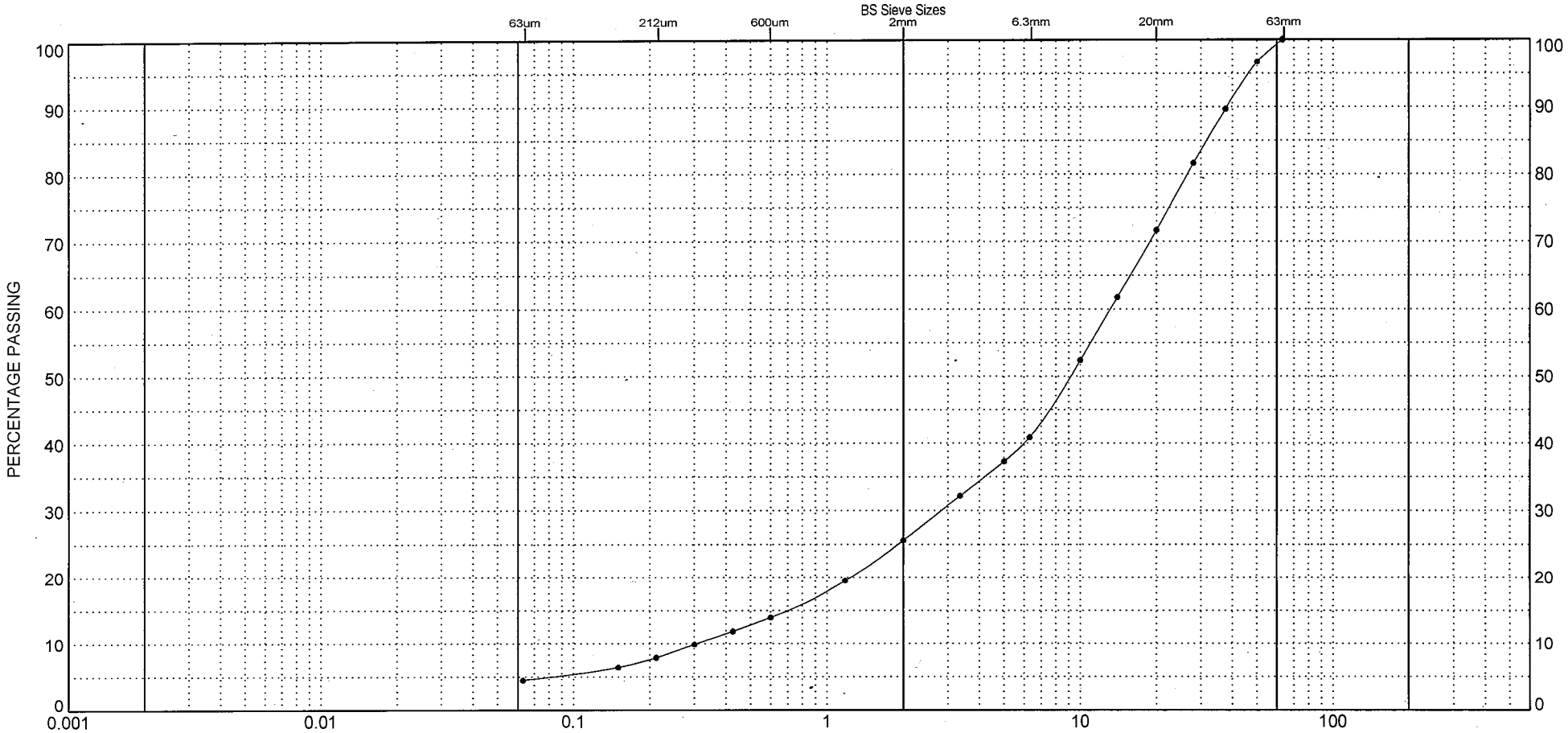
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPB-06**	Depth :- **1.30**	Sample Type & No :- **B**	Date Tested :- **11/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPB-06/B/1.30	M Selkirk	M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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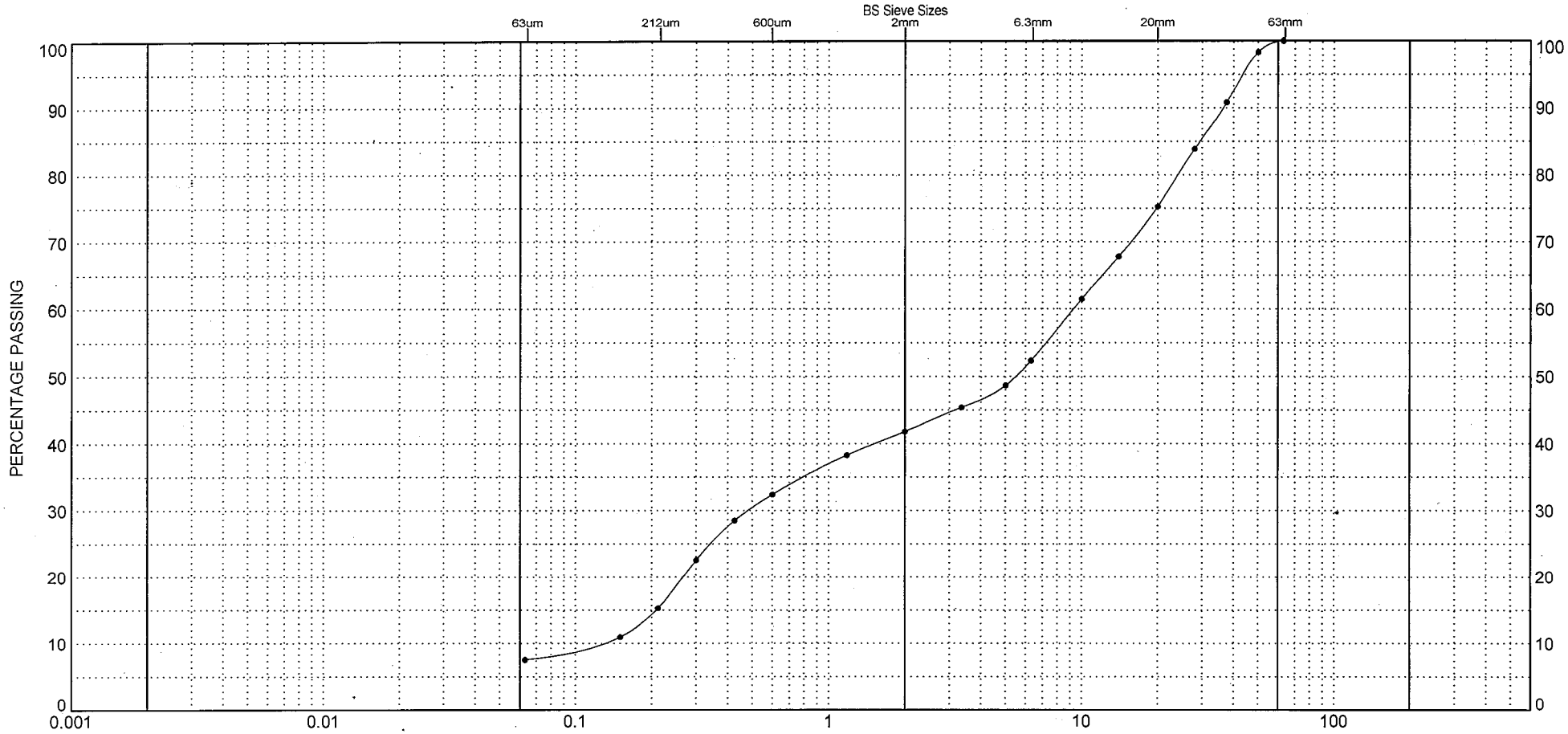
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPB-07**	Depth :- **2.50**	Sample Type & No :- **B**	Date Tested :- **28/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPB-07/B/2.50		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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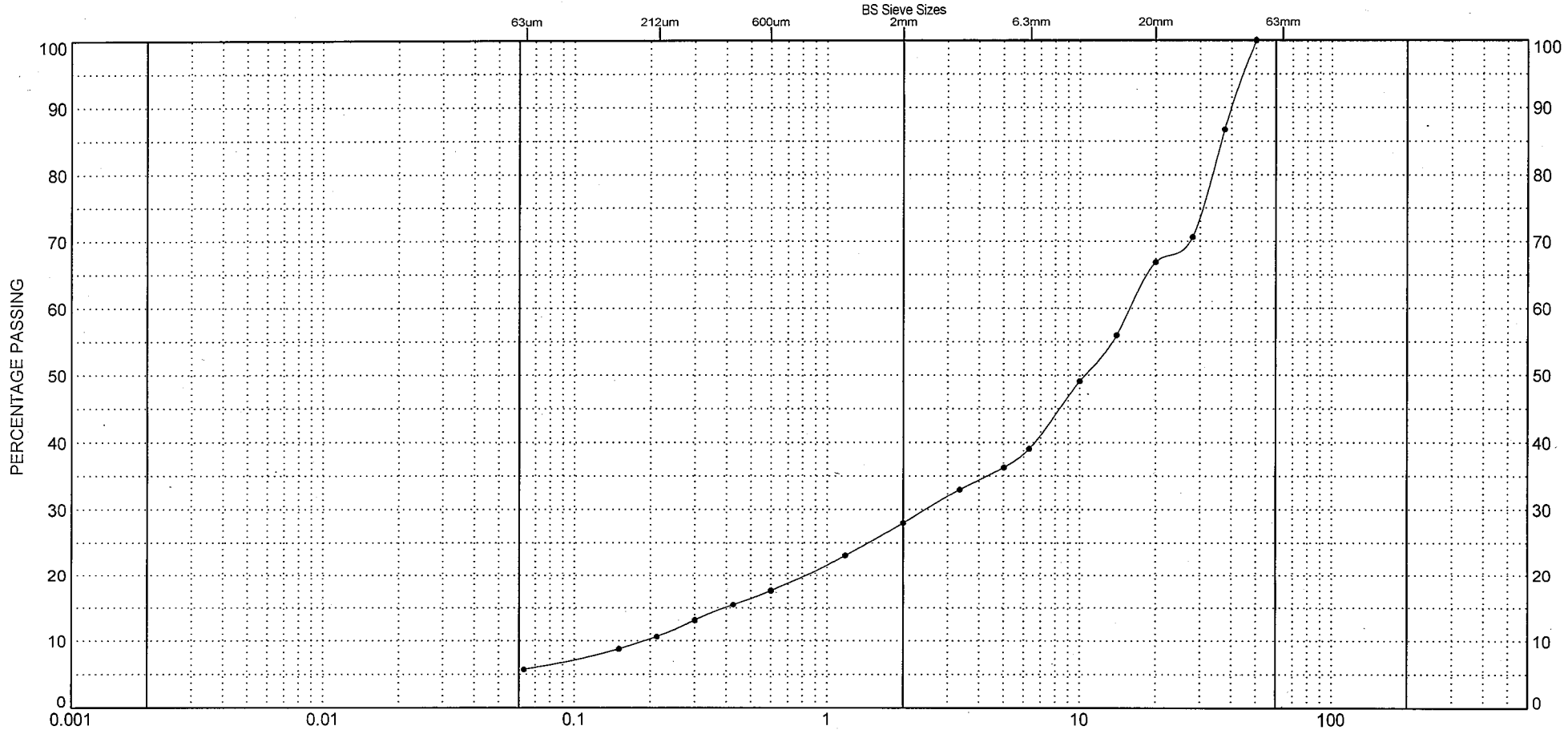
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990 #**	Exploratory Hole No :- **TPB-12**	Depth :- **1.00**	Sample Type & No :- **B**	Date Tested :- **11/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPB-12/B/1.00		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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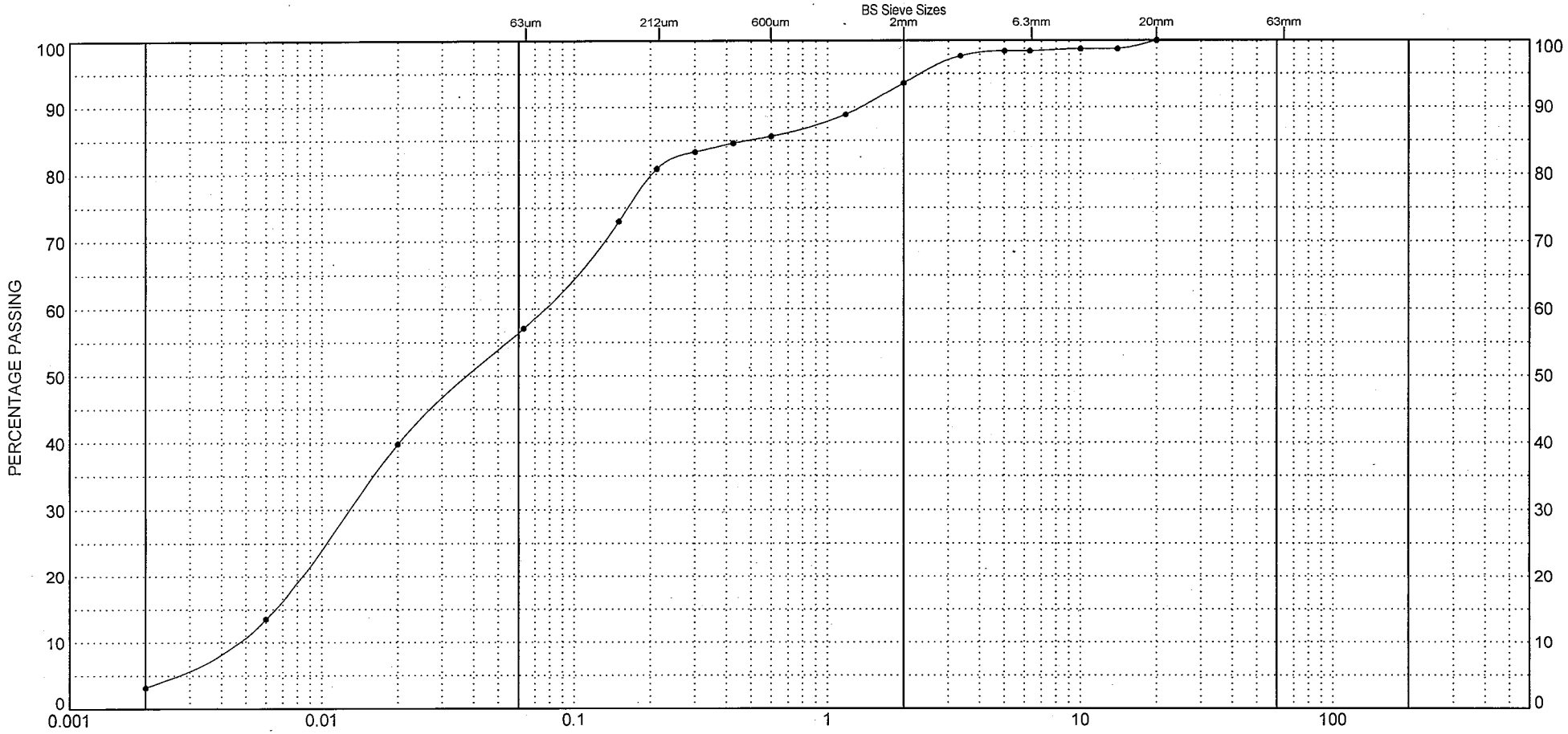
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPC-16**	Depth :- **4.20**	Sample Type & No :- **B**	Date Tested :- **11/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPC-16/B/4.20	MSelne	M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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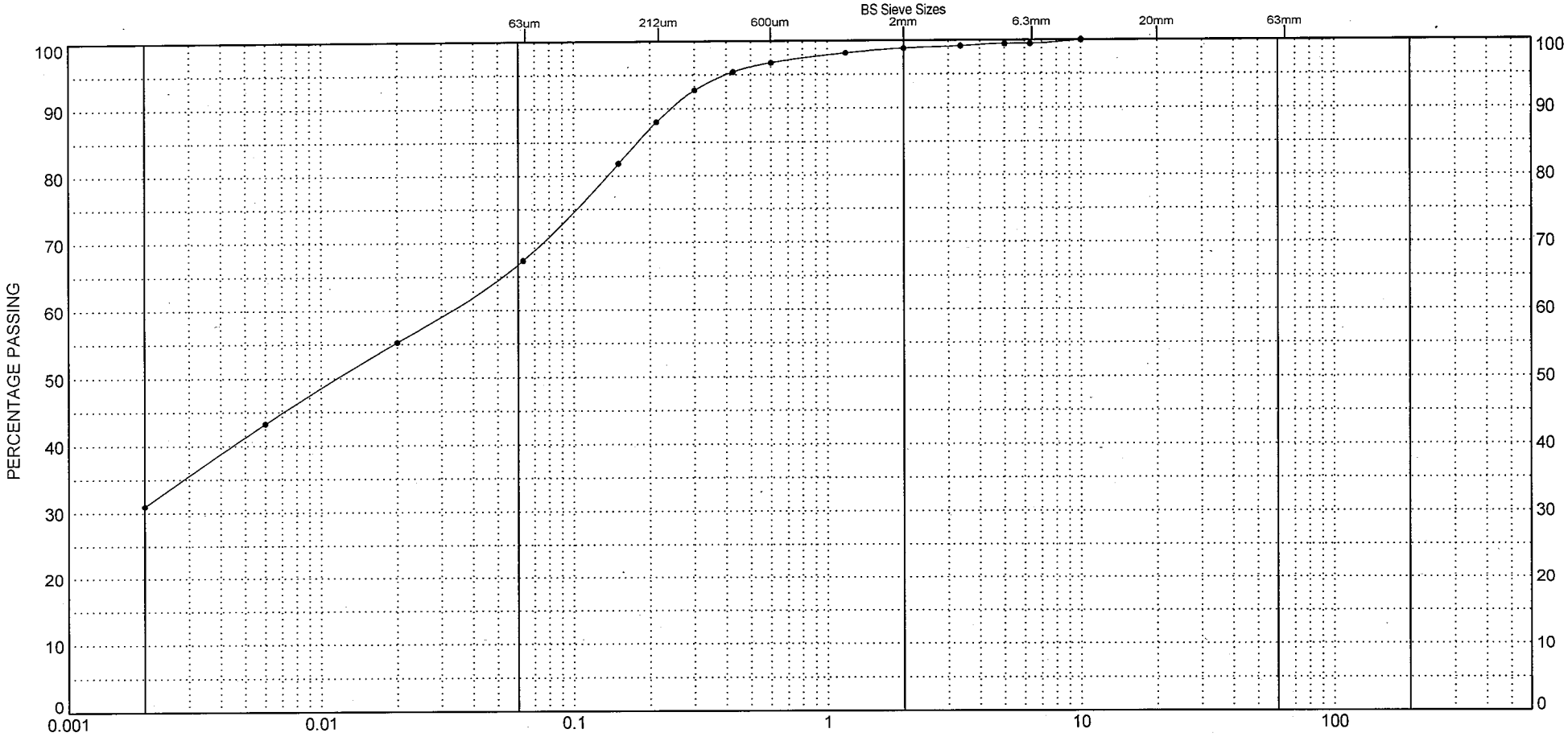
Regional Office: Unit 20, Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL - Tel: 01772 735 300 Fax: 01772 735 999

Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPC-19**	Depth :- **0.80**	Sample Type & No :- **B**	Date Tested :- **20/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPC-19/B/0.80		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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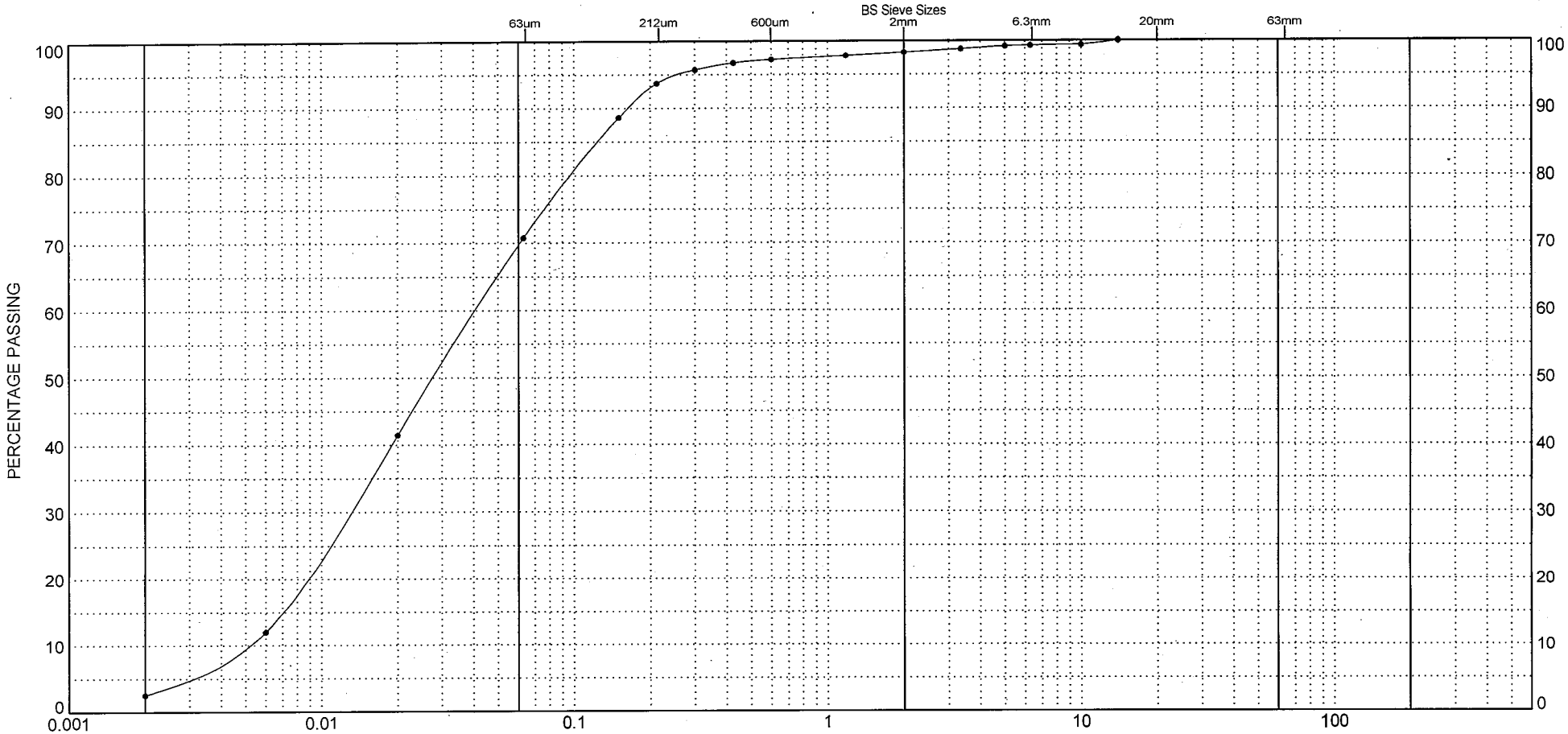
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPC-27**	Depth :- **1.50**	Sample Type & No :- **B**	Date Tested :- **11/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPC-27/B/1.50		M SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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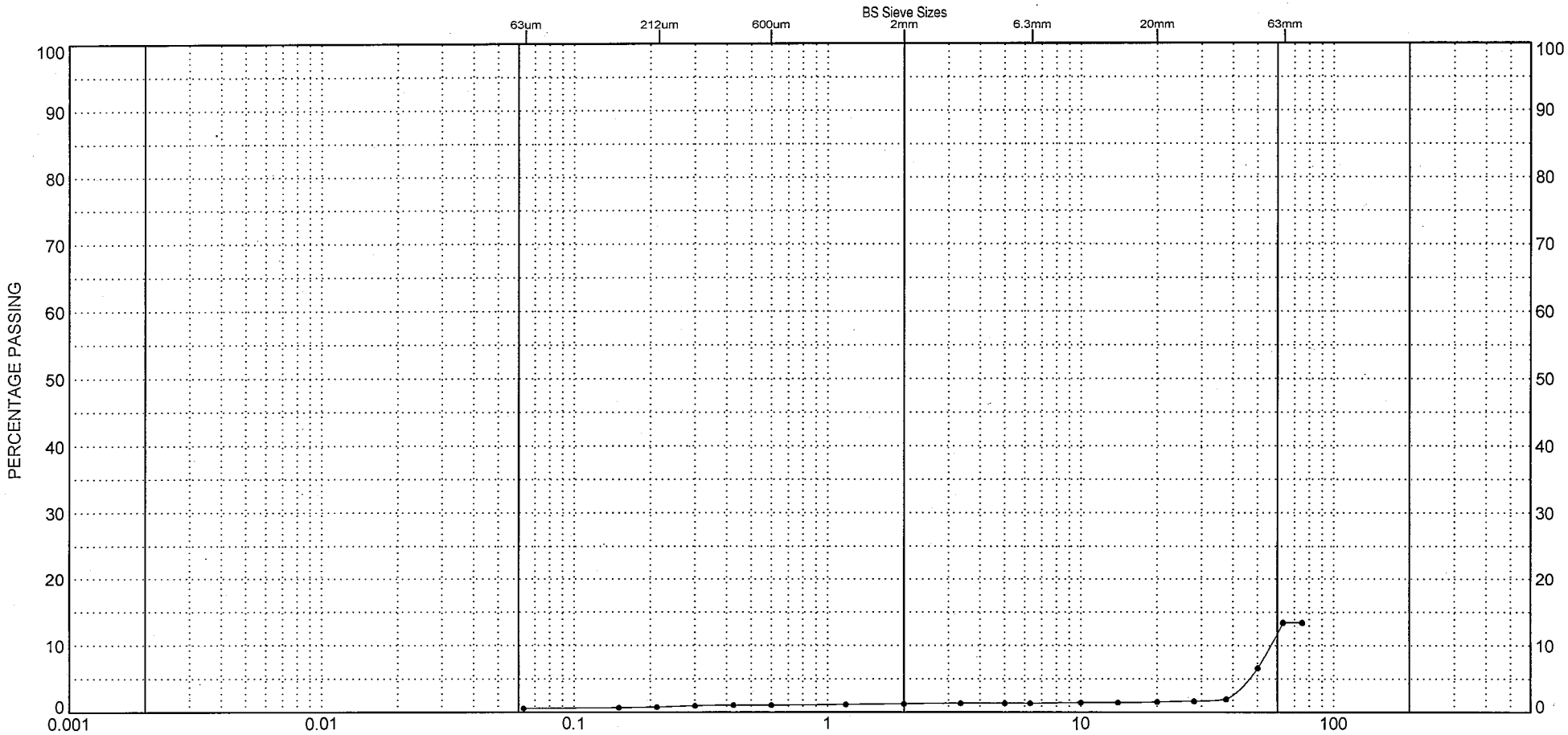
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990 #**	Exploratory Hole No :- **TPD-02**	Depth :- **0.20**	Sample Type & No :- **B**	Date Tested :- **12/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPD-02/B/0.20	mselre	M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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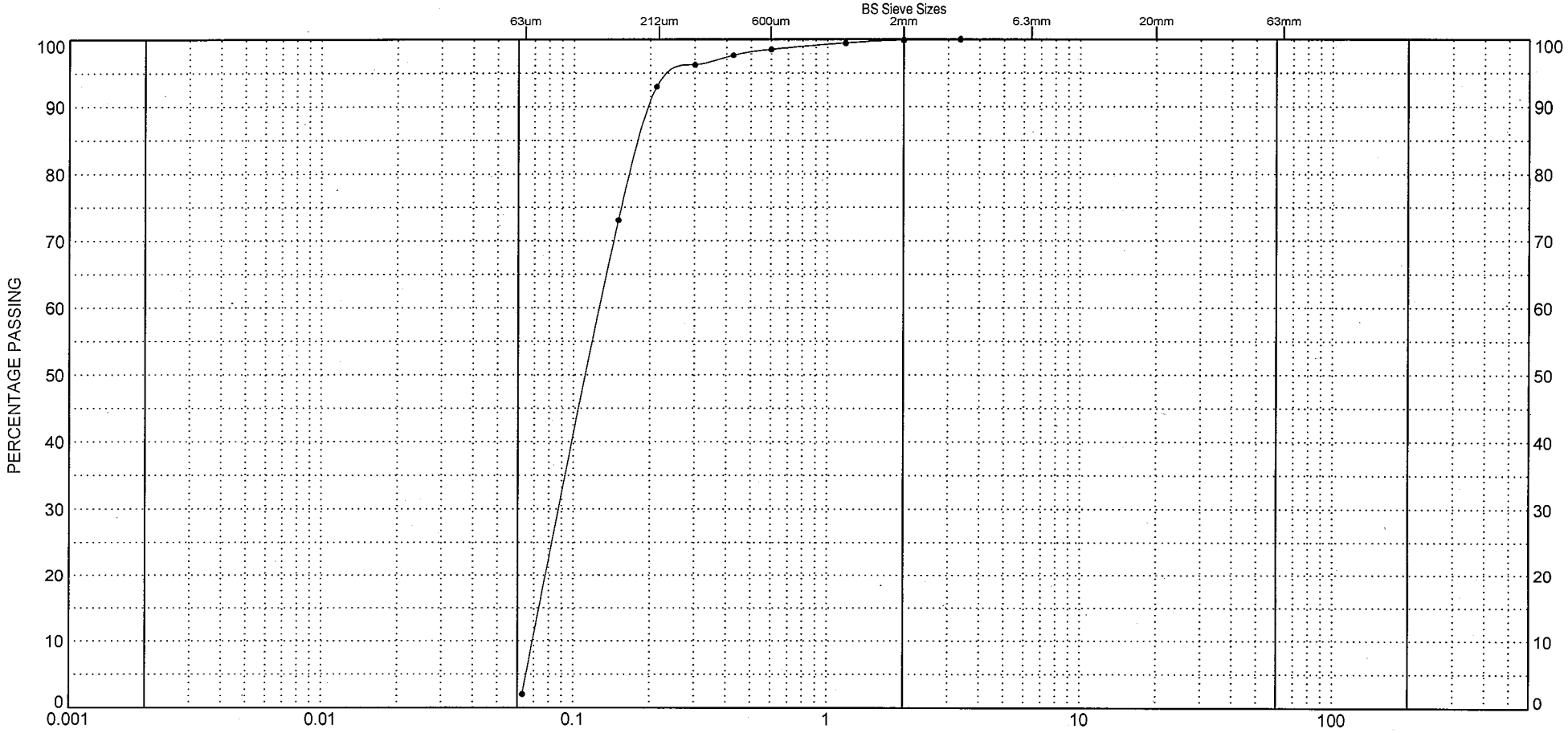
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPD-19**	Depth :- **1.50**	Sample Type & No :- **B**	Date Tested :- **27/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPD-19/B/1.50	MSelk	M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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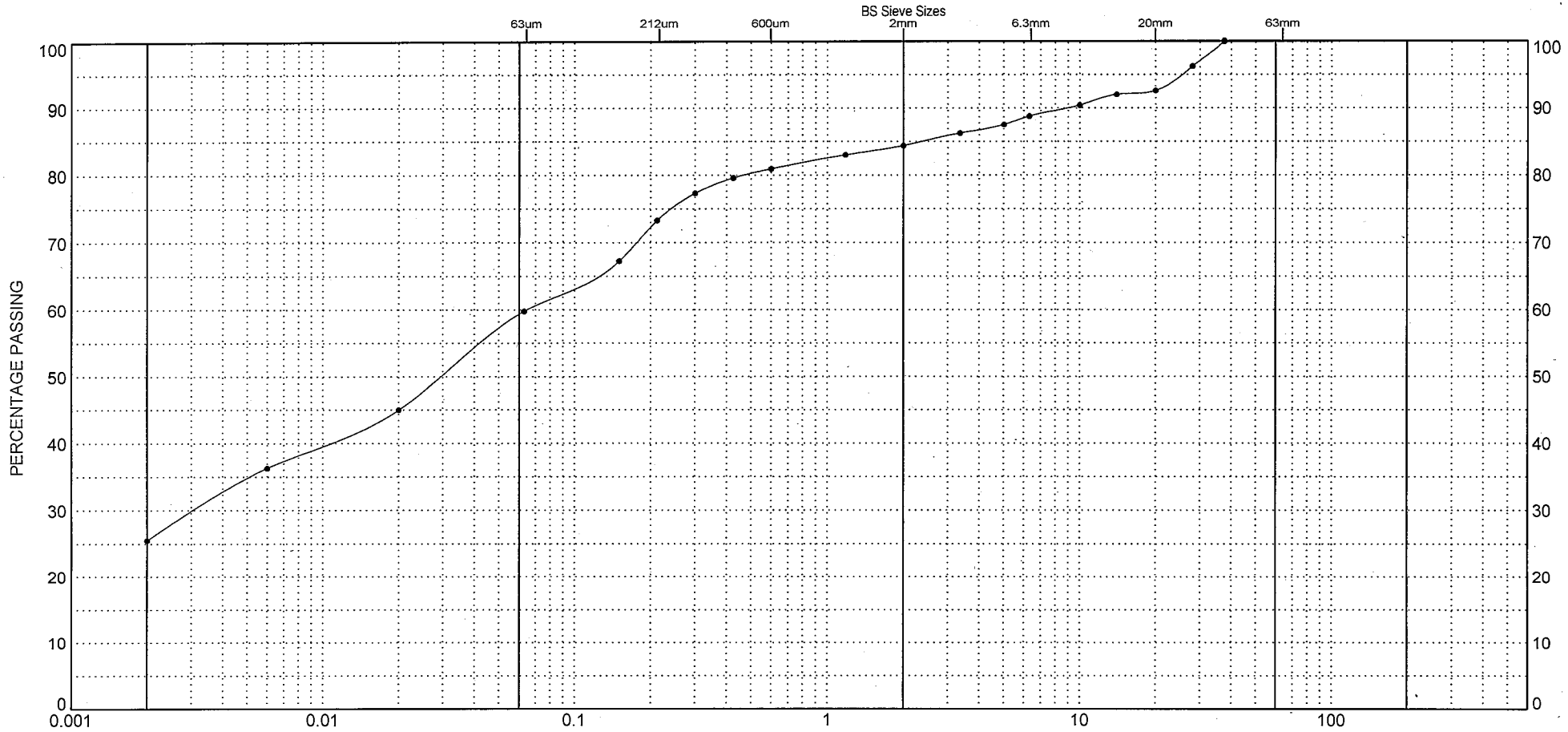
Head Office: Unit 25 Stella Gill Industrial Estate, Pelton Fell, Chester-le-Street, Co. Durham, DH2 2RG - Tel: 0191 387 4700 Fax: 0191 387 4710
Regional Office: Unit 20, Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL - Tel: 01772 735 300 Fax: 01772 735 999

Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPD-22**	Depth :- **2.00**	Sample Type & No :- **B**	Date Tested :- **12/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPD-22/B/2.00	M Selkirk	M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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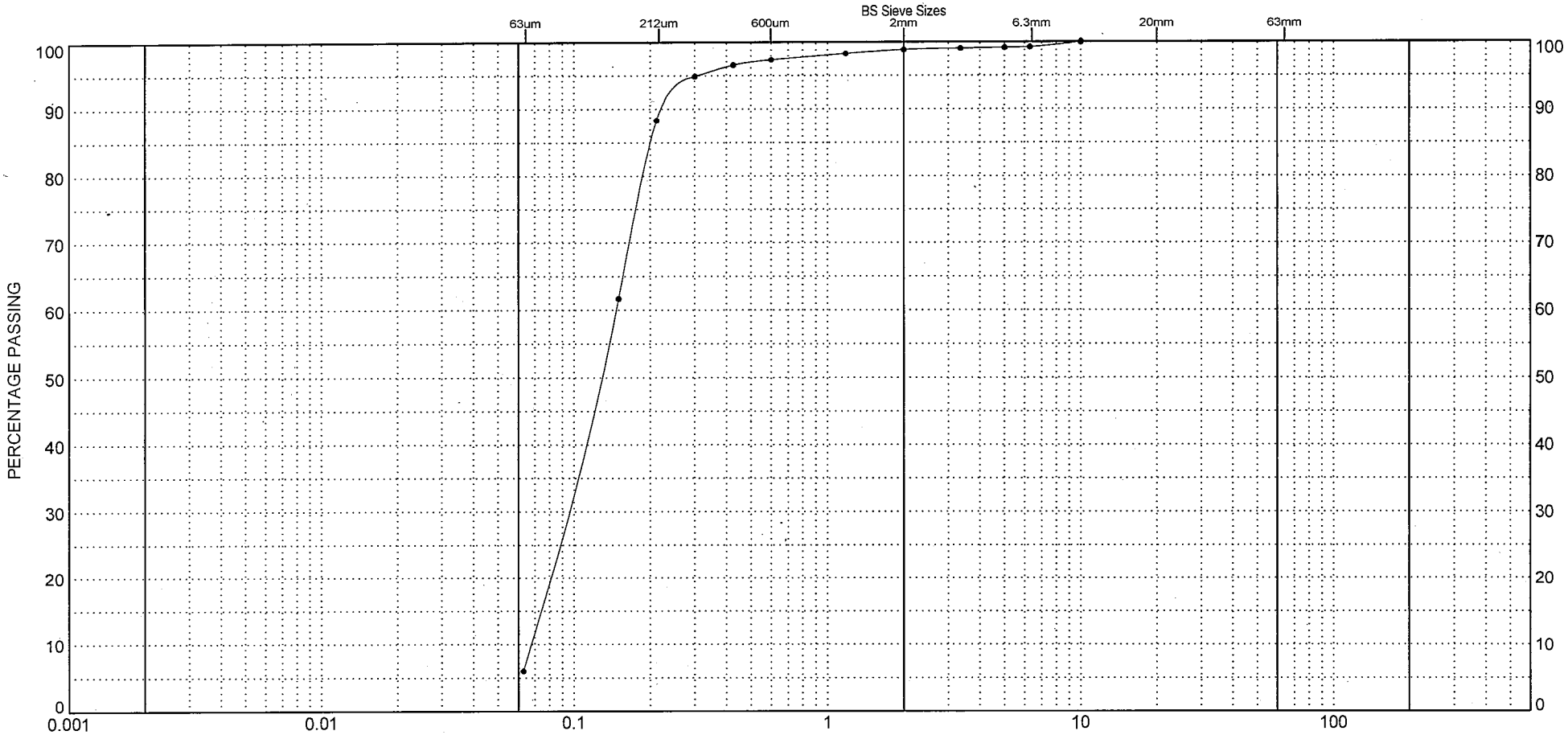
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPD-23**	Depth :- **0.90**	Sample Type & No :- **B**	Date Tested :- **28/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPD-23/B/0.90	MSone	M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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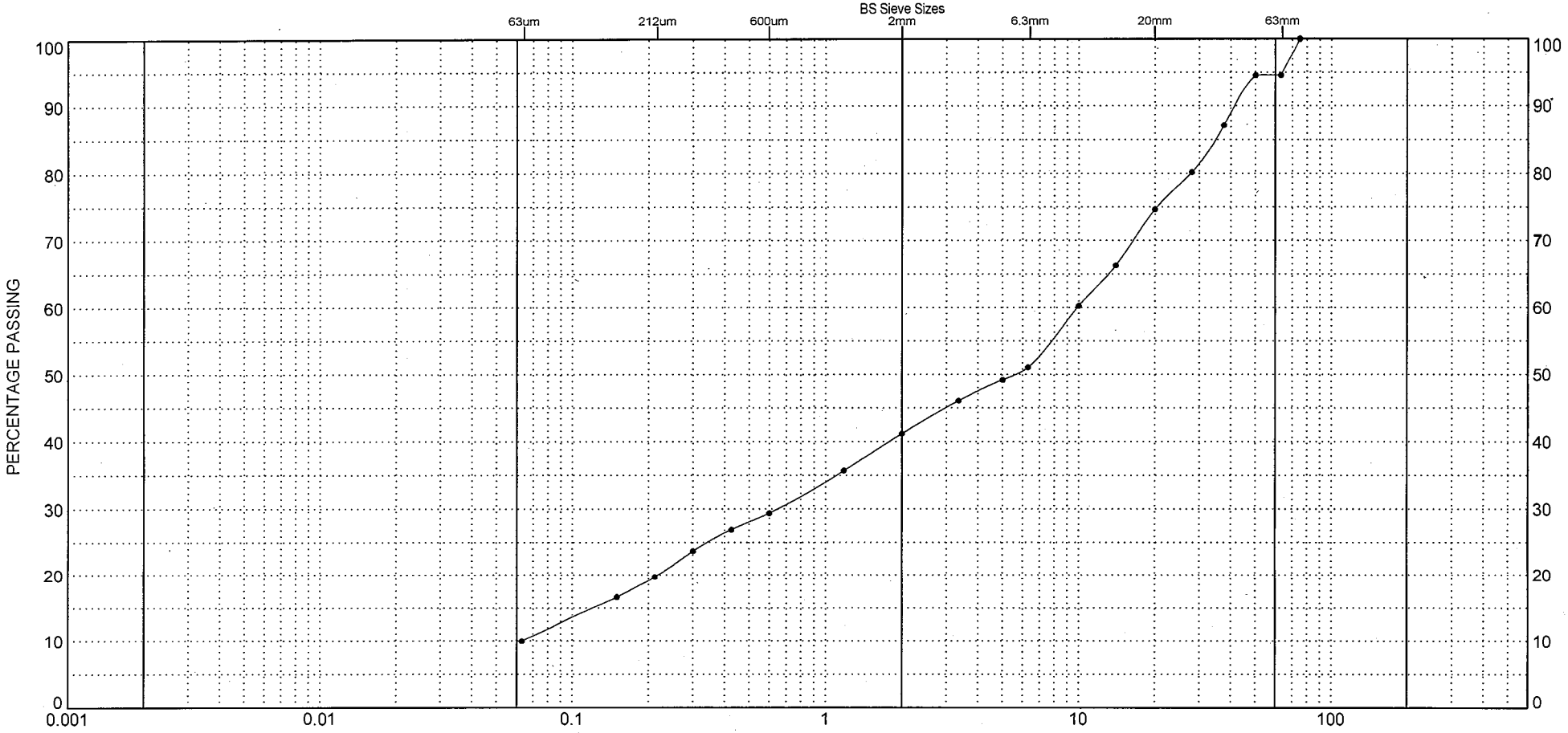
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPD-24**	Depth :- **0.80**	Sample Type & No :- **B**	Date Tested :- **12/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPD-24/B/0.80	MSelkirk	M SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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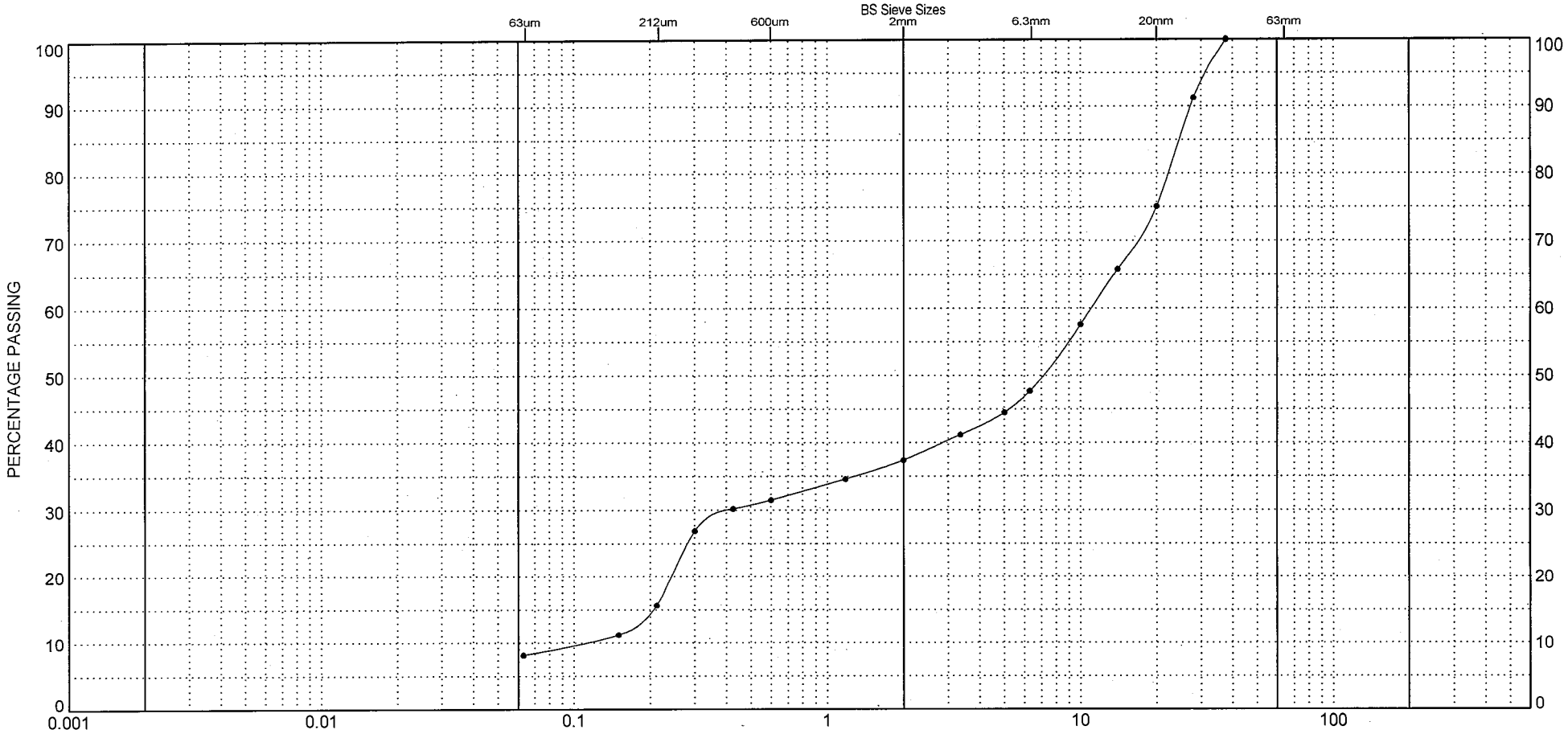
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990 #**	Exploratory Hole No :- **TPD-30**	Depth :- **1.70**	Sample Type & No :- **B**	Date Tested :- **11/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
09/08/2017	PSD/SLS1015/TPD-30/B/1.70		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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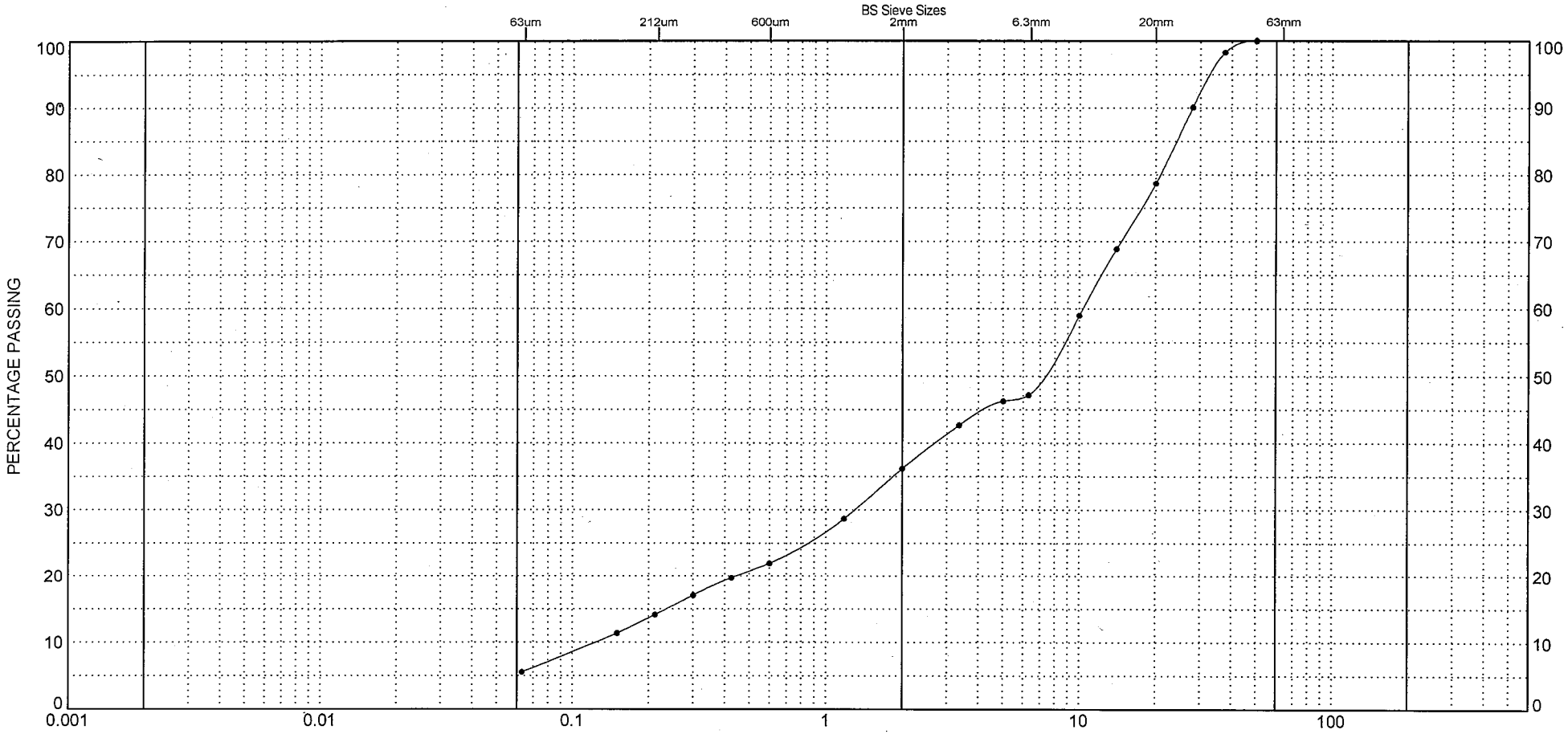
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPE-04**	Depth :- **1.50**	Sample Type & No :- **B**	Date Tested :- **31/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name	Page 1 of 1
08/08/2017	PSD/SLS1015/TPE-04/B/1.50		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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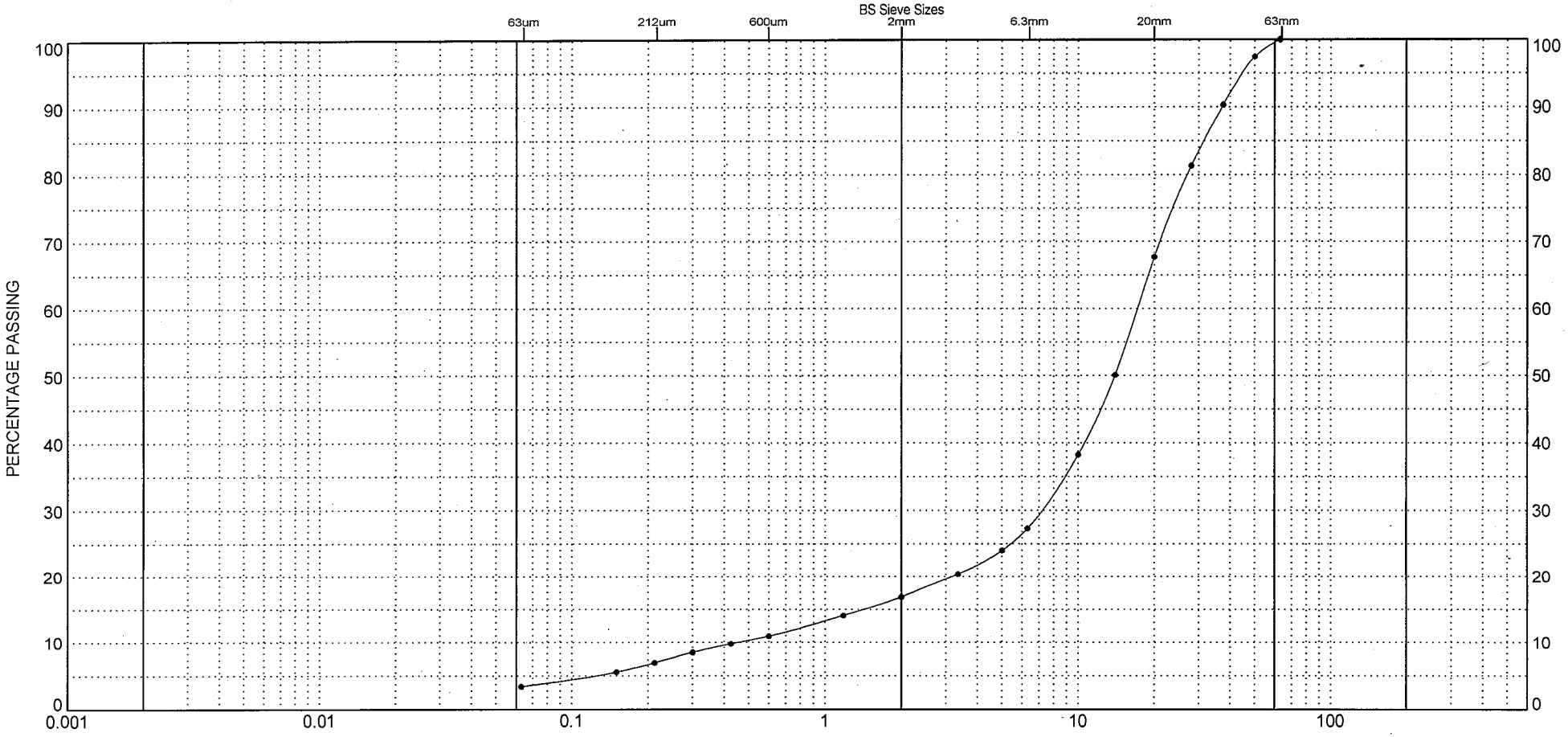
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990 #**	Exploratory Hole No :- **TPE-07**	Depth :- **2.20**	Sample Type & No :- **B**	Date Tested :- **11/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPE-07/B/2.20		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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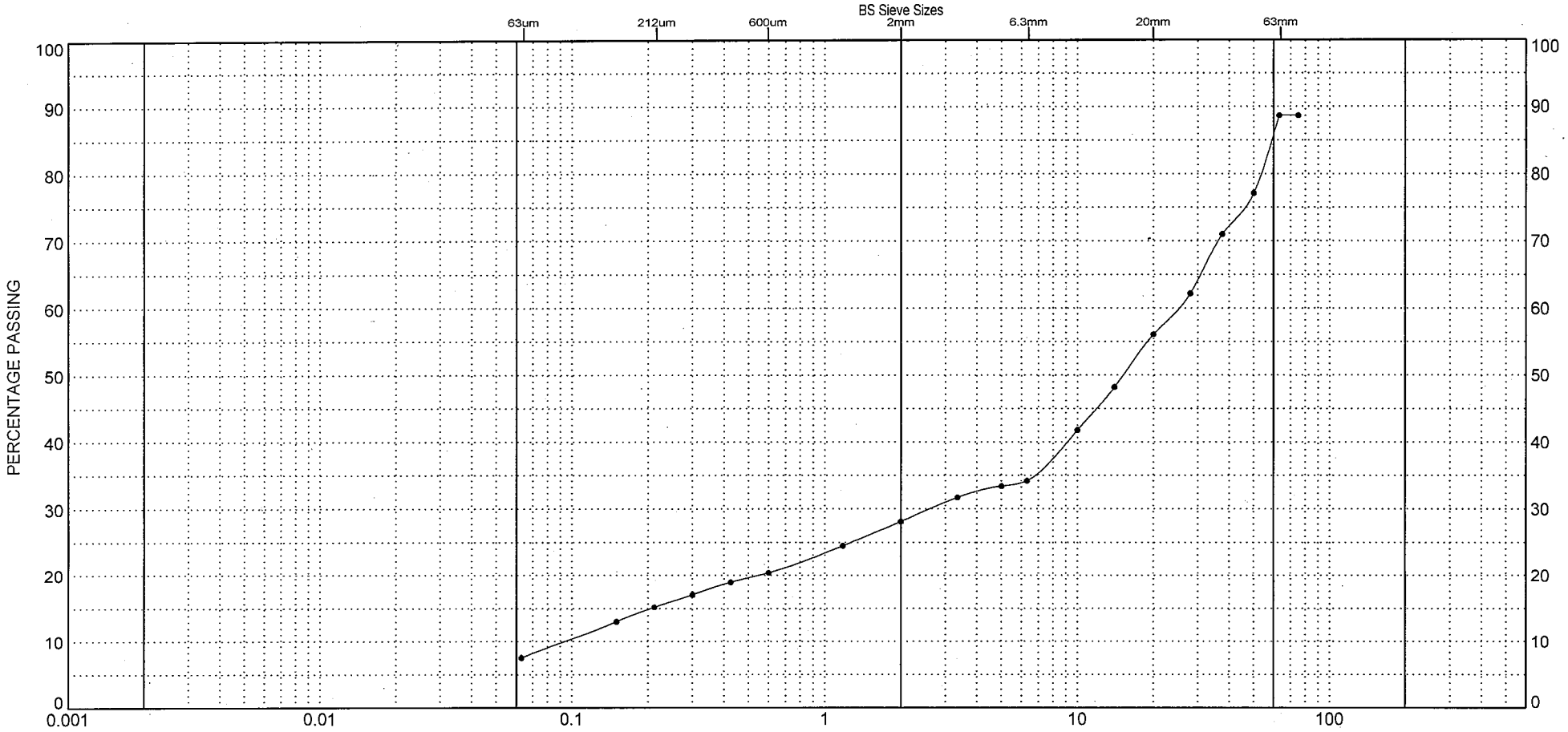
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990 #**	Exploratory Hole No :- **TPE-12**	Depth :- **0.60**	Sample Type & No :- **B**	Date Tested :- **26/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPE-12/B/0.60		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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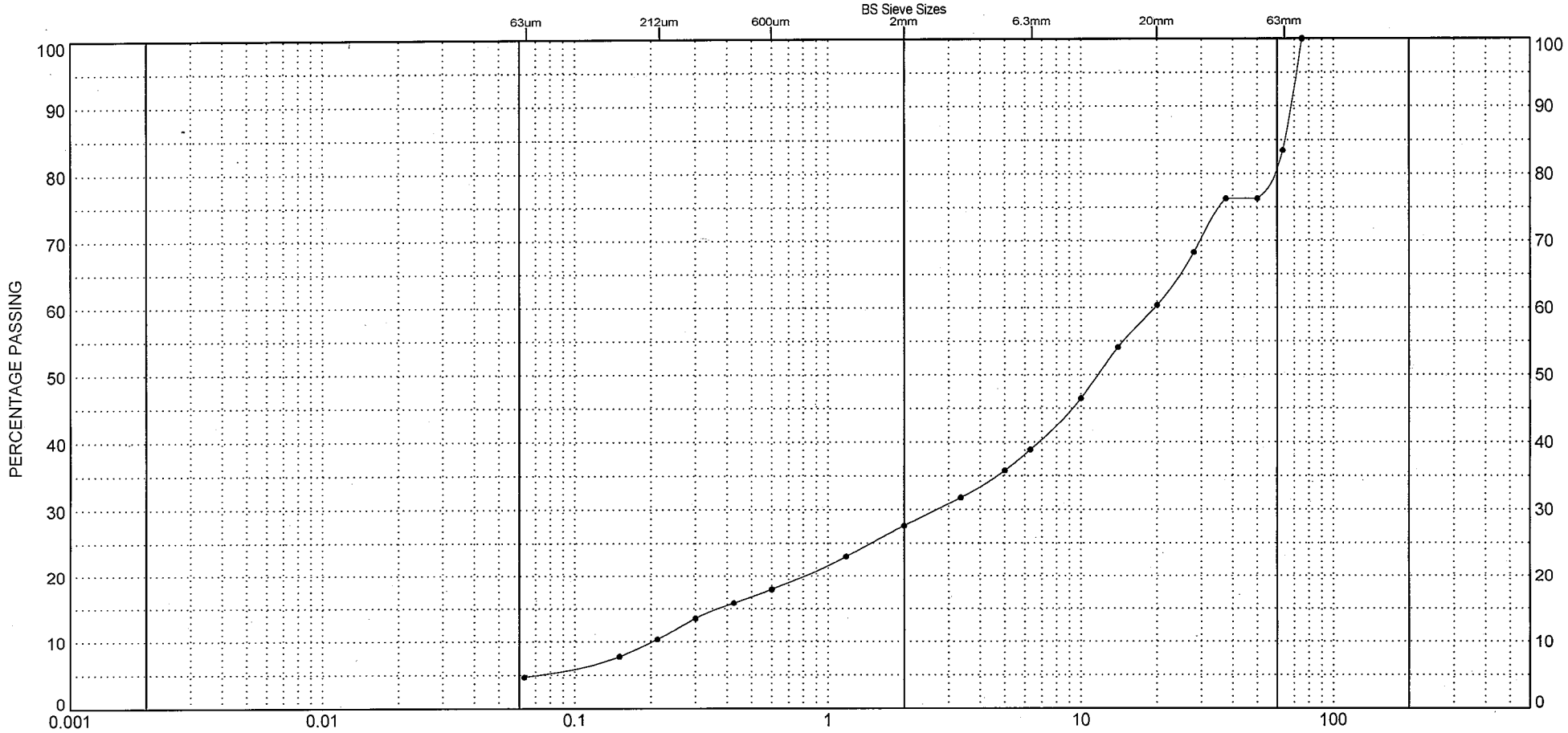
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990 #**	Exploratory Hole No :- **TPE-20**	Depth :- **0.50**	Sample Type & No :- **B**	Date Tested :- **11/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPE-20/B/0.50		M SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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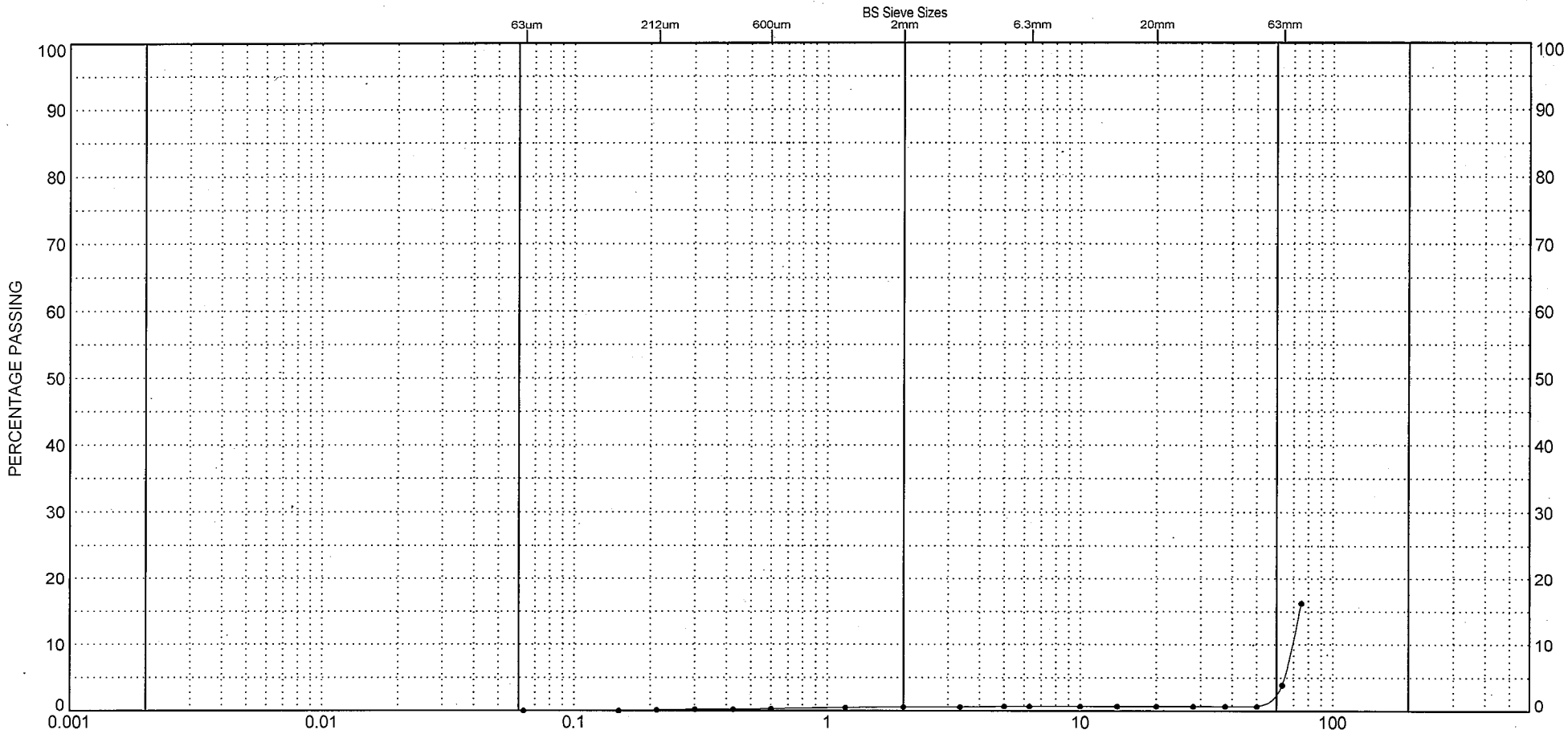
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPE-25**	Depth :- **2.70**	Sample Type & No :- **B**	Date Tested :- **12/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPE-25/B/2.70			

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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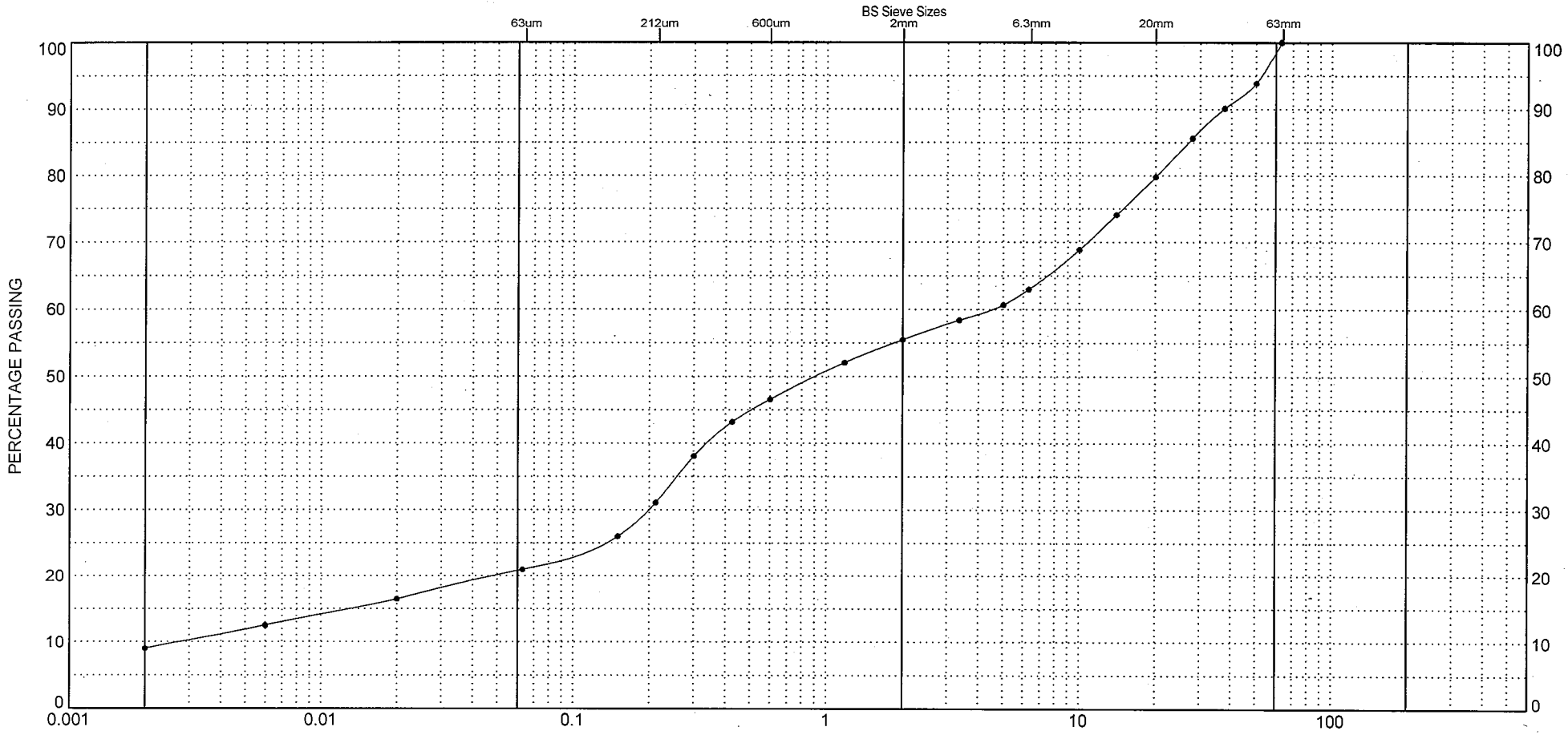
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990 #**	Exploratory Hole No :- **TPE-33**	Depth :- **3.40**	Sample Type & No :- **B**	Date Tested :- **12/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPE-33/B/3.40		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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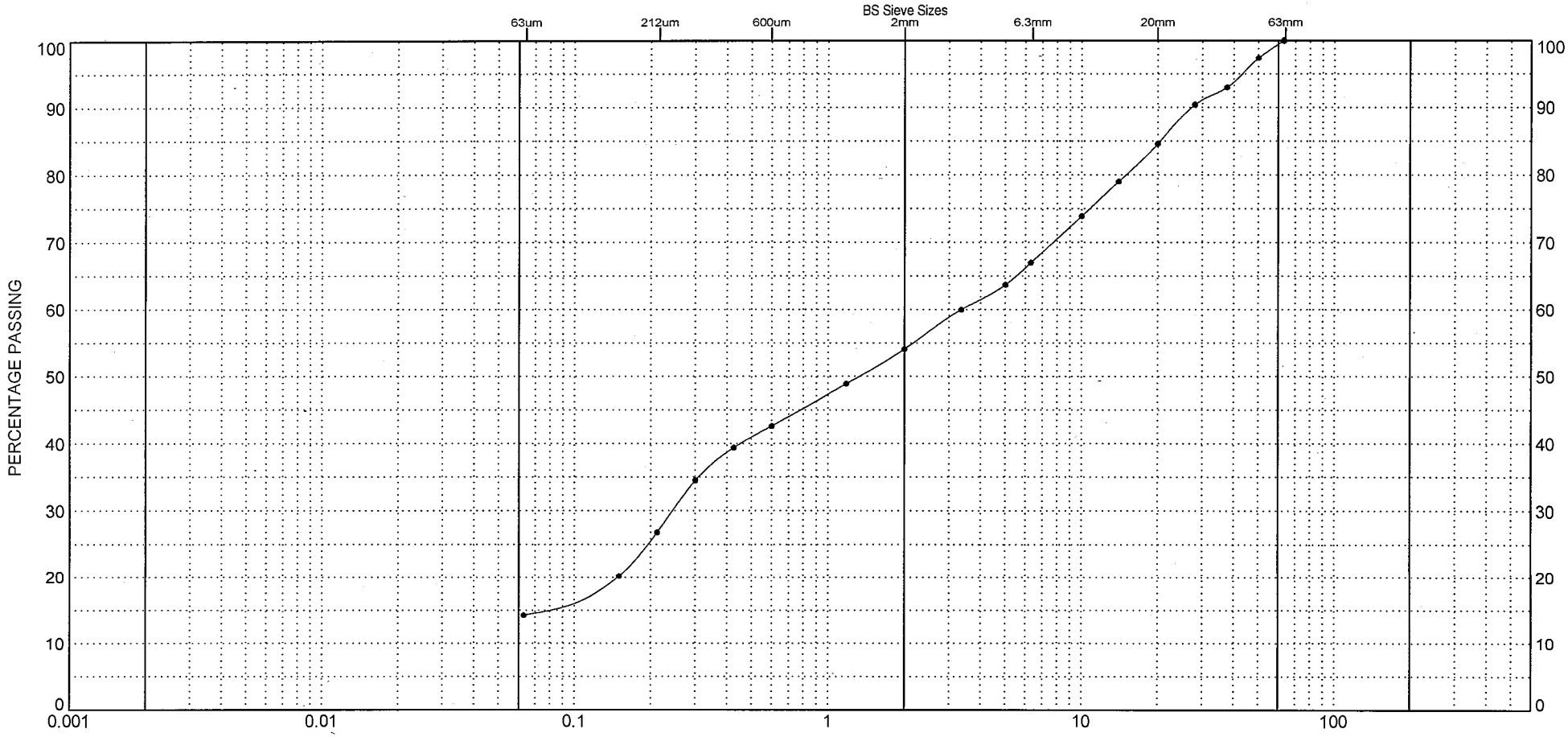
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPE-38**	Depth :- **2.50**	Sample Type & No :- **B**	Date Tested :- **12/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPE-38/B/2.50		N. SALKAR	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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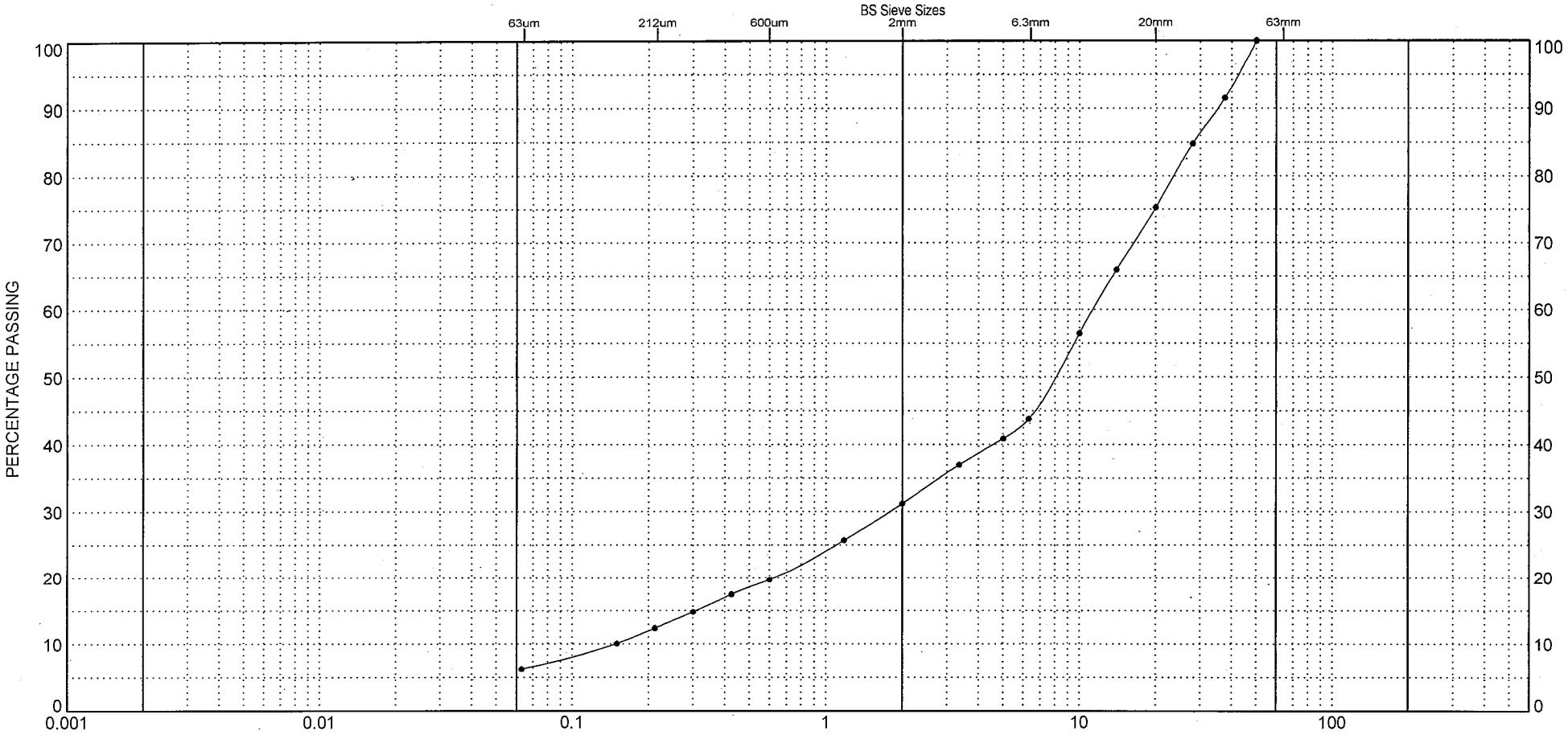
Regional Office: Unit 20, Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL - **Tel:** 01772 735 300 **Fax:** 01772 735 999

Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990 #**	Exploratory Hole No :- **TPE-39**	Depth :- **2.00**	Sample Type & No :- **B**	Date Tested :- **11/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPE-39/B/2.00		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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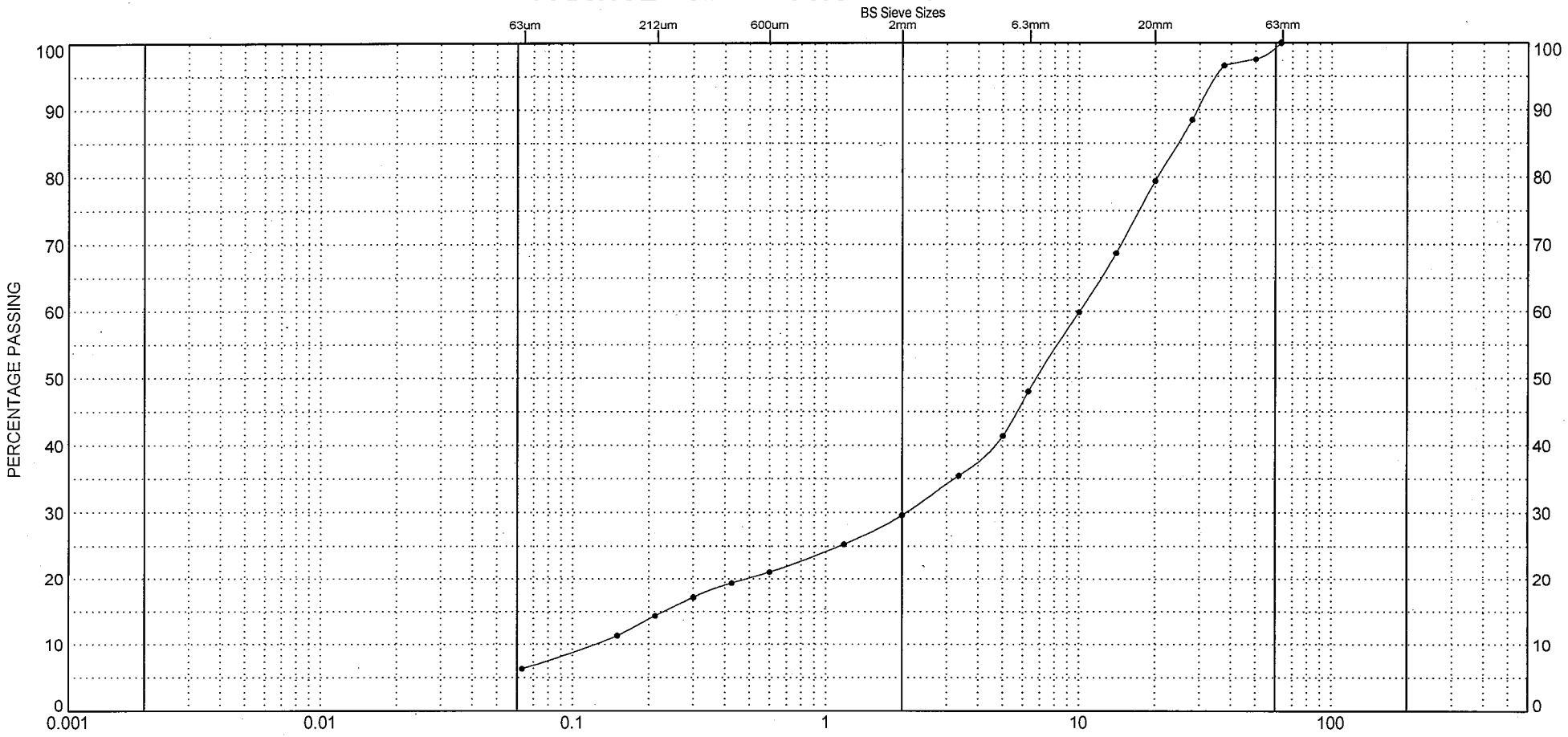
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPE-53**	Depth :- **3.80**	Sample Type & No :- **B**	Date Tested :- **11/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPE-53/B/3.80		[illegible] GELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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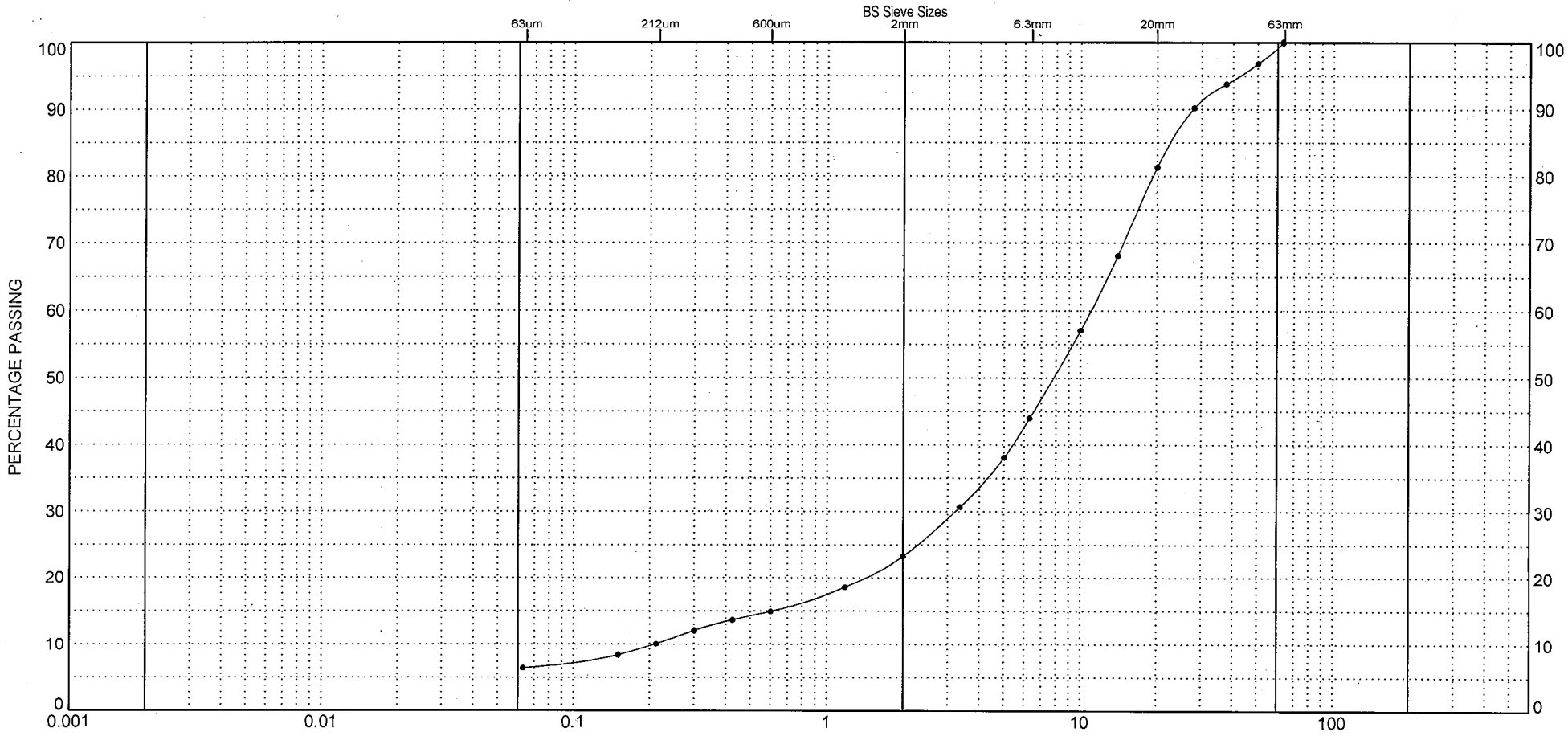
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPE-55**	Depth :- **1.50**	Sample Type & No :- **B**	Date Tested :- **12/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPE-55/B/1.50			

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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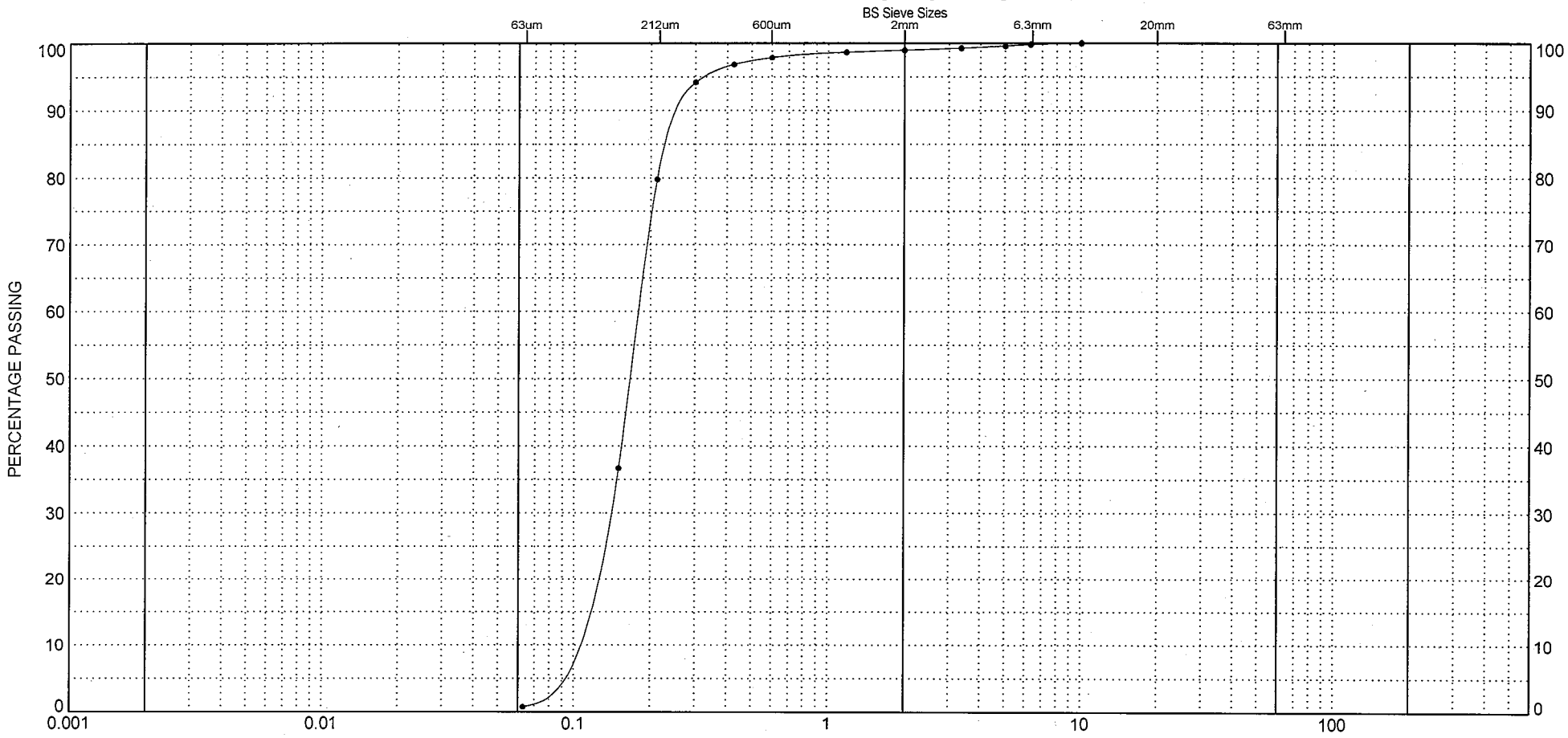
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPF-11**	Depth :- **2.00**	Sample Type & No :- **B**	Date Tested :- **28/09/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPF-11/B/2.00		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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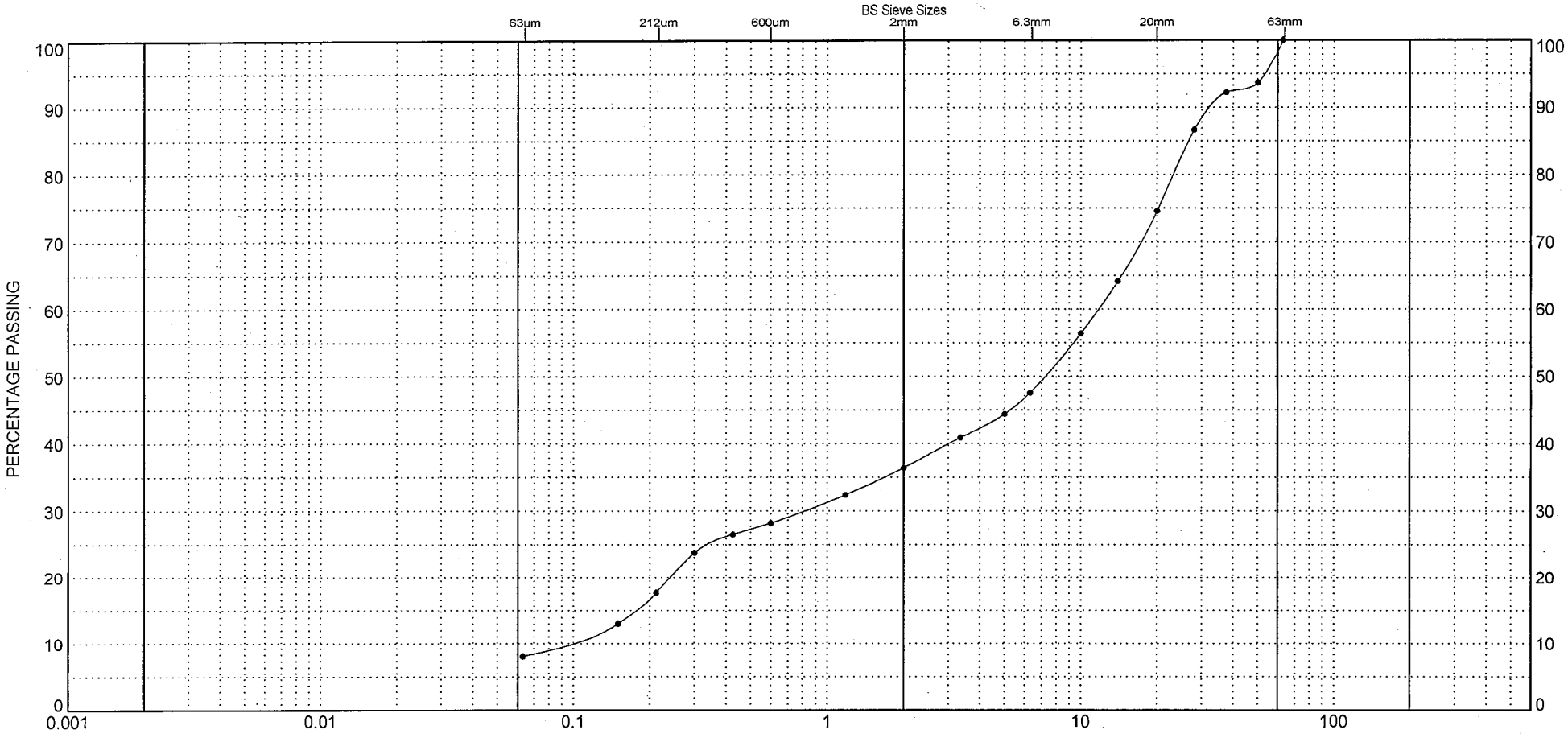
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990 #**	Exploratory Hole No :- **TPH-01**	Depth :- **1.00**	Sample Type & No :- **B**	Date Tested :- **11/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name	Page 1 of 1
08/08/2017	PSD/SLS1015/TPH-01/B/1.00		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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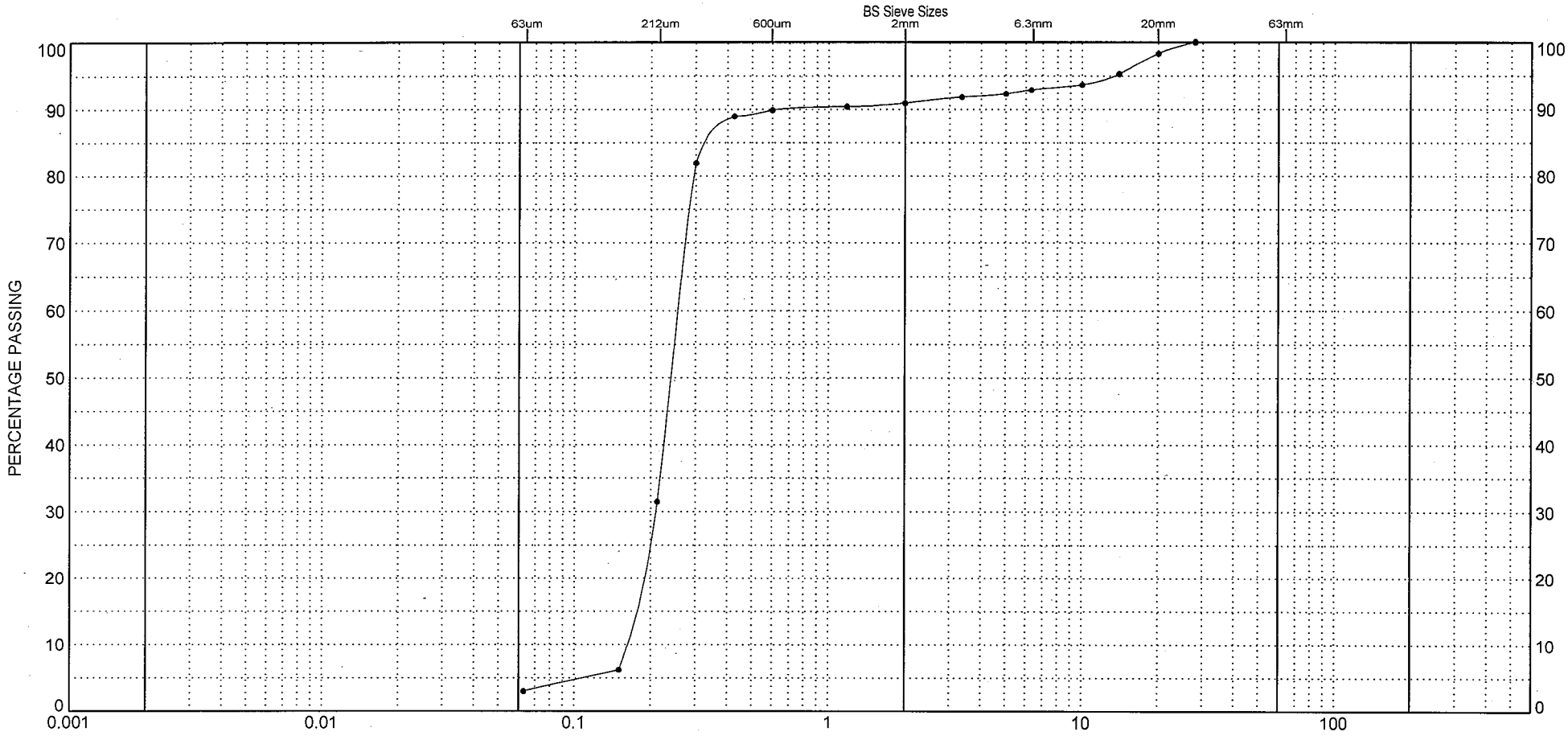
Regional Office: Unit 20, Business Development Centre, Eanam Wharf, Blackburn, BB1 5BL - **Tel:** 01772 735 300 **Fax:** 01772 735 999

Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPH-10**	Depth :- **1.70**	Sample Type & No :- **B**	Date Tested :- **28/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPH-10/B/1.70		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

UKAS TESTING 1367

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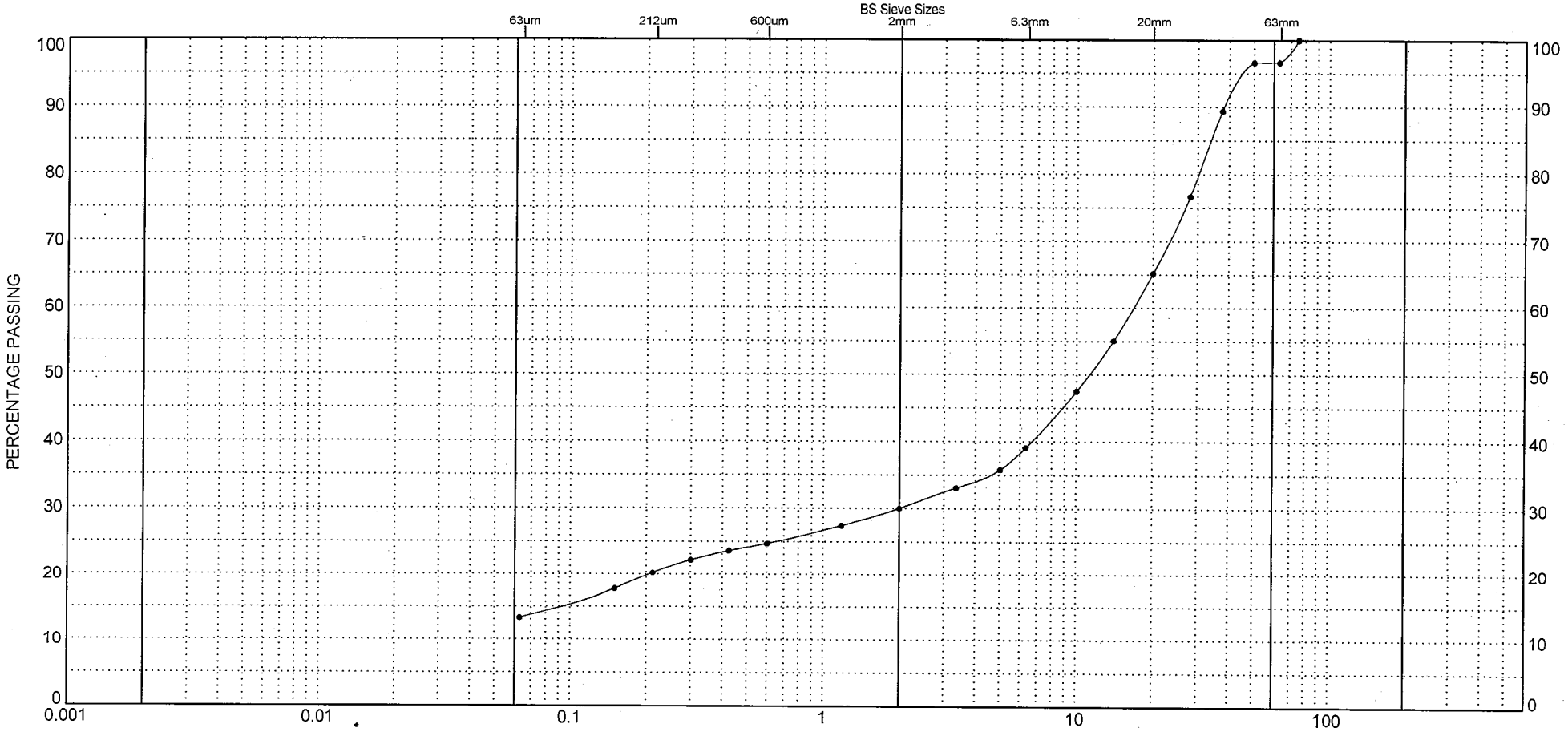
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPH-14**	Depth :- **2.10**	Sample Type & No :- **B**	Date Tested :- **11/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPH-14/B/2.10		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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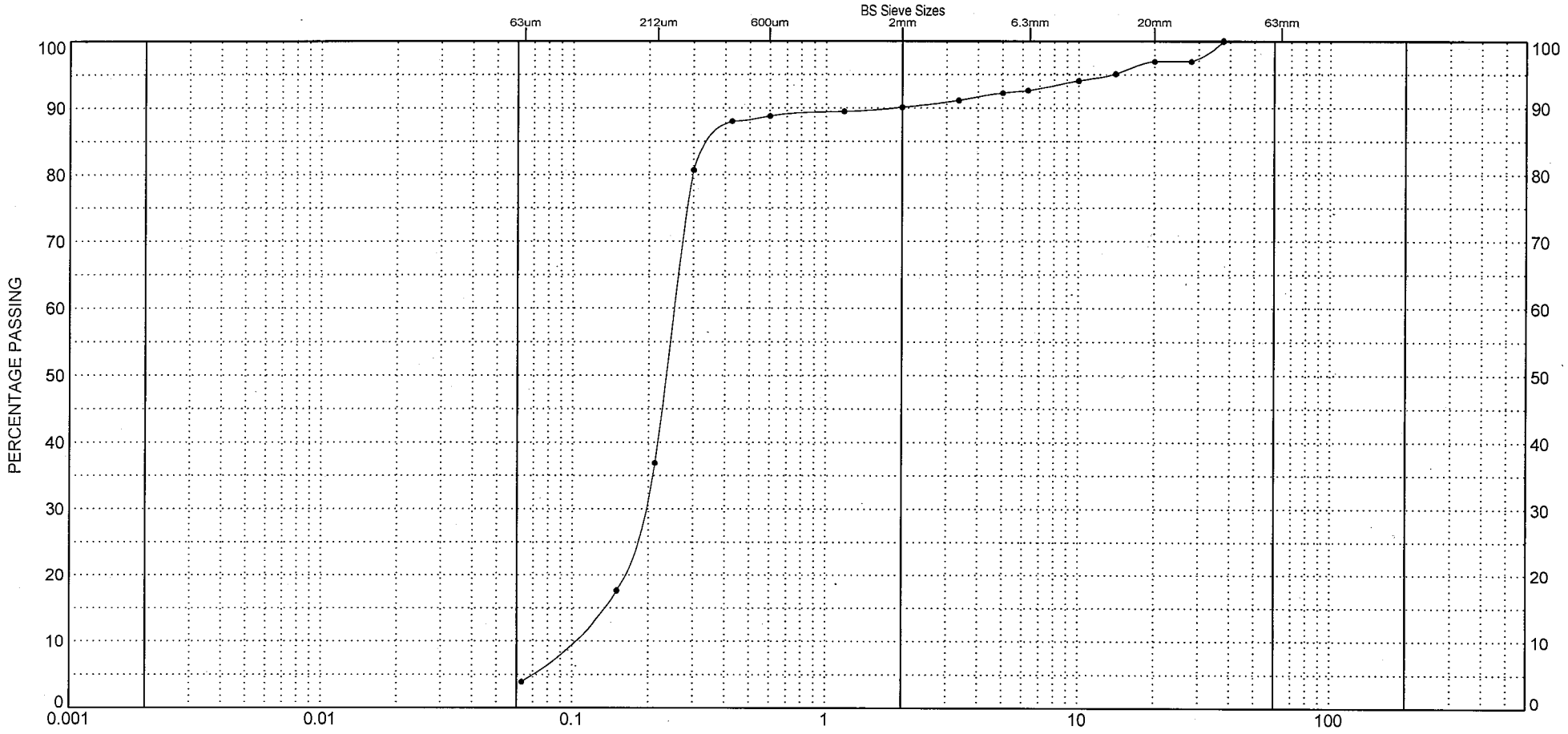
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPH-30**	Depth :- **1.80**	Sample Type & No :- **B**	Date Tested :- **11/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPH-30/B/1.80		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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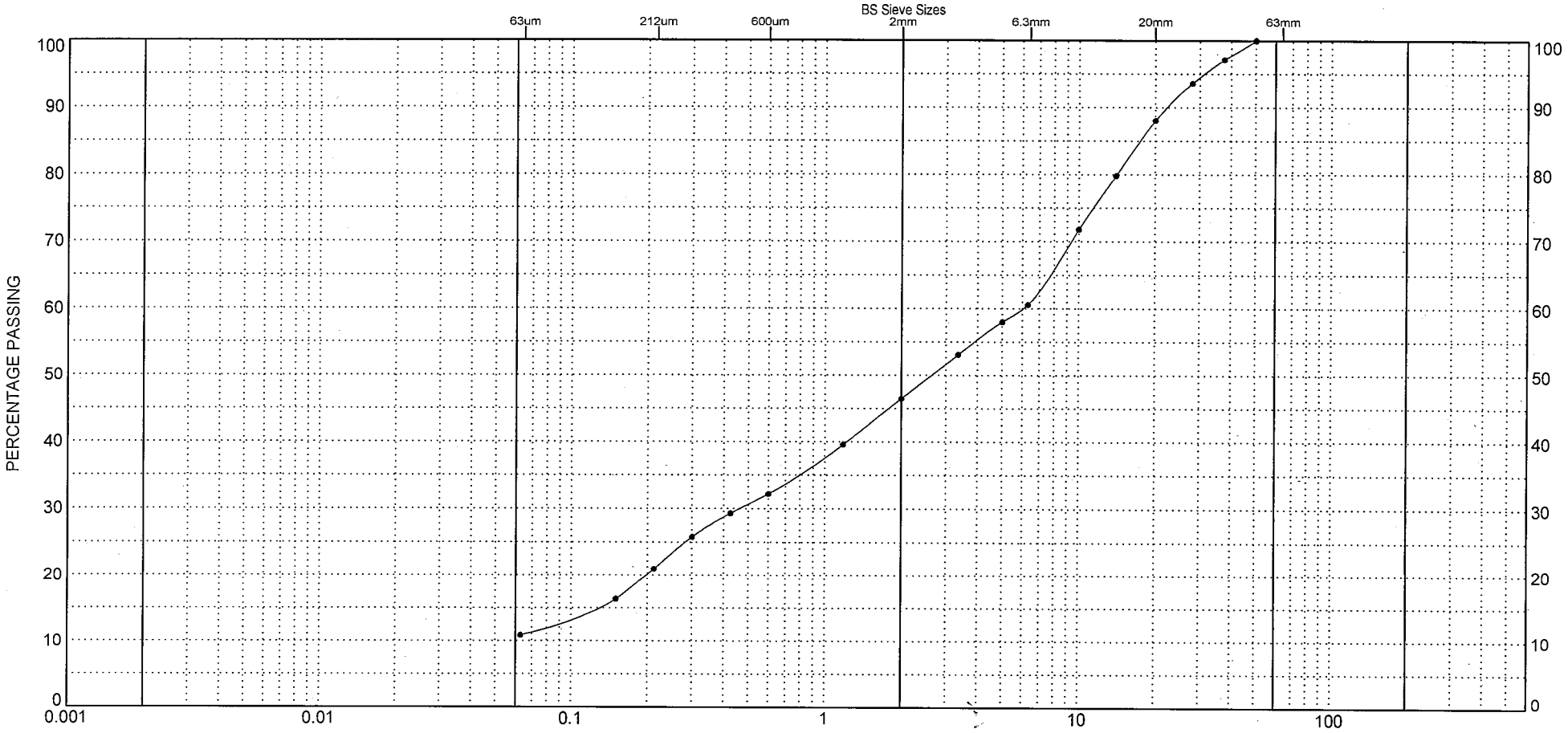
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPI-02**	Depth :- **2.70**	Sample Type & No :- **B**	Date Tested :- **11/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPI-02/B/2.70		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

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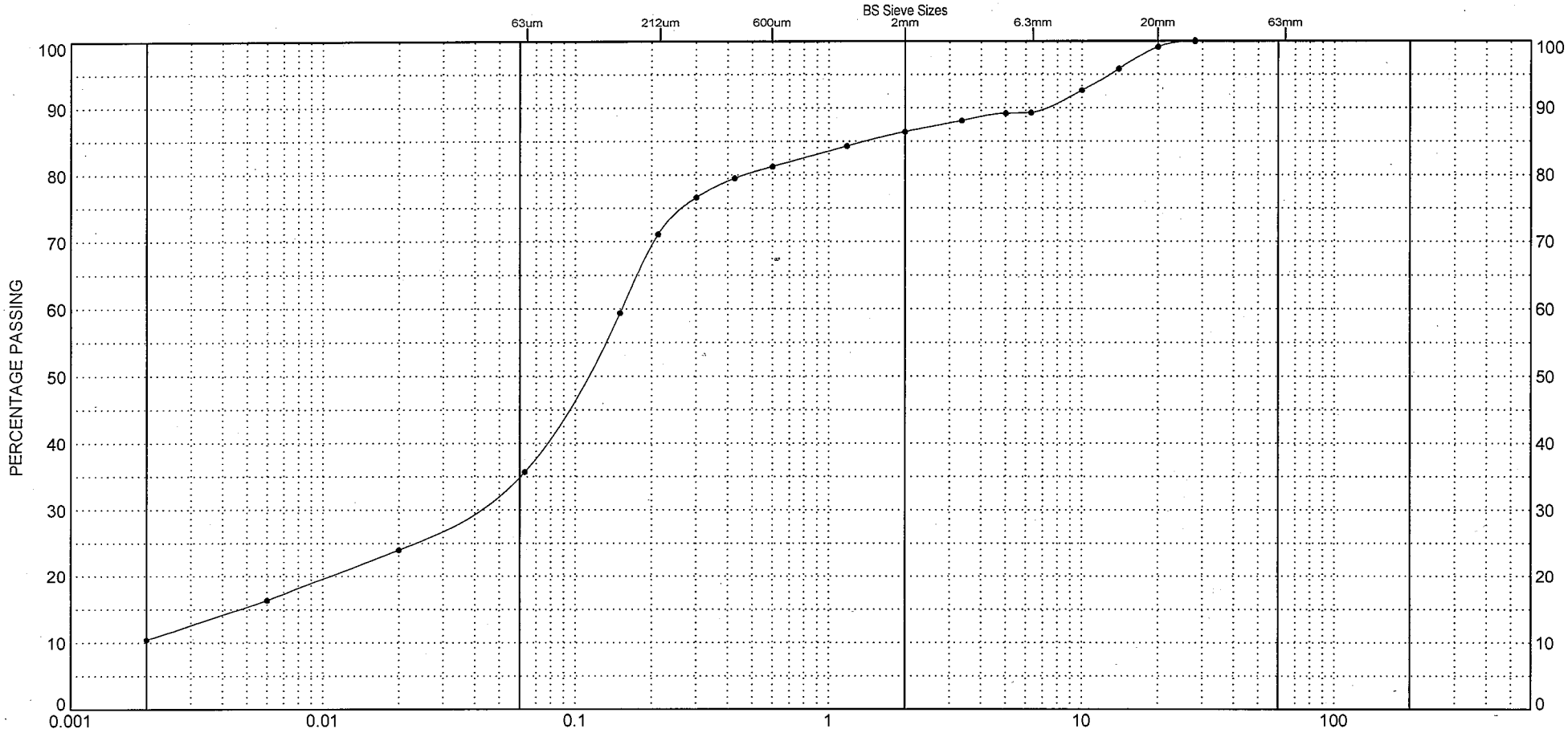
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPI-03**	Depth :- **0.40**	Sample Type & No :- **B**	Date Tested :- **20/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPI-03/B/0.40	MSelkirk	M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
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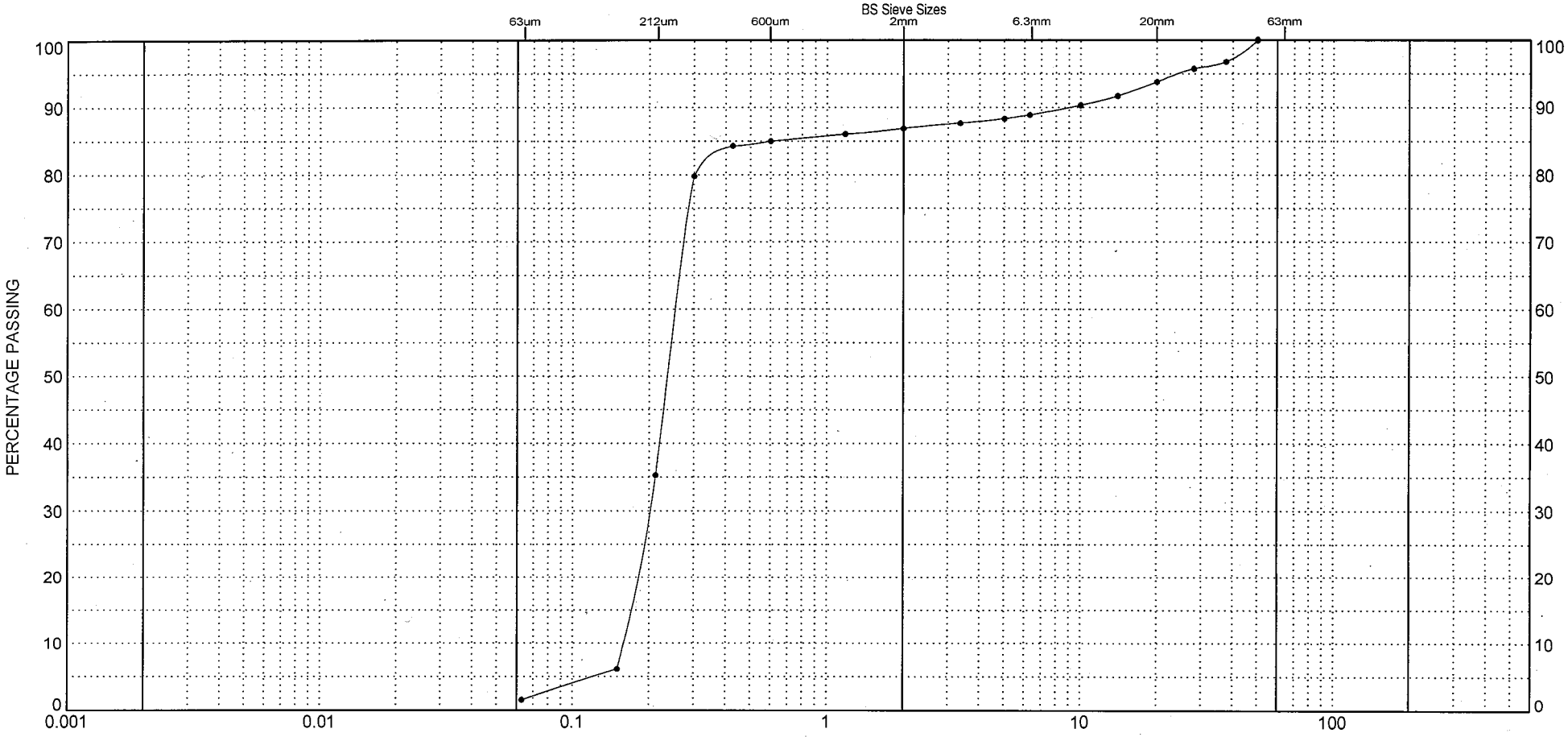
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPI-15**	Depth :- **4.00**	Sample Type & No :- **B**	Date Tested :- **11/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPI-15/B/4.00			

Client :-	Contract Title :-	AEG Contract No :-
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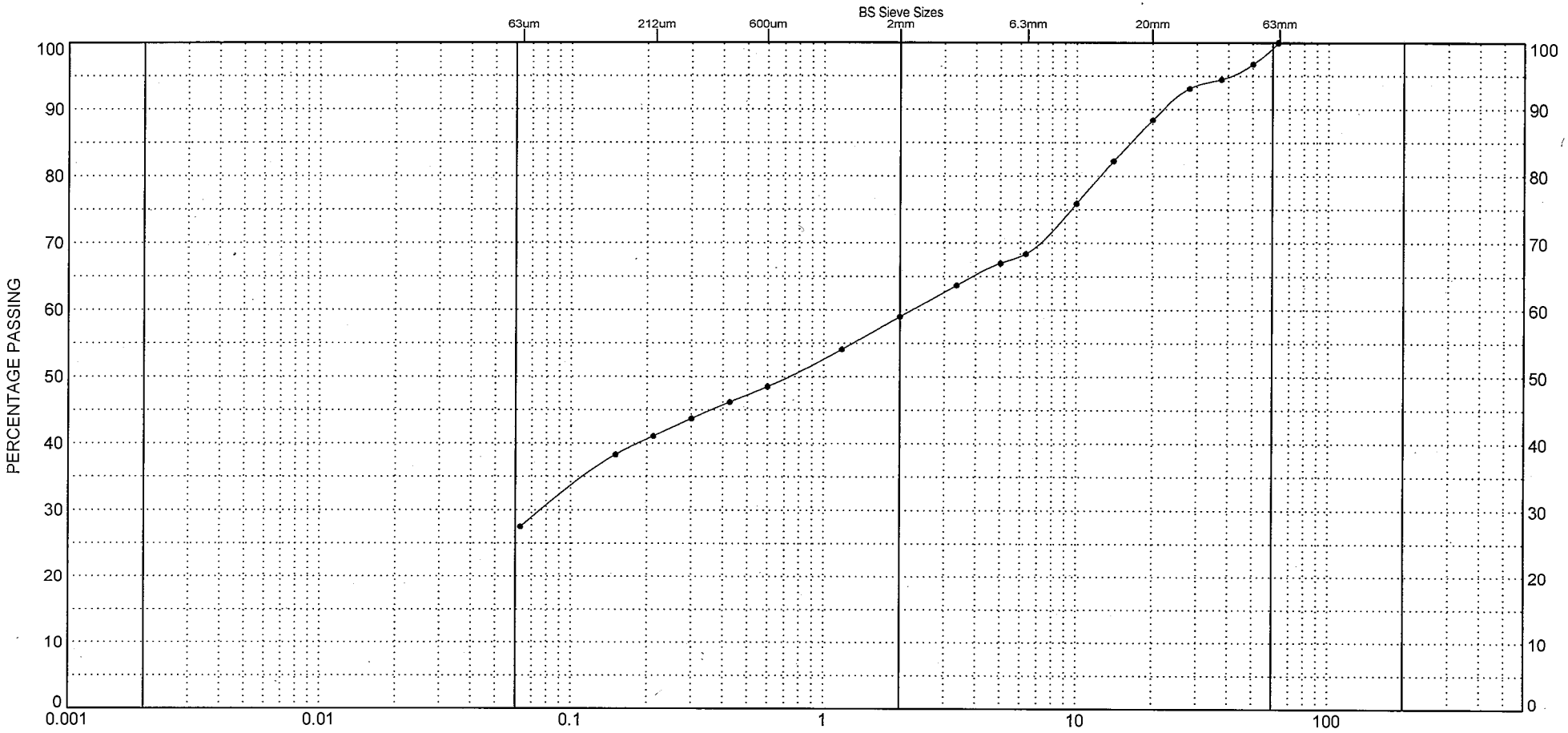
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPI-17**	Depth :- **0.60**	Sample Type & No :- **B**	Date Tested :- **12/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPI-17/B/0.60		[illegible]	

Client :-	Contract Title :-	AEG Contract No :-
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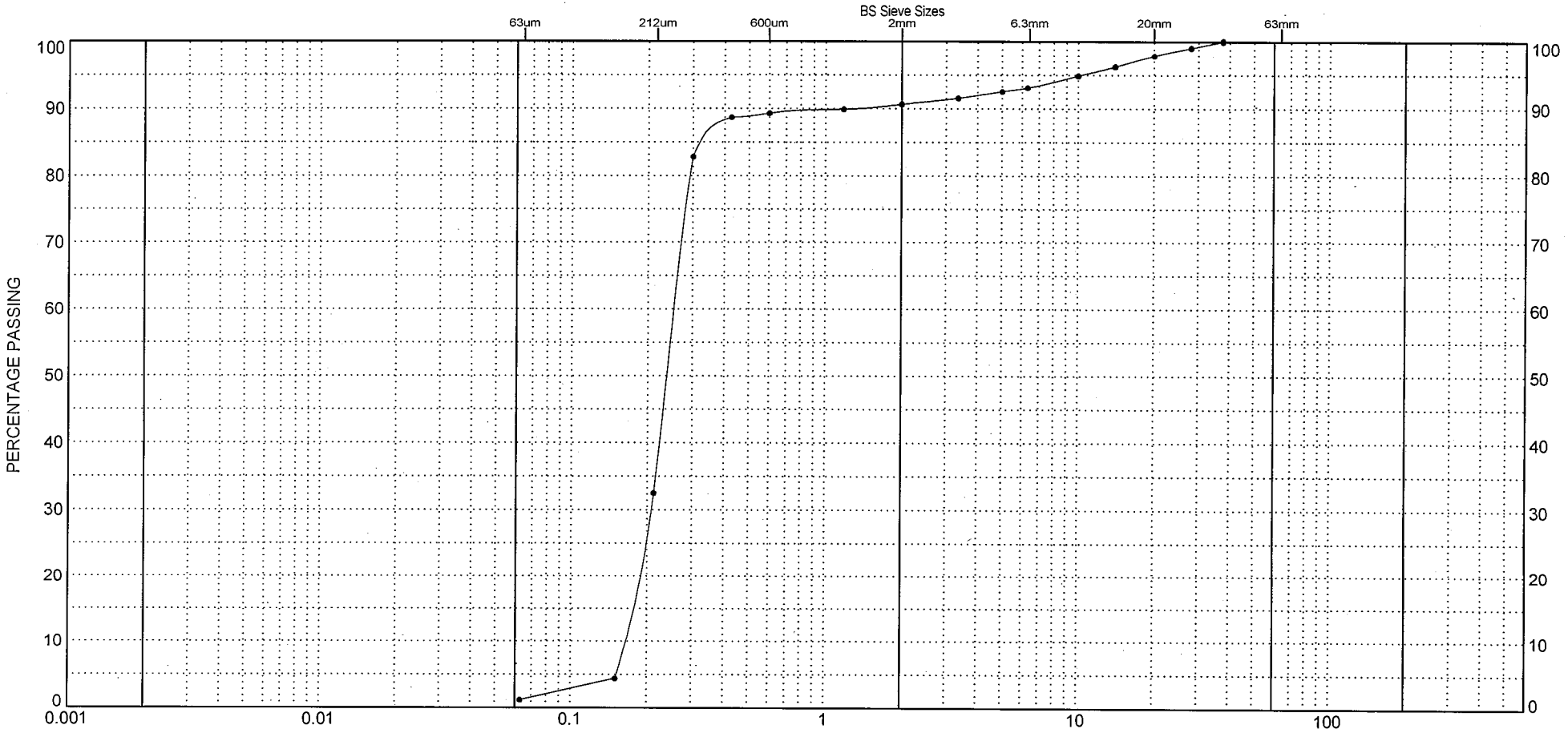
Test Method :- **BS1377 : Part 2 : Clause 9.2 & 9.4 : 1990**	Exploratory Hole No :- **TPI-26**	Depth :- **4.50**	Sample Type & No :- **B**	Date Tested :- **12/07/2017**

PARTICLE SIZE DISTRIBUTION CURVE



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

For description of sample please refer to the Laboratory Sample Description Sheet. # Denotes method deviates from standard due to insufficient sample mass.

Date of issue :-	Certificate No :-	Signed :-	Name :-	Page 1 of 1
08/08/2017	PSD/SLS1015/TPI-26/B/4.50		M. SELKIRK	

Client :-	Contract Title :-	AEG Contract No :-
CH2M	Redcar Site	SLS1015

UKAS TESTING 1367

DETS

Certificate of Analysis

Certificate Number 17-05607

24-Jul-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-05607

Client Reference SLS1015

Order No 1869

Contract Title Redcar Site

Description 6 Soil samples.

Date Received 18-Jul-17

Date Started 18-Jul-17

Date Completed 24-Jul-17

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

Notes Opinions and interpretations are outside the laboratory's scope of ISO 10725 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

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 17-05607
Client Ref SLS1015
Contract Title Redcar Site

			Lab No	1206090	1206091	1206092	1206093	1206094	1206095
			Sample ID	TP-20	TPC-17	TPD-22	TPH-14	TPI-19	TPC-07
			Depth	1.10	1.30	2.00	2.10	3.40	1.00
			Other ID						
			Sample Type	B	B	D	B	B	B
			Sampling Date	n/s	n/s	n/s	n/s	n/s	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Inorganics									
Loss on Ignition at 440oC	DETSC 2003#	0.01	%		4.7	4.7	4.6		0.59
Organic matter	DETSC 2002#	0.1	%	0.7	2.1	1.5	1.5	0.7	

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 17-05607
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1206090	TP-20 1.10 SOIL		PT 500ml	Sample date not supplied, Organic Matter (Manual) (730 days)	
1206091	TPC-17 1.30 SOIL		PT 500ml	Sample date not supplied, Loss on Ignition (730 days), Organic Matter (Manual) (730 days)	
1206092	TPD-22 2.00 SOIL		PT 500ml	Sample date not supplied, Loss on Ignition (730 days), Organic Matter (Manual) (730 days)	
1206093	TPH-14 2.10 SOIL		PT 500ml	Sample date not supplied, Loss on Ignition (730 days), Organic Matter (Manual) (730 days)	
1206094	TPI-19 3.40 SOIL		PT 500ml	Sample date not supplied, Organic Matter (Manual) (730 days)	
1206095	TPC-07 1.00 SOIL		PT 500ml	Sample date not supplied, Loss on Ignition (730 days)	

Key: P-Plastic 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

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TP-14** Depth (mBGL) :- **2.00** Sample Type & No :- **B**

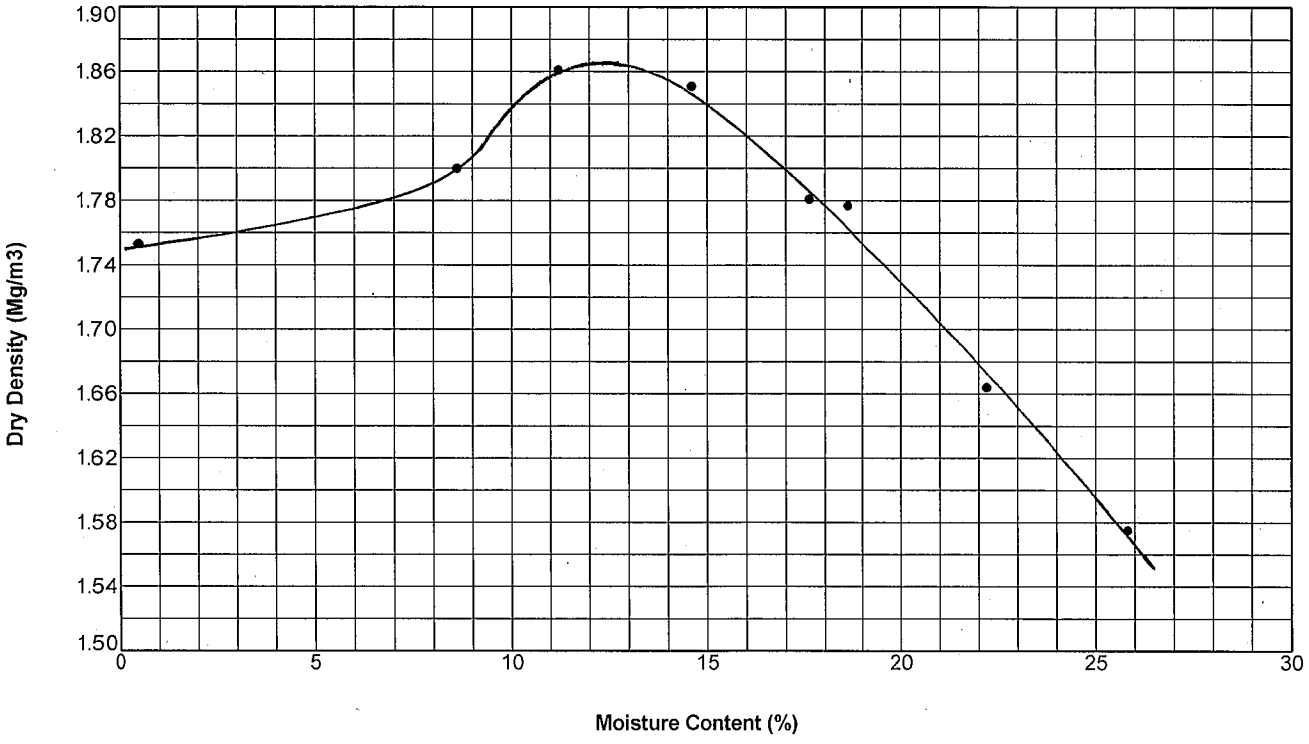
Test Method 4.5kg Compaction Separate Samples

Test Results

Optimum Moisture Content (%) = **12.5** Particle Density (Measured) = **2.51**

Maximum Dry Density (Mg/m3) = **1.86** Retained on 20mm Sieve (%) = **18.1**

Date Tested = **28/07/2017** Retained on 37.5mm Sieve (%) = **7.5**



For description of sample please refer to the Laboratory Sample Description Sheet

Contract Title :-	Client :-
Redcar Site	**CH2M**

Signed :- MSelk	Name :- M. SELKIRK		Page 1 of 1
Date of issue :- 09/08/2017	Certificate No :- COMP/SLS1015/1	AEG Contract No. :- **SLS1015**	

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TP-22** Depth (mBGL) :- **0.70** Sample Type & No :- **B**

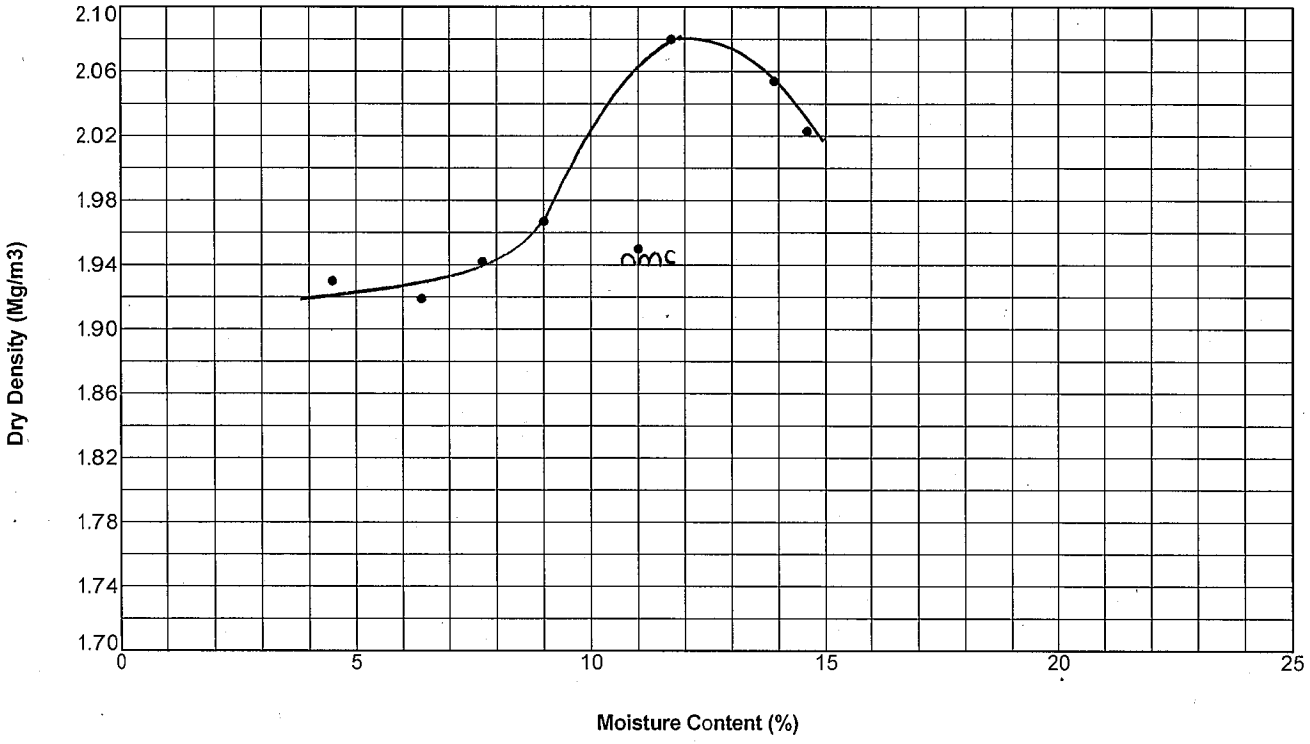
Test Method 4.5kg Compaction Single Sample

Test Results

Optimum Moisture Content (%) = **11.7** Particle Density (Measured) = **2.73**

Maximum Dry Density (Mg/m3) = **2.08** Retained on 20mm Sieve (%) = **20.5**

Date Tested = **20/07/2017** Retained on 37.5mm Sieve (%) = **5.1**



For description of sample please refer to the Laboratory Sample Description Sheet

Contract Title :-	Client :-
Redcar Site	CH2M

Signed :-	Name :- M. SELKIRK	Page 1 of 1	
Date of issue :- 09/08/2017	Certificate No :- COMP/SLS1015/1	AEG Contract No. :- **SLS1015**	UKAS TESTING 1367

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TP-42** Depth (mBGL) :- **0.50** Sample Type & No :- **B**

Test Method 4.5kg Compaction Single Sample

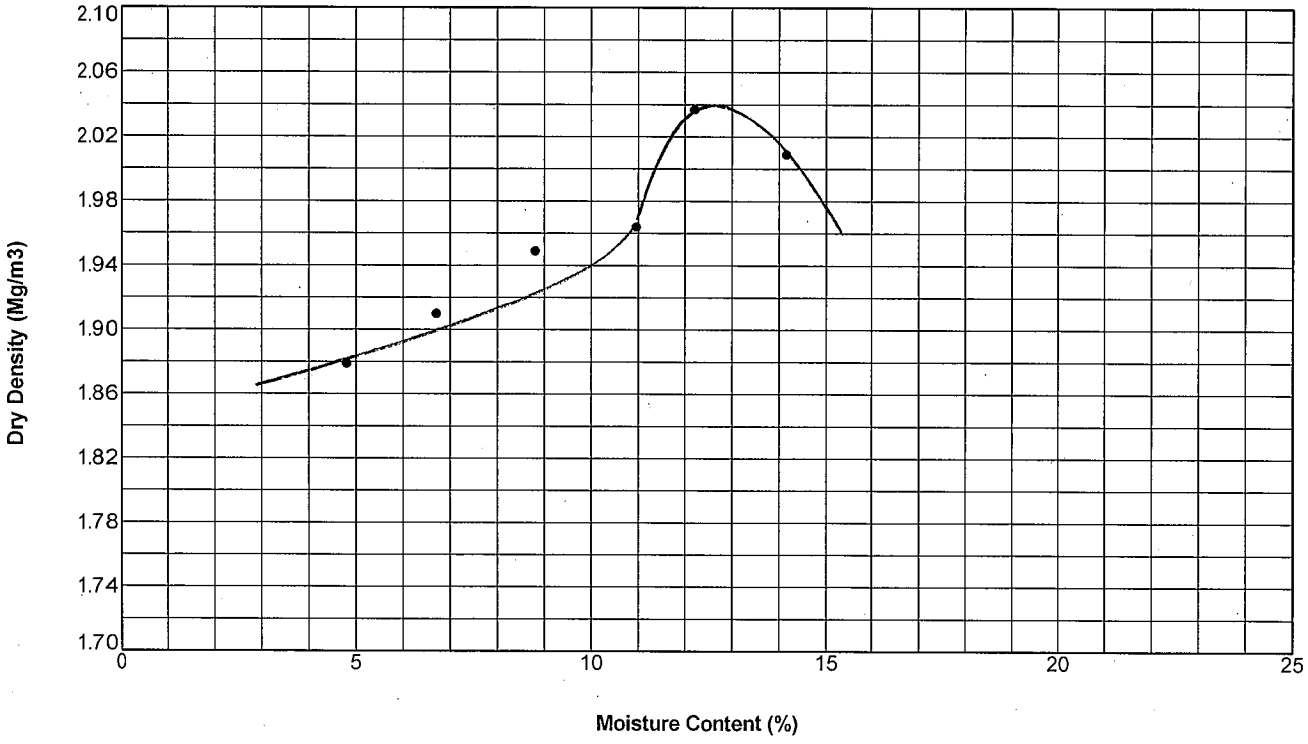
Test Results

Optimum Moisture Content (%) = **12.2** Particle Density (Assumed) = **2.85**

Maximum Dry Density (Mg/m3) = **2.04** Retained on 20mm Sieve (%) = **27.0**

Date Tested = **27/07/2017** Retained on 37.5mm Sieve (%) = **9.5**

Remarks: Non-standard test due to excessive coarse material.



For description of sample please refer to the Laboratory Sample Description Sheet

Contract Title :-	Client :-
Redcar Site	CH2M

Signed :- MSelkirk Name :- M. SELKIRK Page 1 of 1

Date of issue :-	Certificate No :-	AEG Contract No. :-
14/08/2017	COMP/SLS1015/1	SLS1015

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TPB-02** Depth (mBGL) :- **0.30** Sample Type & No :- **B**

Test Method Vibro Hammer Compaction Single Sample

Test Results

Optimum Moisture Content (%) = **10.6** Particle Density (Assumed) = **3.35**

Maximum Dry Density (Mg/m3) = **2.29** Retained on 20mm Sieve (%) = **18.9**

Date Tested = **19/07/2017** Retained on 37.5mm Sieve (%) = **3.6**

For description of sample please refer to the Laboratory Sample Description Sheet

Contract Title :-	Client :-
Redcar Site	**CH2M**

Signed :- msone	Name :- M SELKIRK		Page 1 of 1
Date of issue :- 08/08/2017	Certificate No :- COMP/SLS1015/1	AEG Contract No. :- **SLS1015**	

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TPB-12** Depth (mBGL) :- **1.00** Sample Type & No :- **B**

Test Method 4.5kg Compaction Single Sample

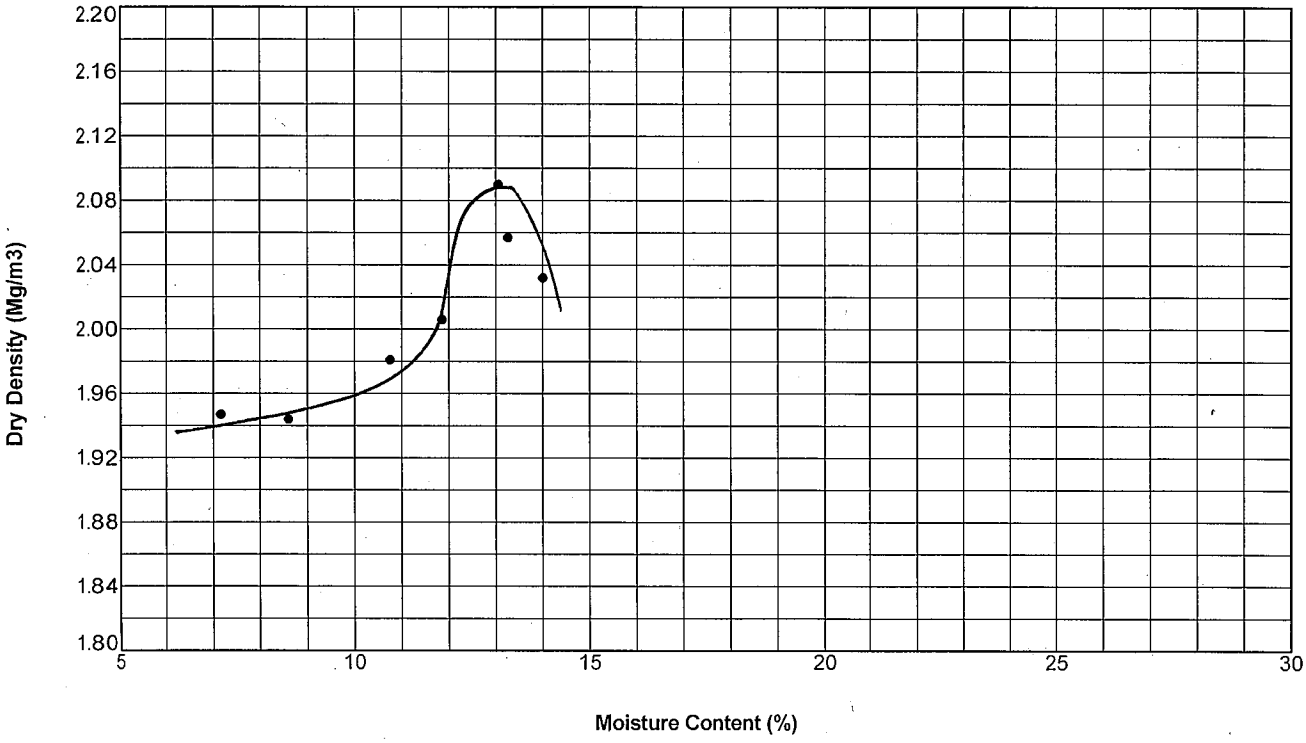
Test Results

Optimum Moisture Content (%) = **13.5** Particle Density (Measured) = **2.72**

Maximum Dry Density (Mg/m3) = **2.06** Retained on 20mm Sieve (%) = **38.8**

Date Tested = **31/07/2017** Retained on 37.5mm Sieve (%) = **17.3**

Remarks: Non-standard test due to excessive coarse material.



For description of sample please refer to the Laboratory Sample Description Sheet

Contract Title :-	Client :-
Redcar Site	**CH2M**

Signed :-	Name :-		Page 1 of 1
Date of issue :- 14/08/2017	Certificate No :- COMP/SLS1015/1	AEG Contract No. :- **SLS1015**	

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TPC-29** Depth (mBGL) :- **1.00** Sample Type & No :- **B**

Test Method 4.5kg Compaction Single Sample

Test Results

Optimum Moisture Content (%) = **38.0**

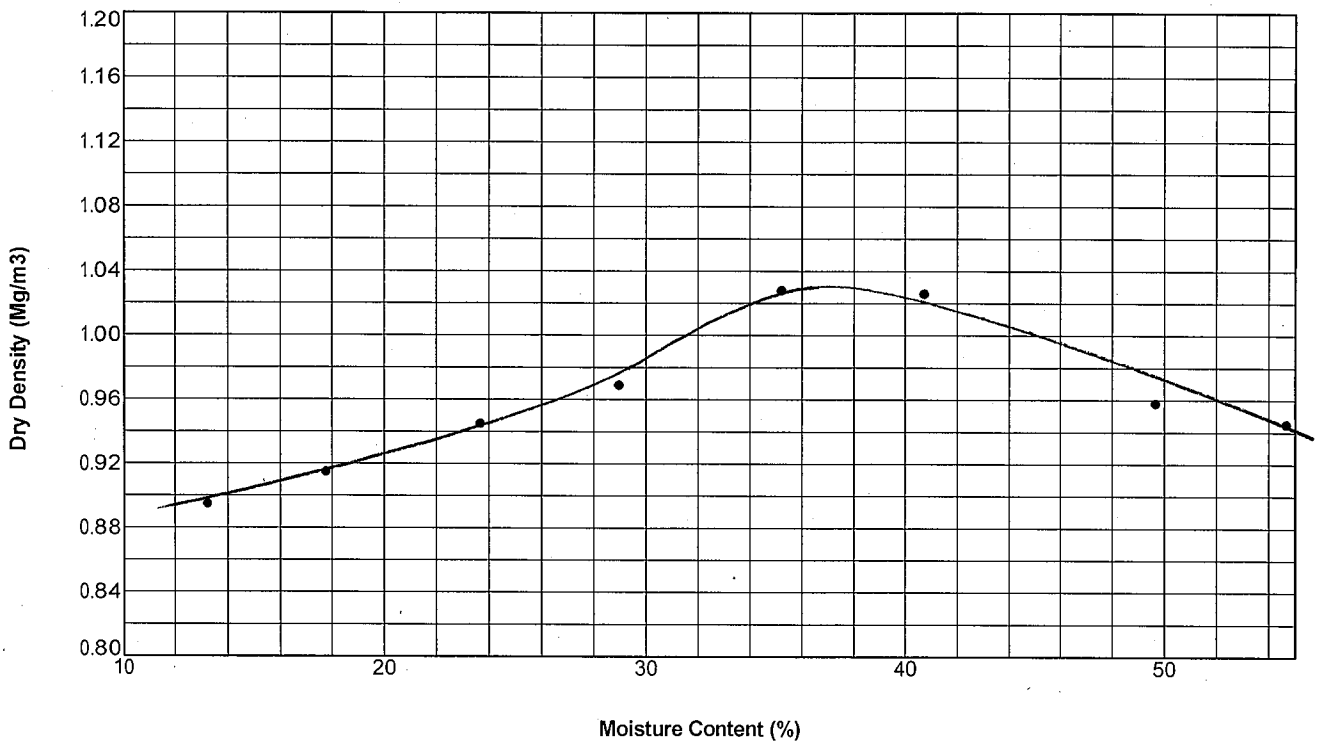
Particle Density (Assumed) = **2.00**

Maximum Dry Density (Mg/m3) = **1.03**

Retained on 20mm Sieve (%) = **0.2**

Date Tested = **21/07/2017**

Retained on 37.5mm Sieve (%) = **0.0**



For description of sample please refer to the Laboratory Sample Description Sheet

Contract Title :-	Client :-
Redcar Site	**CH2M**

Signed :-	Name :- M. SELKIRK		Page 1 of 1
Date of issue :- 09/08/2017	Certificate No :- COMP/SLS1015/1	AEG Contract No. :- **SLS1015**	

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TPC-32** Depth (mBGL) :- **3.70** Sample Type & No :- **B**

Test Method 4.5kg Compaction Single Sample

Test Results

Optimum Moisture Content (%) = **12.1** Particle Density (Assumed) = **2.30**

Maximum Dry Density (Mg/m3) = **1.77** Retained on 20mm Sieve (%) = **1.8**

Date Tested = **17/07/2017** Retained on 37.5mm Sieve (%) = **0.8**

For description of sample please refer to the Laboratory Sample Description Sheet

Contract Title :-	Client :-
Redcar Site	CH2M

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TPD-01** Depth (mBGL) :- **1.20** Sample Type & No :- **B**

Test Method 4.5kg Compaction Single Sample

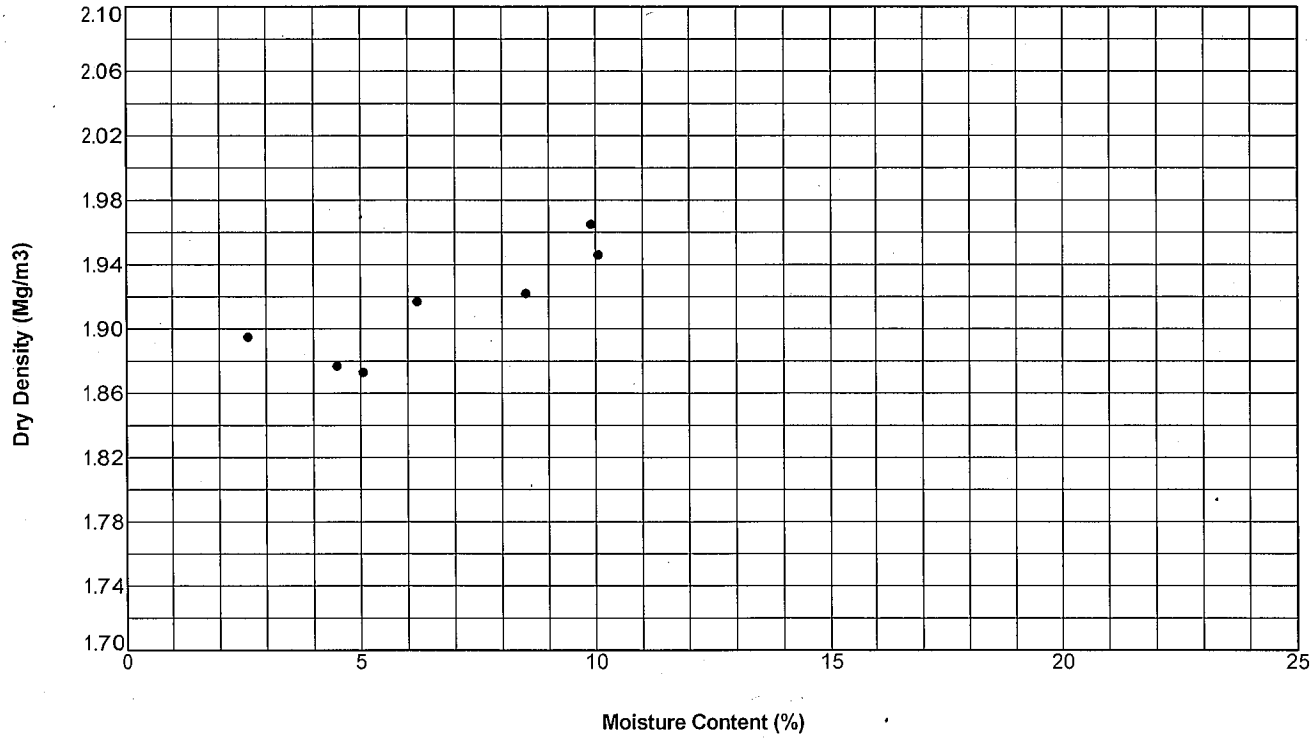
Test Results

Optimum Moisture Content (%) = Particle Density (Measured) = **2.69**

Maximum Dry Density (Mg/m3) = **1.97** Retained on 20mm Sieve (%) = **0.3**

Date Tested = **17/07/2017** Retained on 37.5mm Sieve (%) = **0.0**

Remarks: Unable to determine OMC.



For description of sample please refer to the Laboratory Sample Description Sheet

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TPD-19** Depth (mBGL) :- **1.50** Sample Type & No :- **B**

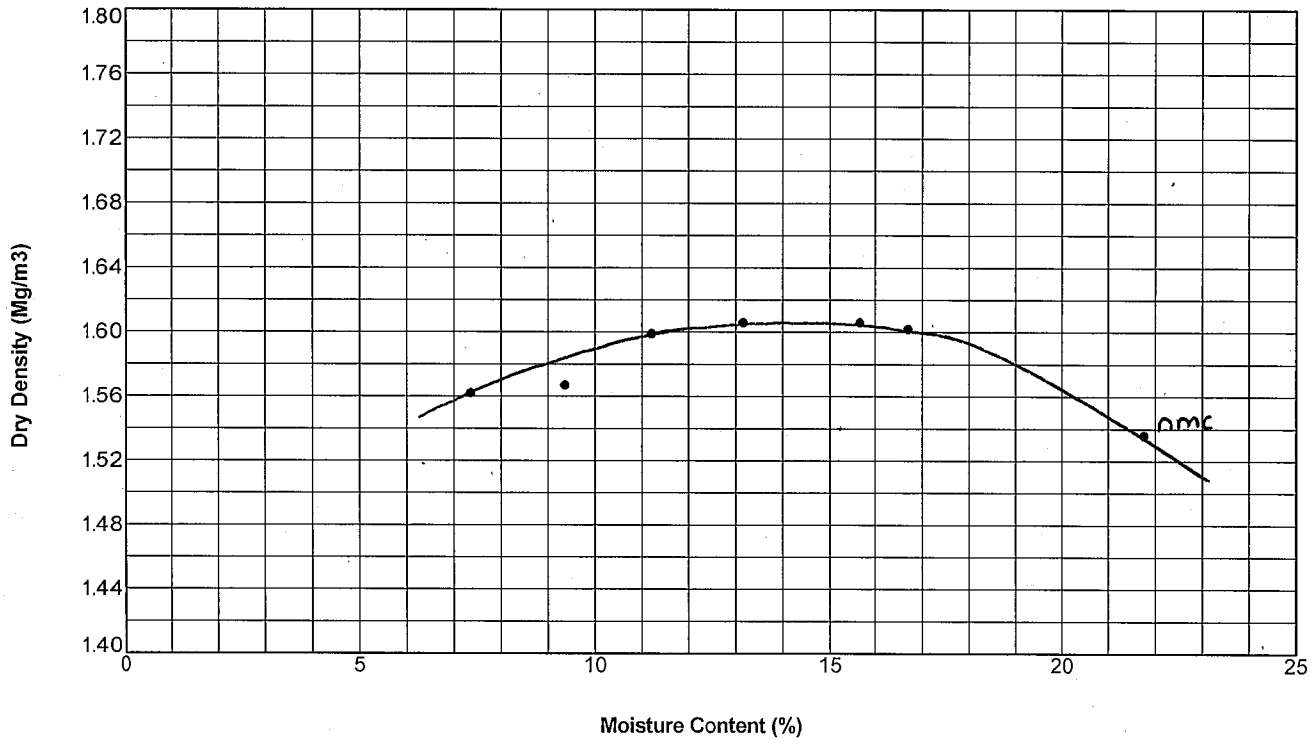
Test Method 4.5kg Compaction Separate Samples

Test Results

Optimum Moisture Content (%) = **14.5** Particle Density (Assumed) = **2.35**

Maximum Dry Density (Mg/m3) = **1.61** Retained on 20mm Sieve (%) = **0.0**

Date Tested = **01/08/2017** Retained on 37.5mm Sieve (%) = **0.0**



For description of sample please refer to the Laboratory Sample Description Sheet

Contract Title :-	Client :-
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Date of issue :- 08/08/2017	Certificate No :- COMP/SLS1015/1	AEG Contract No. :- **SLS1015**	UKAS TESTING 1367

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TPD-22** Depth (mBGL) :- **2.00** Sample Type & No :- **B**

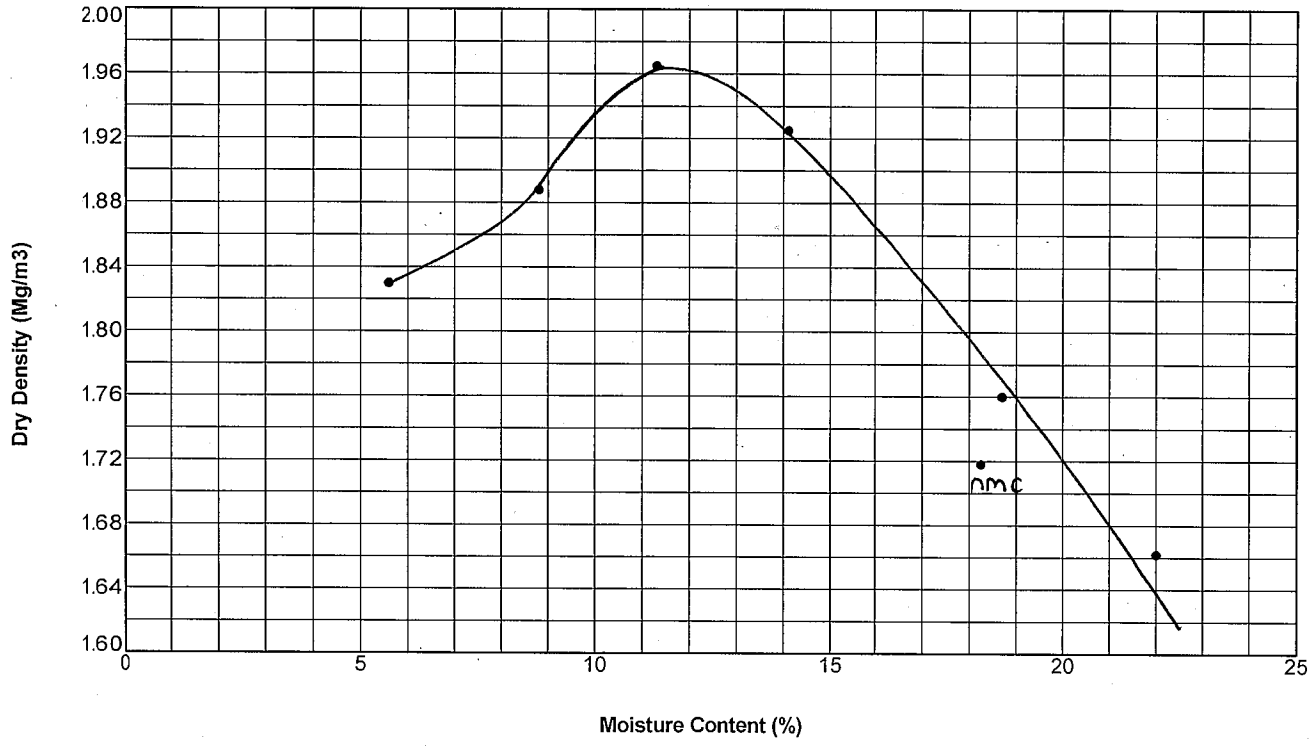
Test Method 4.5kg Compaction Separate Samples

Test Results

Optimum Moisture Content (%) = **11.3** Particle Density (Assumed) = **2.75**

Maximum Dry Density (Mg/m3) = **1.97** Retained on 20mm Sieve (%) = **4.2**

Date Tested = **28/07/2017** Retained on 37.5mm Sieve (%) = **0.0**



For description of sample please refer to the Laboratory Sample Description Sheet

Contract Title :-	Client :-
Redcar Site	CH2M

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TPD-30** Depth (mBGL) :- **1.70** Sample Type & No :- **B**

Test Method 4.5kg Compaction Single Sample

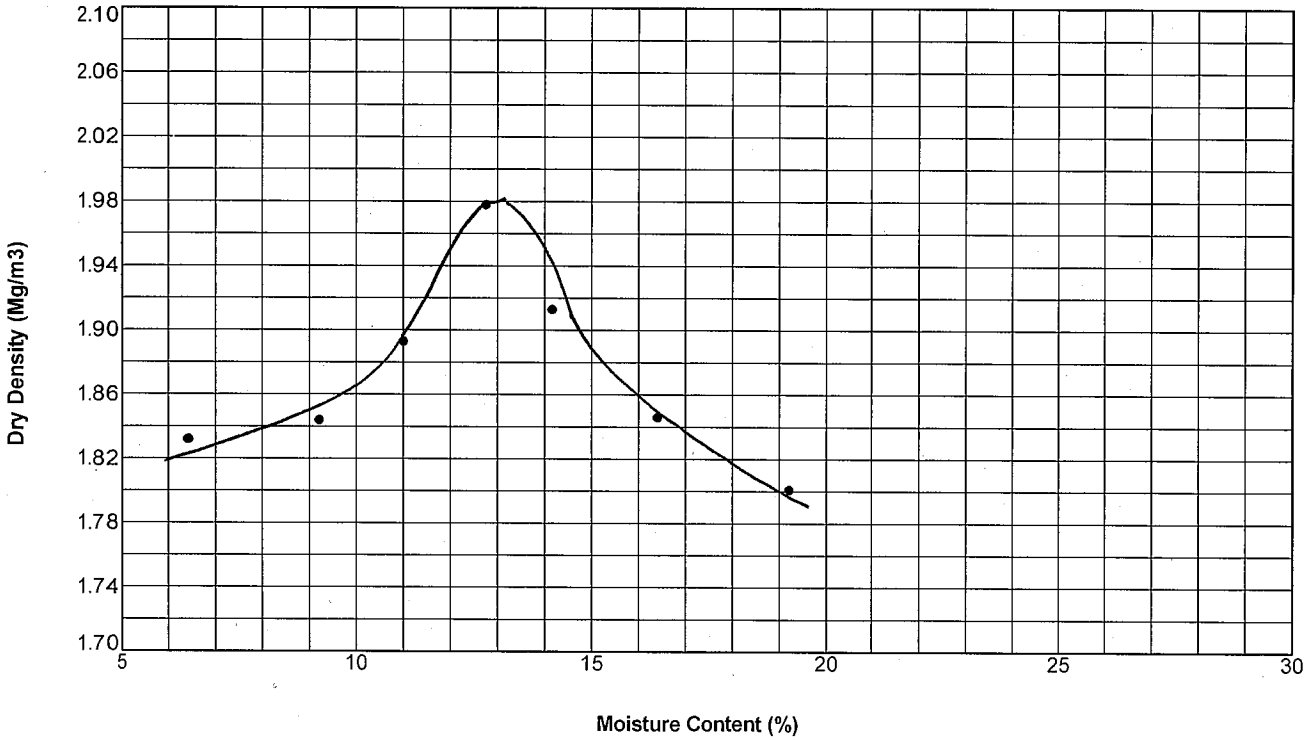
Test Results

Optimum Moisture Content (%) = **12.8** Particle Density (Assumed) = **2.70**

Maximum Dry Density (Mg/m3) = **1.98** Retained on 20mm Sieve (%) = **40.6**

Date Tested = **28/07/2017** Retained on 37.5mm Sieve (%) = **14.3**

Remarks: Non-standard test due to excessive coarse material.



For description of sample please refer to the Laboratory Sample Description Sheet

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TPE-05** Depth (mBGL) :- **0.50** Sample Type & No :- **B**

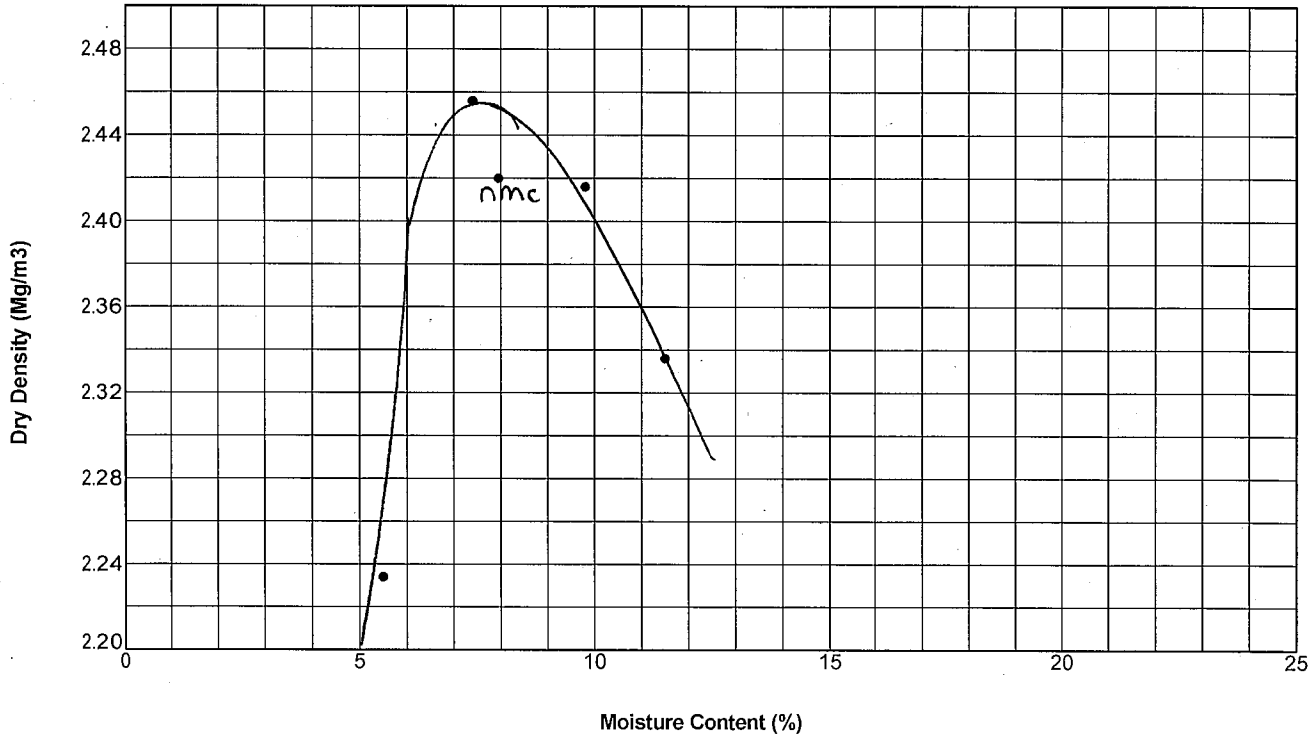
Test Method 4.5kg Compaction Separate Samples

Test Results

Optimum Moisture Content (%) = **8.5** Particle Density (Assumed) = **3.00**

Maximum Dry Density (Mg/m3) = **2.45** Retained on 20mm Sieve (%) = **22.2**

Date Tested = **28/07/2017** Retained on 37.5mm Sieve (%) = **0.6**



For description of sample please refer to the Laboratory Sample Description Sheet

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TPE-20** Depth (mBGL) :- **0.50** Sample Type & No :- **B**

Test Method 4.5kg Compaction Single Sample

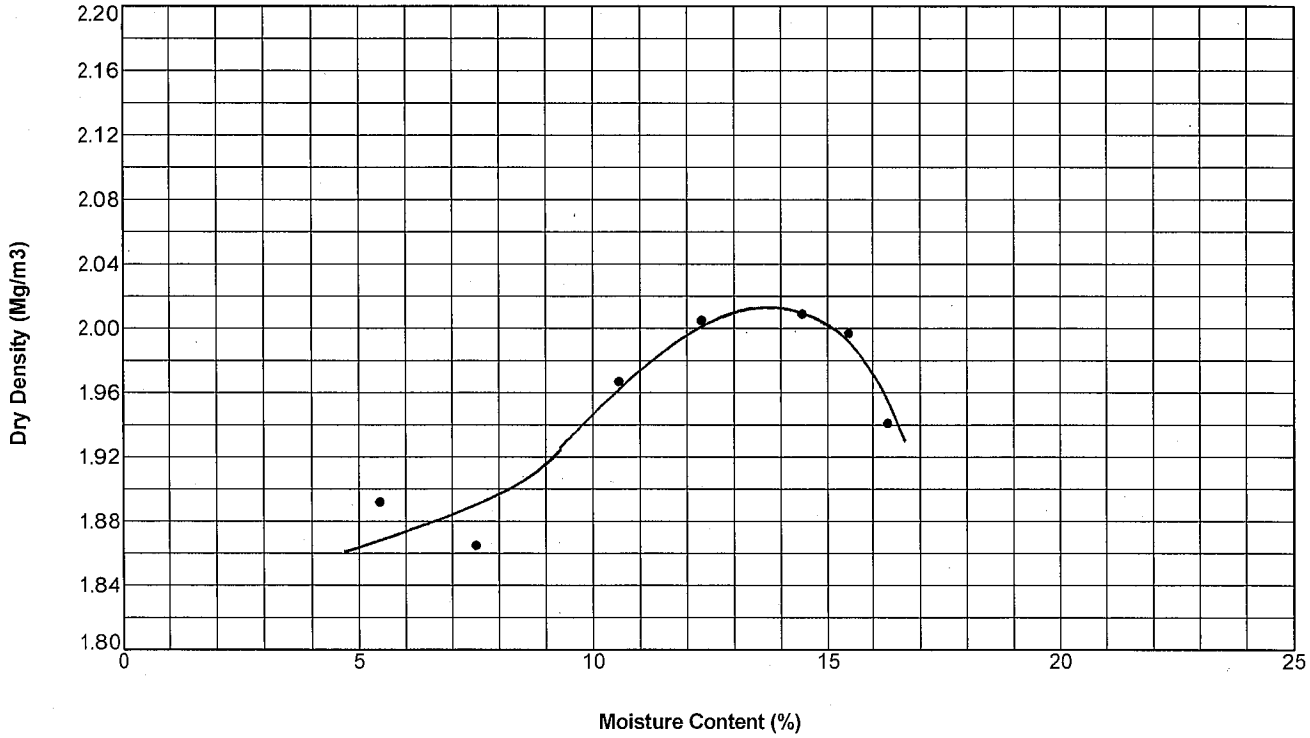
Test Results

Optimum Moisture Content (%) = **13.0** Particle Density (Assumed) = **2.90**

Maximum Dry Density (Mg/m3) = **2.01** Retained on 20mm Sieve (%) = **41.3**

Date Tested = **28/07/2017** Retained on 37.5mm Sieve (%) = **25.2**

Remarks: Non-standard test due to excessive coarse material.



For description of sample please refer to the Laboratory Sample Description Sheet

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TPE-33** Depth (mBGL) :- **3.40** Sample Type & No :- **B**

Test Method 4.5kg Compaction Single Sample

Test Results

Optimum Moisture Content (%) = **6.5**

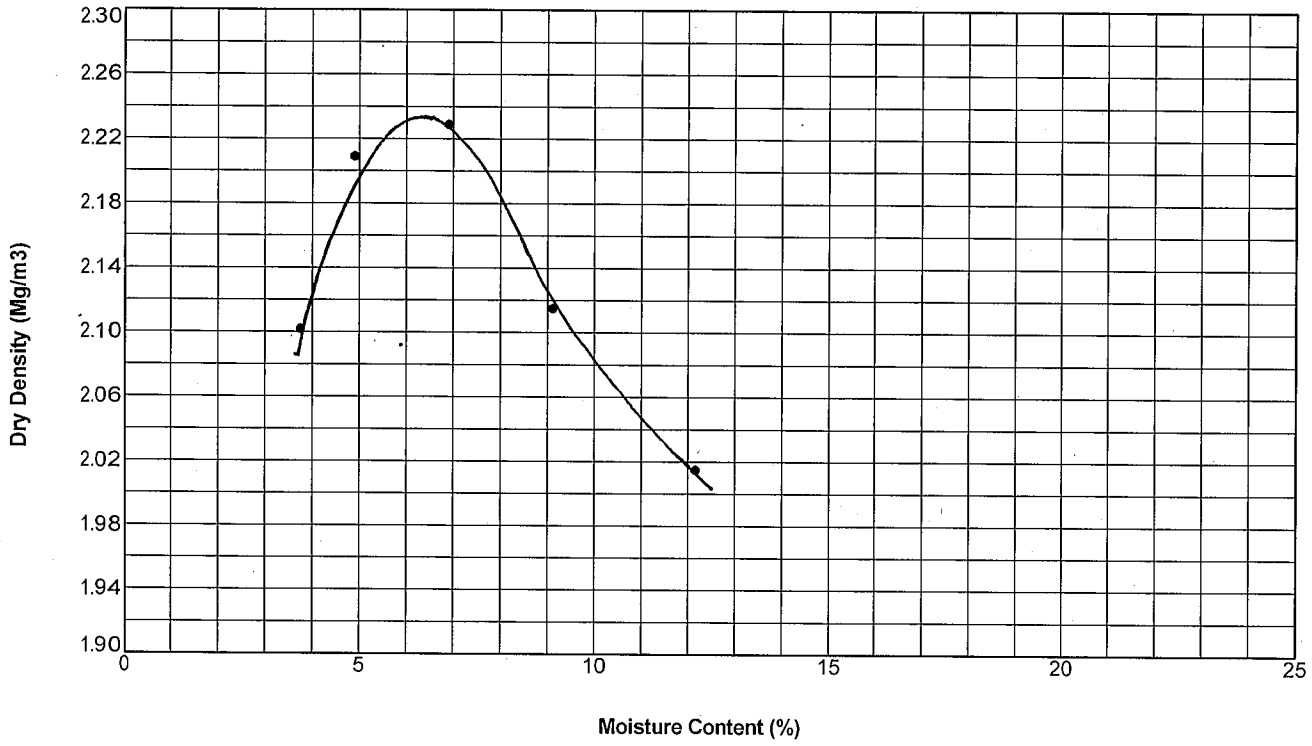
Particle Density (Assumed) = **2.70**

Maximum Dry Density (Mg/m3) = **2.22**

Retained on 20mm Sieve (%) = **21.2**

Date Tested = **24/07/2017**

Retained on 37.5mm Sieve (%) = **8.3**



For description of sample please refer to the Laboratory Sample Description Sheet

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TPE-38** Depth (mBGL) :- **2.50** Sample Type & No :- **B**

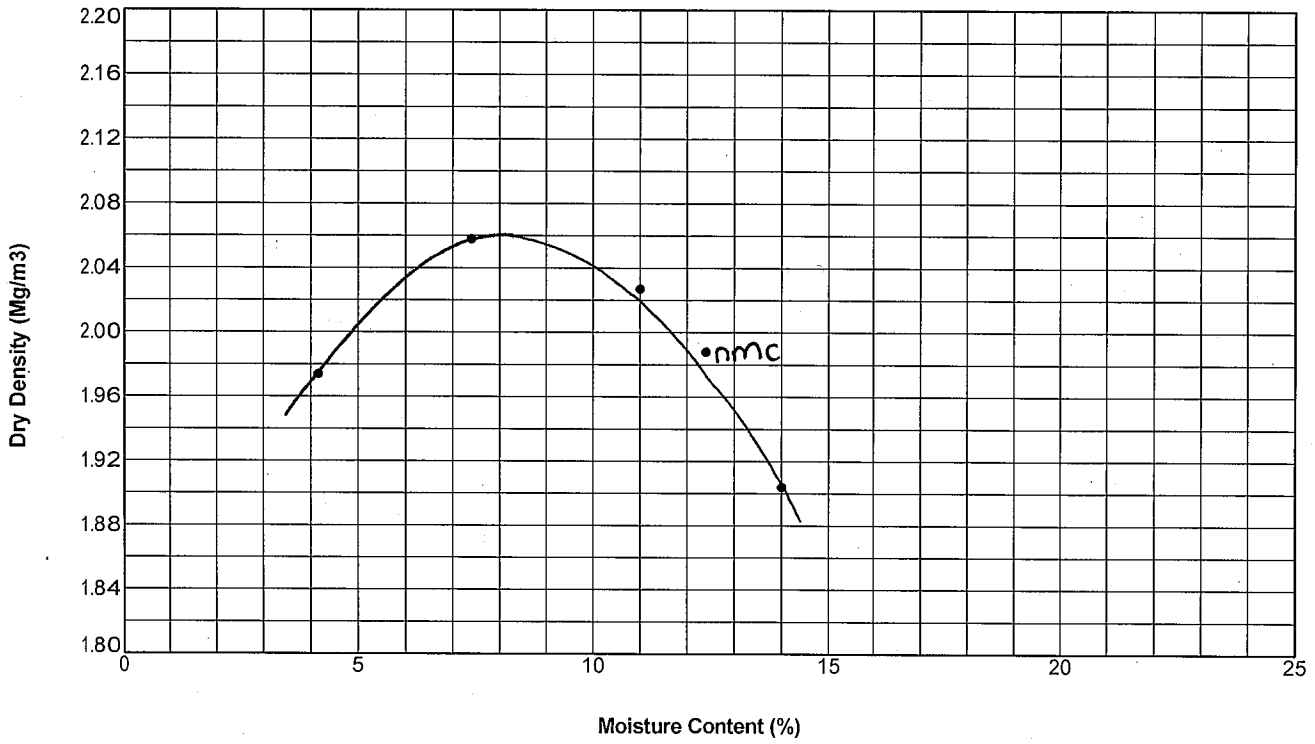
Test Method 4.5kg Compaction Single Sample

Test Results

Optimum Moisture Content (%) = **8.0** Particle Density (Assumed) = **2.75**

Maximum Dry Density (Mg/m3) = **2.06** Retained on 20mm Sieve (%) = **17.1**

Date Tested = **20/07/2017** Retained on 37.5mm Sieve (%) = **6.4**



For description of sample please refer to the Laboratory Sample Description Sheet

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TPE-39** Depth (mBGL) :- **2.00** Sample Type & No :- **B**

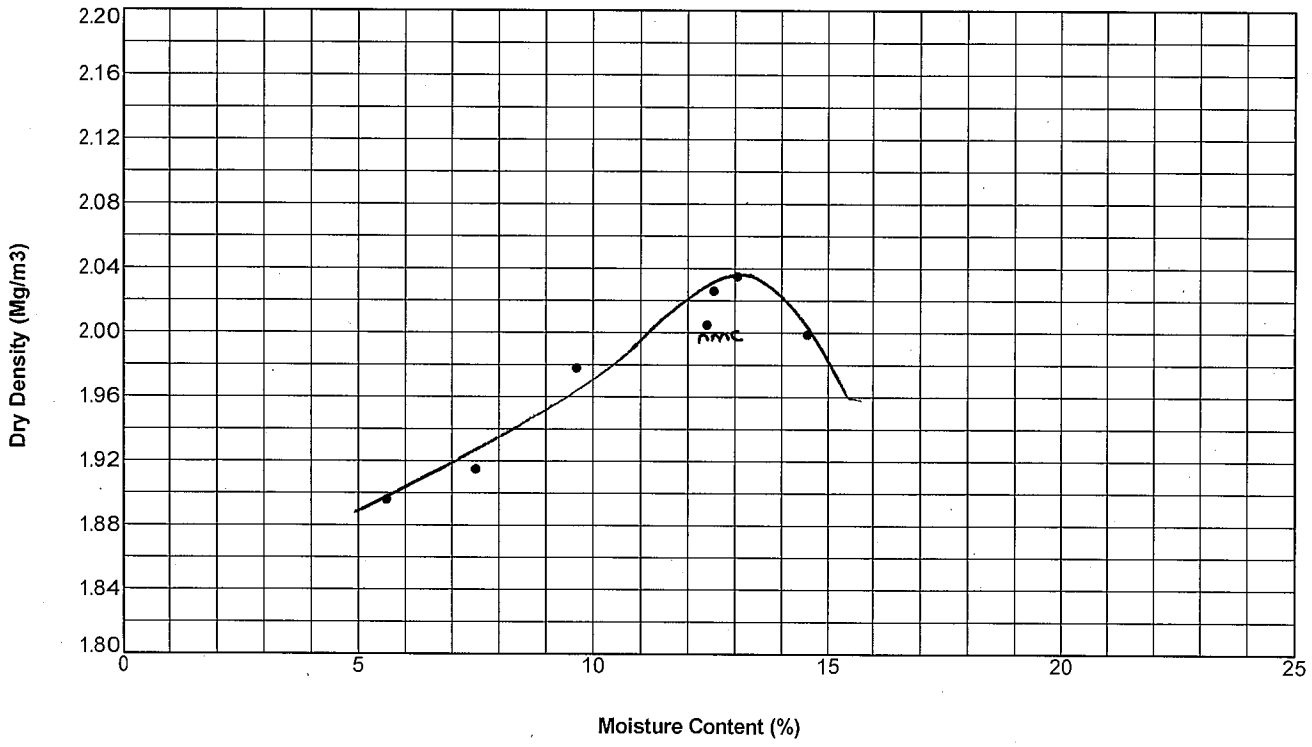
Test Method 4.5kg Compaction Single Sample

Test Results

Optimum Moisture Content (%) = **13.0** Particle Density (Assumed) = **2.85**

Maximum Dry Density (Mg/m3) = **2.04** Retained on 20mm Sieve (%) = **31.2**

Date Tested = **26/07/2017** Retained on 37.5mm Sieve (%) = **9.7**



For description of sample please refer to the Laboratory Sample Description Sheet

Contract Title :-	Client :-
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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TPE-59** Depth (mBGL) :- **3.50** Sample Type & No :- **B**

Test Method 4.5kg Compaction Single Sample

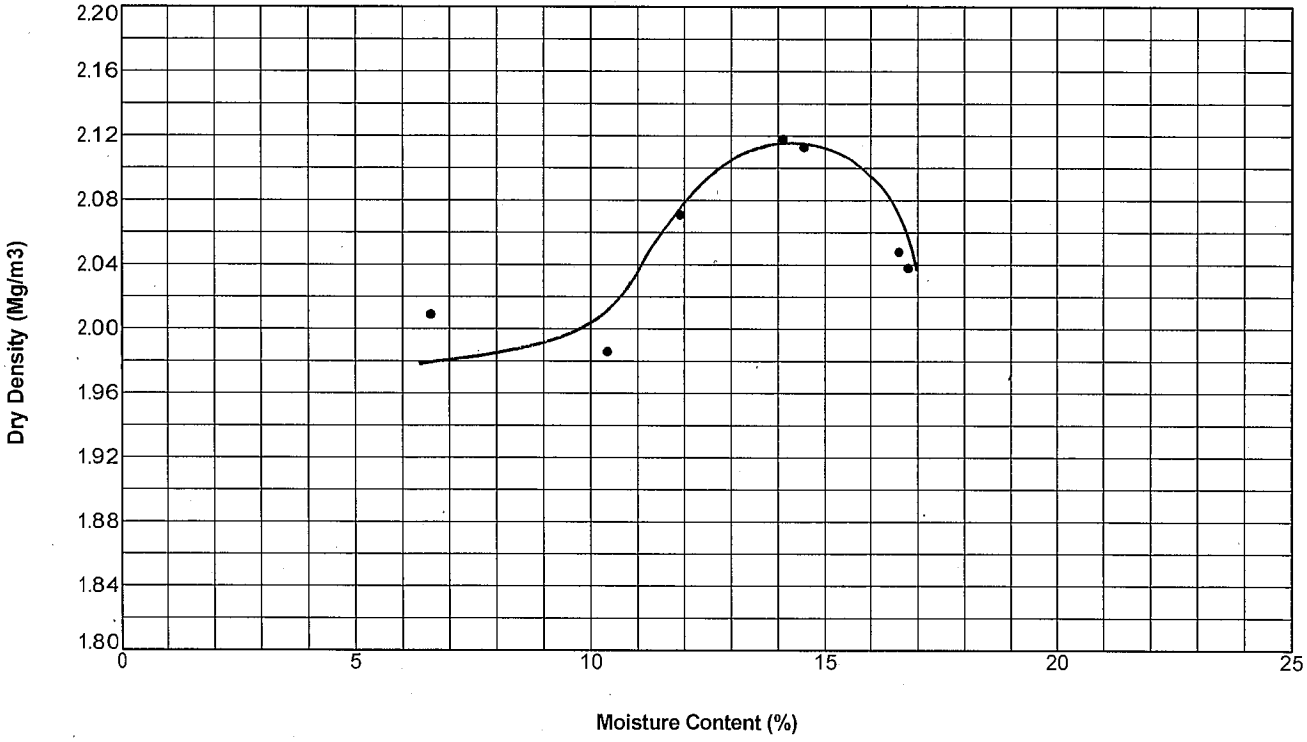
Test Results

Optimum Moisture Content (%) = **14.1** Particle Density (Assumed) = **3.15**

Maximum Dry Density (Mg/m3) = **2.12** Retained on 20mm Sieve (%) = **35.8**

Date Tested = **28/07/2017** Retained on 37.5mm Sieve (%) = **17.8**

Remarks: Non-standard test due to excessive coarse material.



For description of sample please refer to the Laboratory Sample Description Sheet

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TPF-04** Depth (mBGL) :- **0.70** Sample Type & No :- **B**

Test Method 4.5kg Compaction Single Sample

Test Results

Optimum Moisture Content (%) = **4.9**

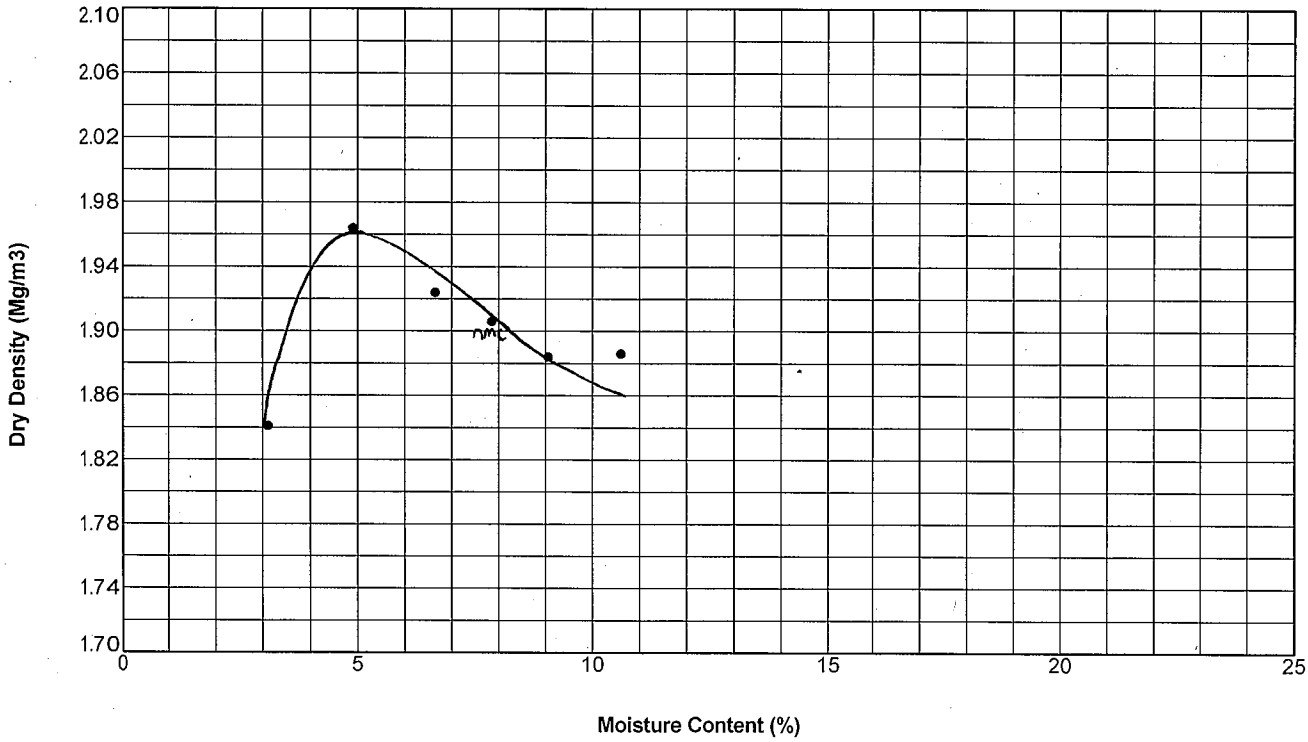
Particle Density (Assumed) = **2.35**

Maximum Dry Density (Mg/m3) = **1.96**

Retained on 20mm Sieve (%) = **13.6**

Date Tested = **21/07/2017**

Retained on 37.5mm Sieve (%) = **1.1**



For description of sample please refer to the Laboratory Sample Description Sheet

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TPH-01** Depth (mBGL) :- **1.00** Sample Type & No :- **B**

Test Method 4.5kg Compaction Single Sample

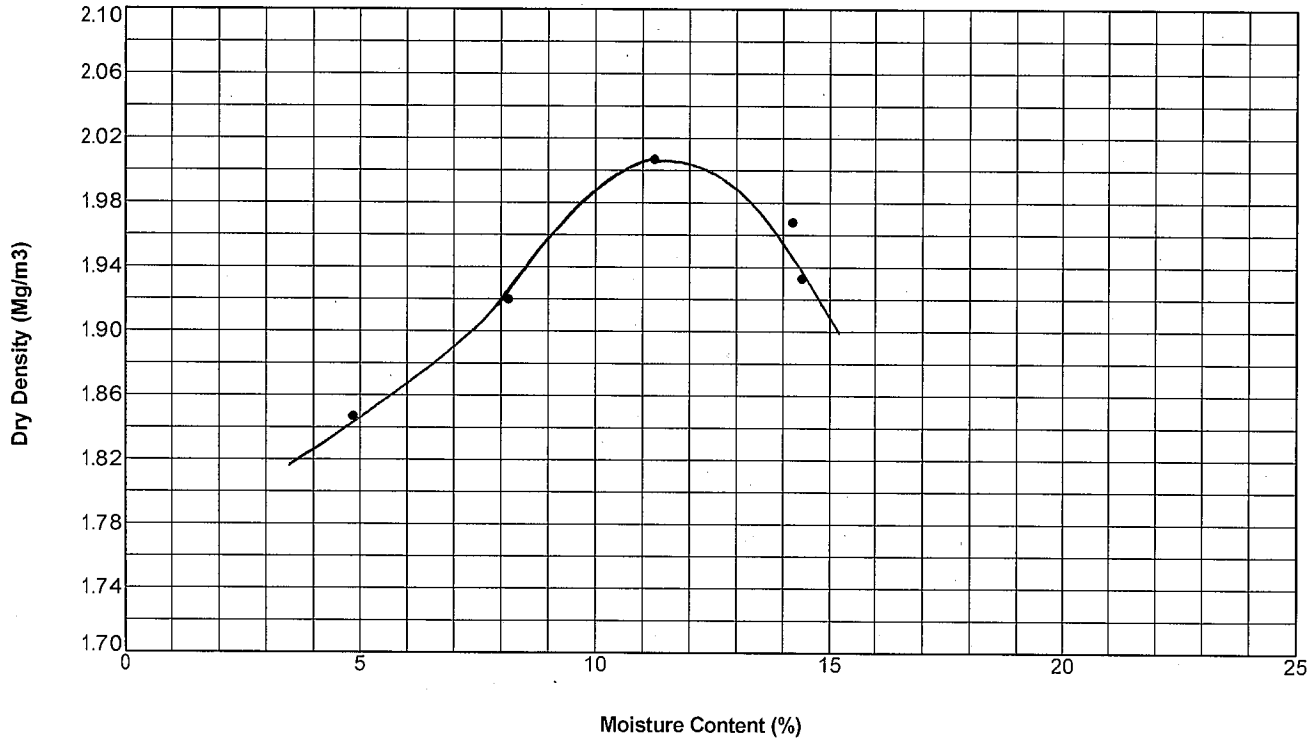
Test Results

Optimum Moisture Content (%) = **11.3** Particle Density (Assumed) = **2.75**

Maximum Dry Density (Mg/m3) = **2.01** Retained on 20mm Sieve (%) = **27.2**

Date Tested = **20/07/2017** Retained on 37.5mm Sieve (%) = **7.5**

Remarks: Non-standard test due to excessive coarse material.



For description of sample please refer to the Laboratory Sample Description Sheet

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TPH-23** Depth (mBGL) :- **2.50** Sample Type & No :- **B**

Test Method 4.5kg Compaction Separate Samples

Test Results

Optimum Moisture Content (%) = **13.2**

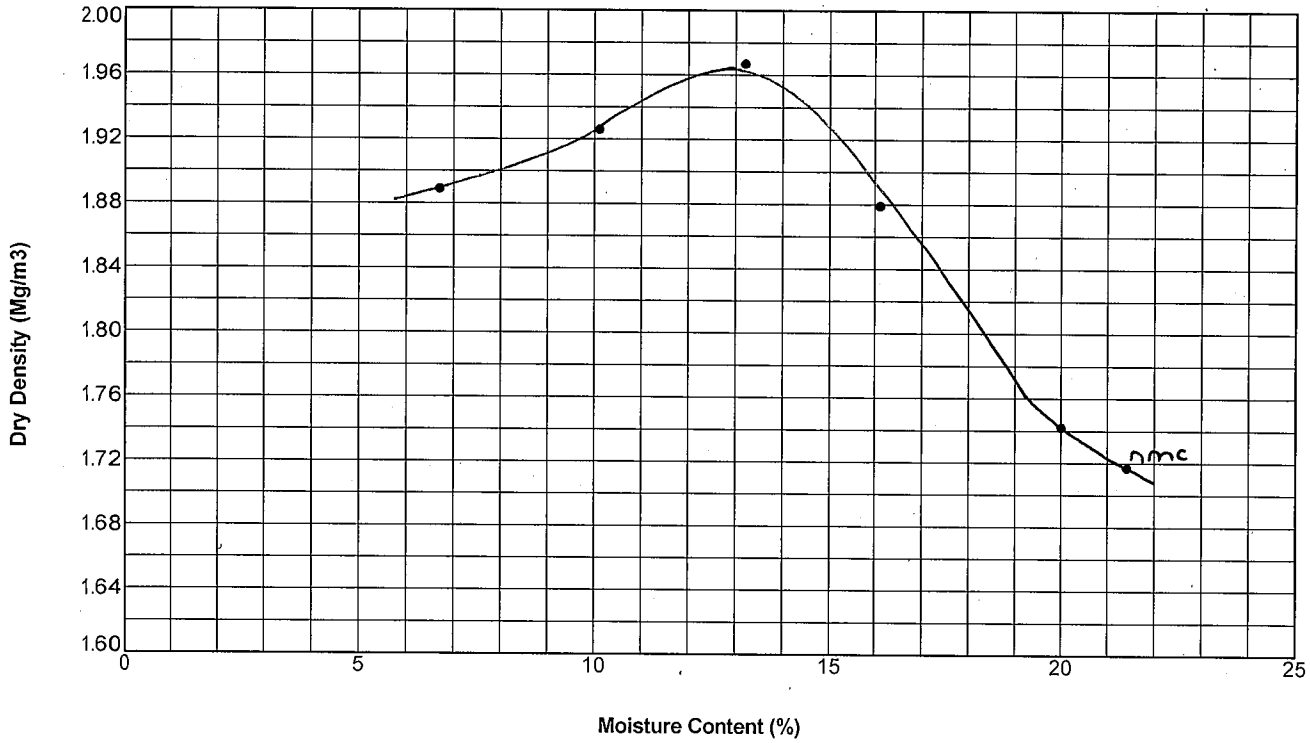
Particle Density (Assumed) = **2.75**

Maximum Dry Density (Mg/m3) = **1.97**

Retained on 20mm Sieve (%) = **1.4**

Date Tested = **28/07/2017**

Retained on 37.5mm Sieve (%) = **0.7**



For description of sample please refer to the Laboratory Sample Description Sheet

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TPI-03** Depth (mBGL) :- **0.40** Sample Type & No :- **B**

Test Method 4.5kg Compaction Separate Samples

Test Results

Optimum Moisture Content (%) = **10.6**

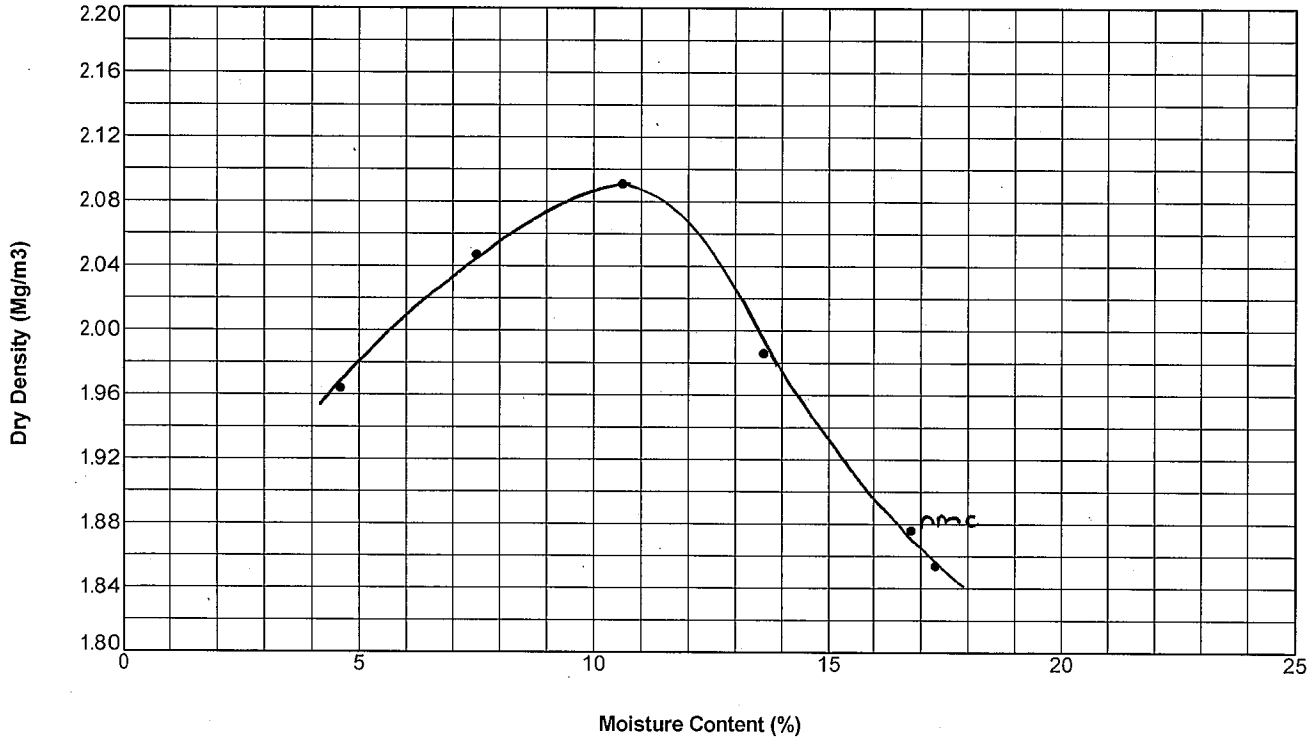
Particle Density (Assumed) = **2.75**

Maximum Dry Density (Mg/m3) = **2.09**

Retained on 20mm Sieve (%) = **3.8**

Date Tested = **02/08/2017**

Retained on 37.5mm Sieve (%) = **0.4**



For description of sample please refer to the Laboratory Sample Description Sheet

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TPI-17** Depth (mBGL) :- **0.60** Sample Type & No :- **B**

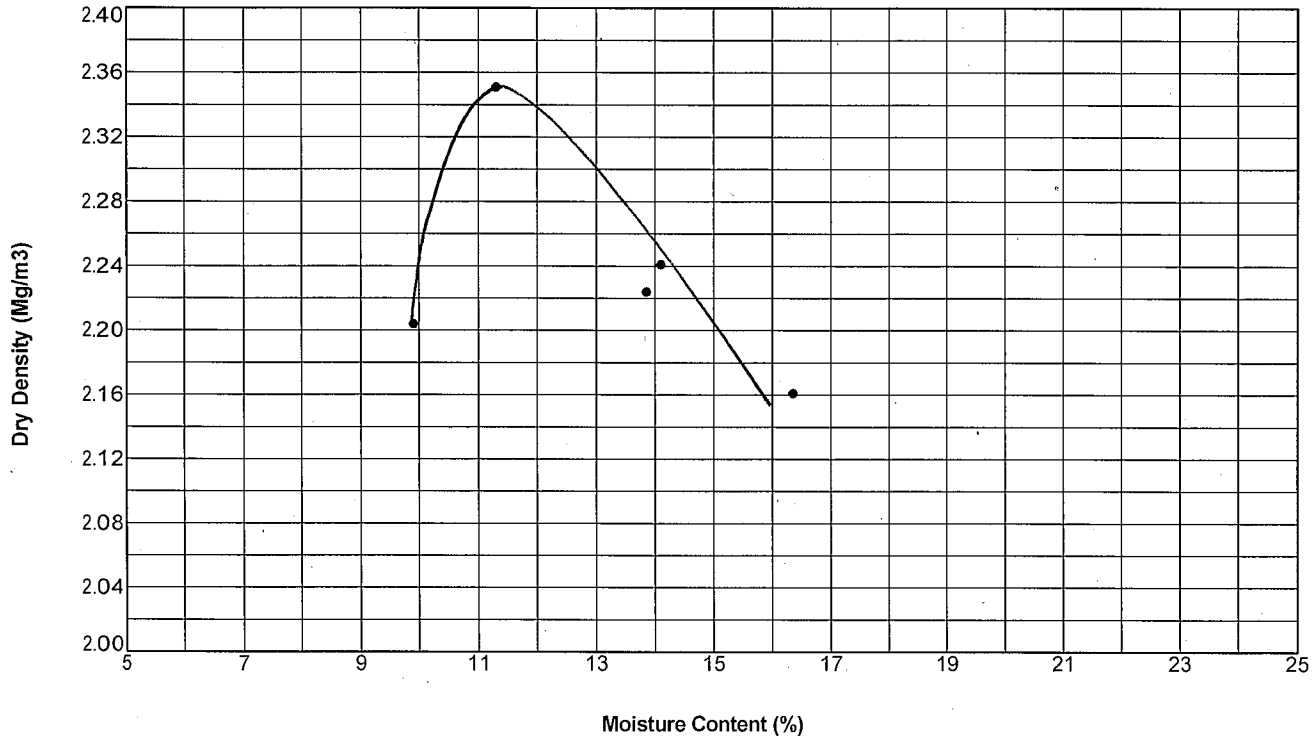
Test Method 4.5kg Compaction Single Sample

Test Results

Optimum Moisture Content (%) = **11.3** Particle Density (Assumed) = **3.40**

Maximum Dry Density (Mg/m3) = **2.35** Retained on 20mm Sieve (%) = **14.1**

Date Tested = **21/07/2017** Retained on 37.5mm Sieve (%) = **6.0**



For description of sample please refer to the Laboratory Sample Description Sheet

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MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

BS 1377 : Part 4 : 1990

Specimen Identification

Exploratory Hole No :- **TPI-26** Depth (mBGL) :- **4.50** Sample Type & No :- **B**

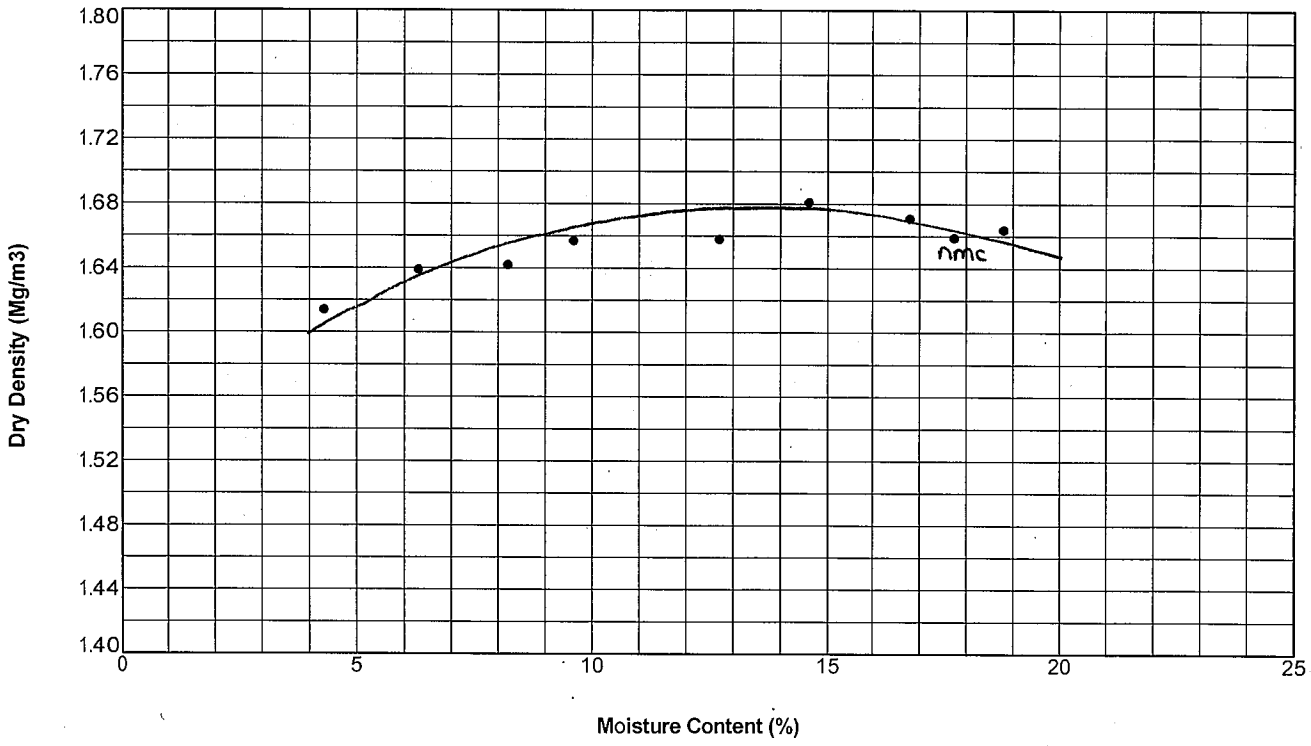
Test Method 4.5kg Compaction Separate Samples

Test Results

Optimum Moisture Content (%) = **14.6** Particle Density (Assumed) = **2.50**

Maximum Dry Density (Mg/m3) = **1.68** Retained on 20mm Sieve (%) = **3.5**

Date Tested = **28/07/2017** Retained on 37.5mm Sieve (%) = **1.0**



For description of sample please refer to the Laboratory Sample Description Sheet

Contract Title :-	Client :-
Redcar Site	**CH2M**

Signed :-	Name :- M SELKIRK	Page 1 of 1	
Date of issue :- 08/08/2017	Certificate No :- COMP/SLS1015/1	AEG Contract No. :- **SLS1015**	

UKAS TESTING 1367

Test Report: **Method of the Determination of Resistance to Fragmentation by Los Angeles test Method**
BS EN 1097:2:2010

Client:		**Allied Exploration & Geotechnics Limited**
Client Ref:		**SLS1015**
Contract Number:		**36014**
Location:		**SSI Redcar**
Date Sampled:		**Unknown**
Date tested:		**27/07/2017**
Hole Number:		**TPD 27**
Sample Number:		
Depth (m):	**From**	**1.00 to 1.30**
Method of Sampling:		**BS 932-1 General requirements and sample preparation**
Sampled By:		**Unknown**
Aggregate Type and Nominal Size:		**14-10mm**
Target Specification:		**N/A**

Los Angeles Coefficient	**43**

Remarks: Non-standard test.

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Wayne Honey (Office/Quality Assistant) W. Honey

Date: 30.7.17

GSTL
GEO SITE & TESTING SERVICES LTD

UKAS TESTING
2788

Test Report: **Method of the Determination of Resistance to Fragmentation by Los Angeles test Method**
BS EN 1097:2:2010

Client:		**Allied Exploration & Geotechnics Limited**
Client Ref:		**SLS1015**
Contract Number:		**36014**
Location:		**SSI Redcar**
Date Sampled:		**Unknown**
Date tested:		**27/07/2017**
Hole Number:		**TPE 19**
Sample Number:		
Depth (m):	**From**	**2.10 to 2.60**
Method of Sampling:		**BS 932-1 General requirements and sample preparation**
Sampled By:		**Unknown**
Aggregate Type and Nominal Size:		**14-10mm**
Target Specification:		**N/A**

Los Angeles Coefficient	**35**

Remarks: Non-standard test.

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Wayne Honey (Office/Quality Assistant) W. Honey

Date: 30.7.17

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UKAS TESTING
2788

Test Report: **Method of the Determination of Resistance to Fragmentation by Los Angeles test Method**
BS EN 1097:2:2010

Client:		**Allied Exploration & Geotechnics Limited**
Client Ref:		**SLS1015**
Contract Number:		**36014**
Location:		**SSI Redcar**
Date Sampled:		**Unknown**
Date tested:		**27/07/2017**
Hole Number:		**TPE 29**
Sample Number:		
Depth (m):	**From**	**2.60 to**
Method of Sampling:		**BS 932-1 General requirements and sample preparation**
Sampled By:		**Unknown**
Aggregate Type and Nominal Size:		**14-10mm**
Target Specification:		**N/A**

Los Angeles Coefficient	**34**

Remarks: Non-standard test.

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Wayne Honey (Office/Quality Assistant) W. Honey

Date: 30.7.17

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UKAS TESTING
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Test Report: **Method of the Determination of Resistance to Fragmentation by Los Angeles test Method**
BS EN 1097:2:2010

Client:		**Allied Exploration & Geotechnics Limited**
Client Ref:		**SLS1015**
Contract Number:		**36014**
Location:		**SSI Redcar**
Date Sampled:		**Unknown**
Date tested:		**27/07/2017**
Hole Number:		**TPI 19**
Sample Number:		
Depth (m):	**From**	**3.40 to**
Method of Sampling:		**BS 932-1 General requirements and sample preparation**
Sampled By:		**Unknown**
Aggregate Type and Nominal Size:		**14-10mm**
Target Specification:		**N/A**

Los Angeles Coefficient	**35**

Remarks: Non-standard test.

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Wayne Honey (Office/Quality Assistant) W. Honey

Date: 30.7.17

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UKAS TESTING
2788

Test Report: CONSOLIDATED DRAINED LARGE SHEARBOX TEST.

BS1377:Part 7:5 :1990.

Borehole Number:	TP01 + TP02	Depth from (m):	1.70 + 1.00
Sample Number :	B2 + B1	Depth to (m):	0.00

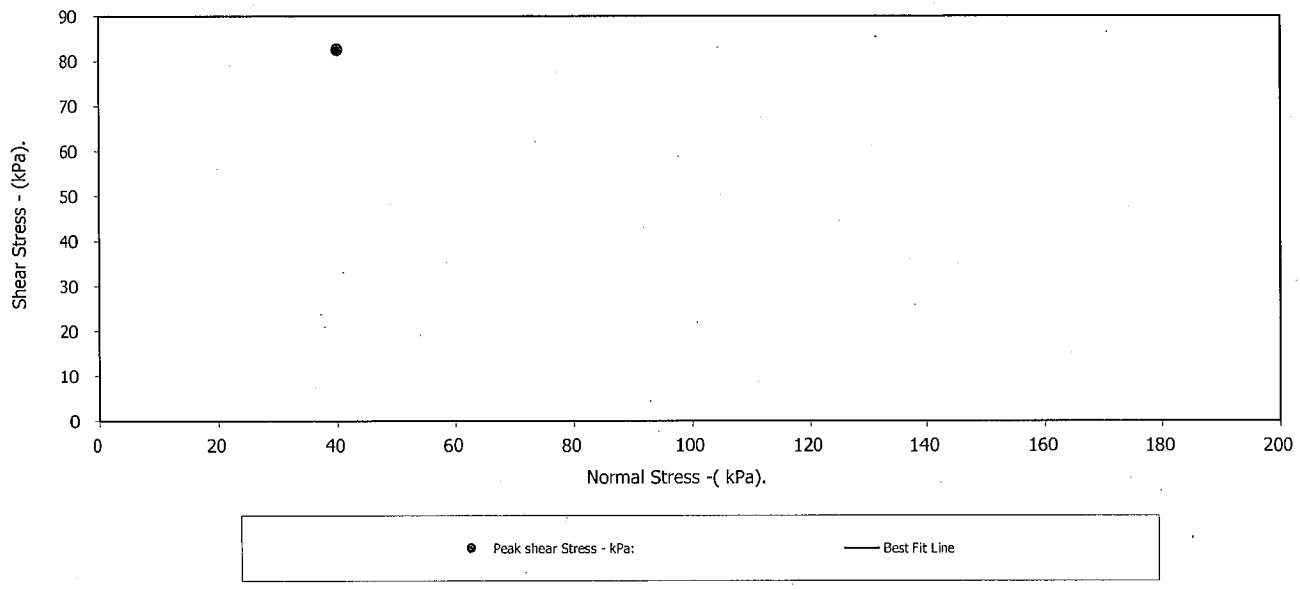
Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	At natural moisture content, Remoulded (Light Tamping) Material above 20mm removed.

Sample Description:
Dark brown slightly clayey sandy GRAVEL (fine-coarse/angular-subrounded)

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	145.00		
Length - mm:	300.00		
Moisture Content - %:	14		
Bulk Density - Mg/m3:	1.73		
Dry Density - Mg/m3:	1.51		
Voids Ratio:	0.7537		
Normal Pressure- kPa	40		
Consolidation			
Consolidated Height - mm:	142.71		
Shear			
Rate of Strain (mm/min)	0.667		
Strain at peak shear stress (%)	65.01		
Peak shear Stress - kPa:	83		

PEAK	
Angle of Shearing Resistance:(θ)	**0.0**
Effective Cohesion - kPa:	**0**

FAILURE CONDITIONS



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Contract No.: **36162**

Client Ref Number: **SLS1015**

Redcar Site

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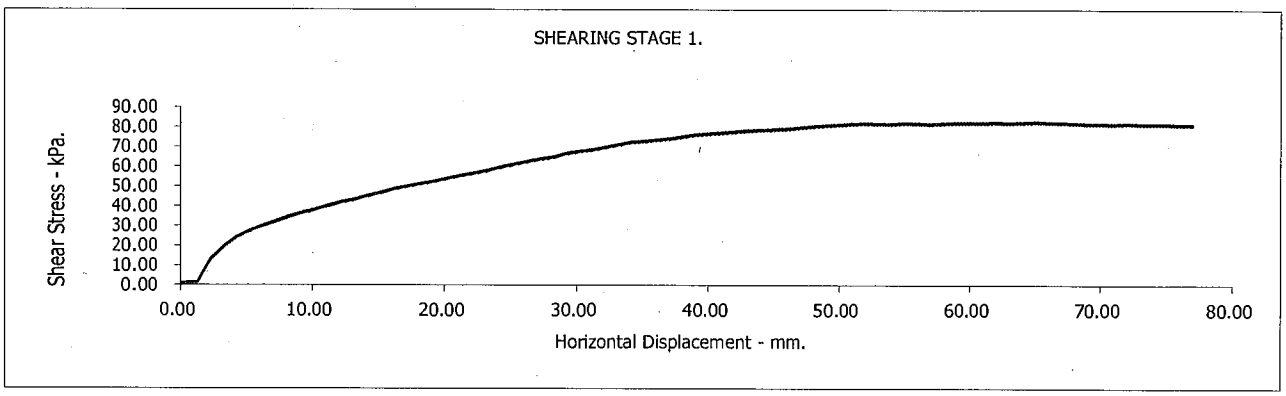
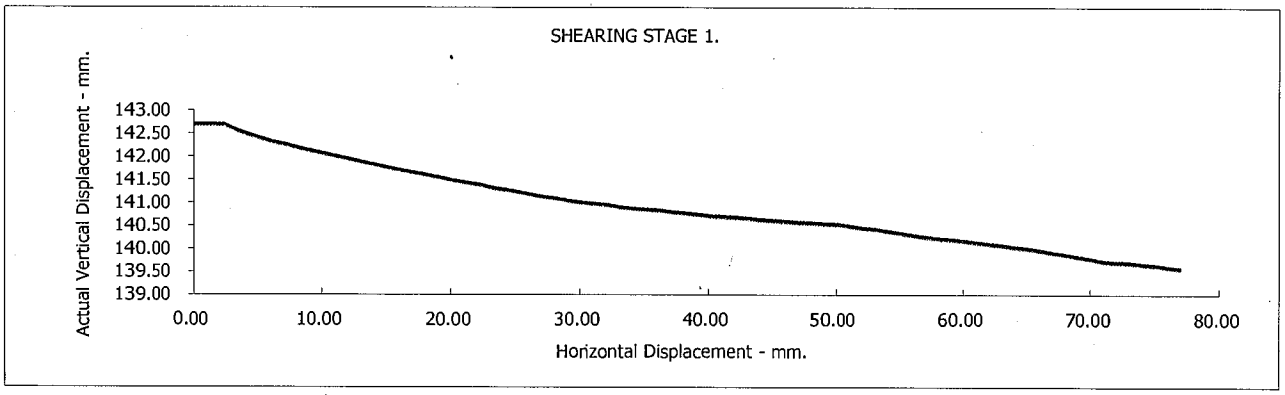
010705CD SBOX LARGE

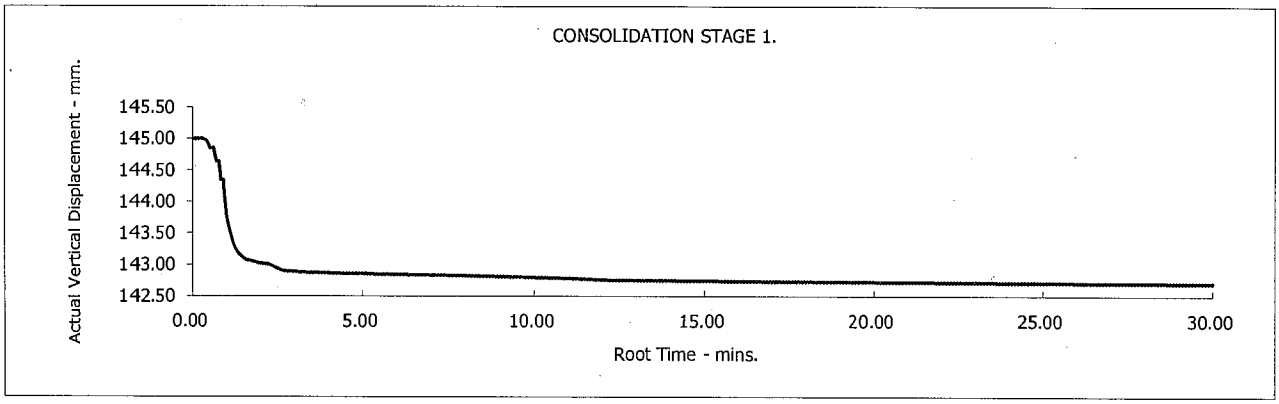
Test Report: CONSOLIDATED DRAINED LARGE SHEARBOX TEST.

BS1377:Part 7:5 :1990.

Borehole/Sample Number: TP01 + TP02 Depth (m): 1.70 + 1.00







Redcar Site

Contract No.:
36162

Client Ref Number:
SLS1015

Figure.

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010705CD SBOX LARGE

Test Report: CONSOLIDATED DRAINED LARGE SHEARBOX TEST.

BS1377:Part 7:5 :1990.

Borehole Number:	TP-B10 +TP-B05	Depth from (m):	1.70
Sample Number :	1	Depth to (m):	0.00

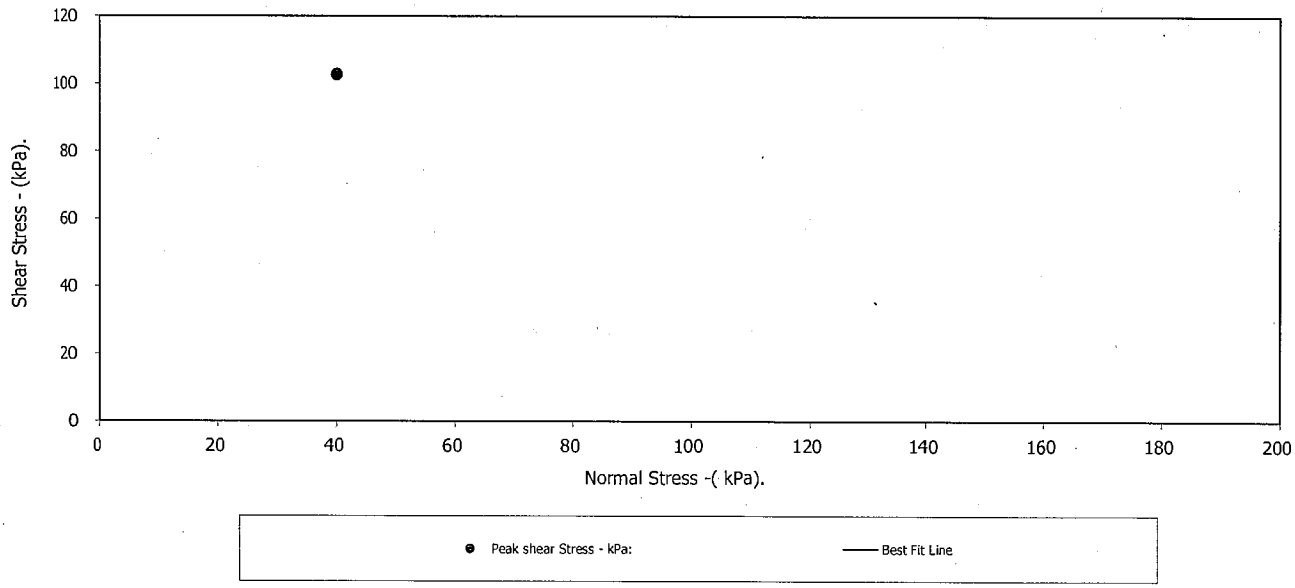
Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	At natural moisture content, Remoulded (Light Tamping) Material above 20mm removed.

Sample Description:
Dark brown sandy GRAVEL (fine-medium/angular-subangular)

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	147.00		
Length - mm:	300.00		
Moisture Content - %:	9		
Bulk Density - Mg/m3:	1.77		
Dry Density - Mg/m3:	1.62		
Voids Ratio:	0.6386		
Normal Pressure- kPa	40		
Consolidation			
Consolidated Height - mm:	145.88		
Shear			
Rate of Strain (mm/min)	0.667		
Strain at peak shear stress (%)	32.93		
Peak shear Stress - kPa:	103		

PEAK	
Angle of Shearing Resistance:(θ)	**0.0**
Effective Cohesion - kPa:	**0**

FAILURE CONDITIONS



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Contract No.: **36162**

Redcar Site

Client Ref Number: **SLS1015**

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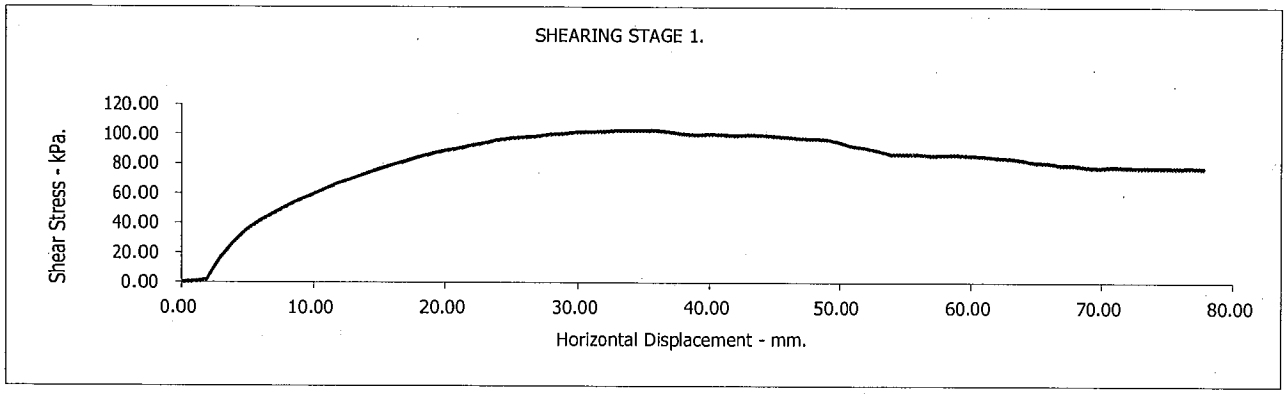
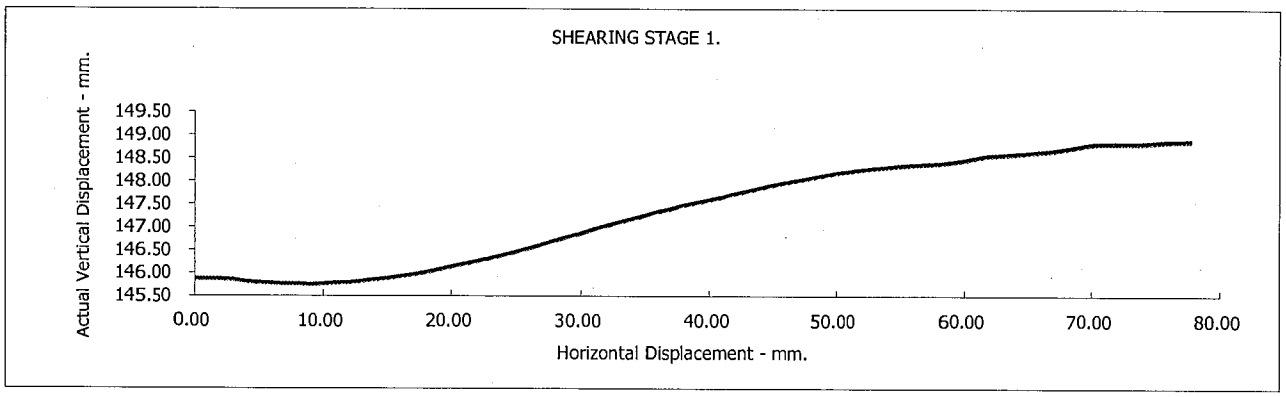
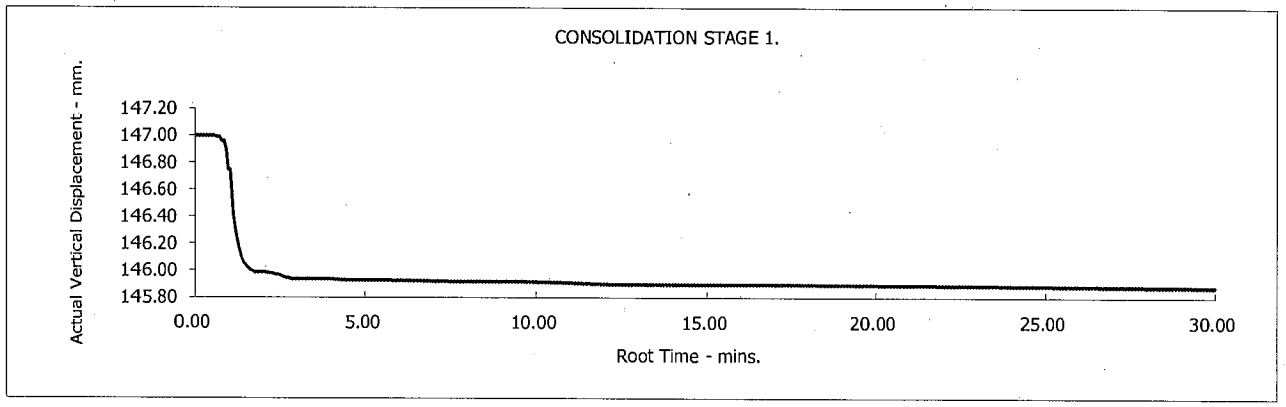
Test Report: CONSOLIDATED DRAINED LARGE SHEARBOX TEST.

BS1377:Part 7:5 :1990.

Borehole/Sample Number: TP-B10 +TP-B05 Depth (m): 1.70







Redcar Site

Contract No.:
36162

Client Ref Number:
SLS1015

Figure.

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GEO SITE & TESTING SERVICES LTD

010705CD SBOX LARGE

Test Report: CONSOLIDATED DRAINED LARGE SHEARBOX TEST.

BS1377:Part 7:5 :1990.

Borehole Number:	TP-D42 + TP-D24 + TP-D31	Depth from (m):	0.7 + 0.8 + 0.65
Sample Number :	B2 + B2 + B1	Depth to (m):	0.00

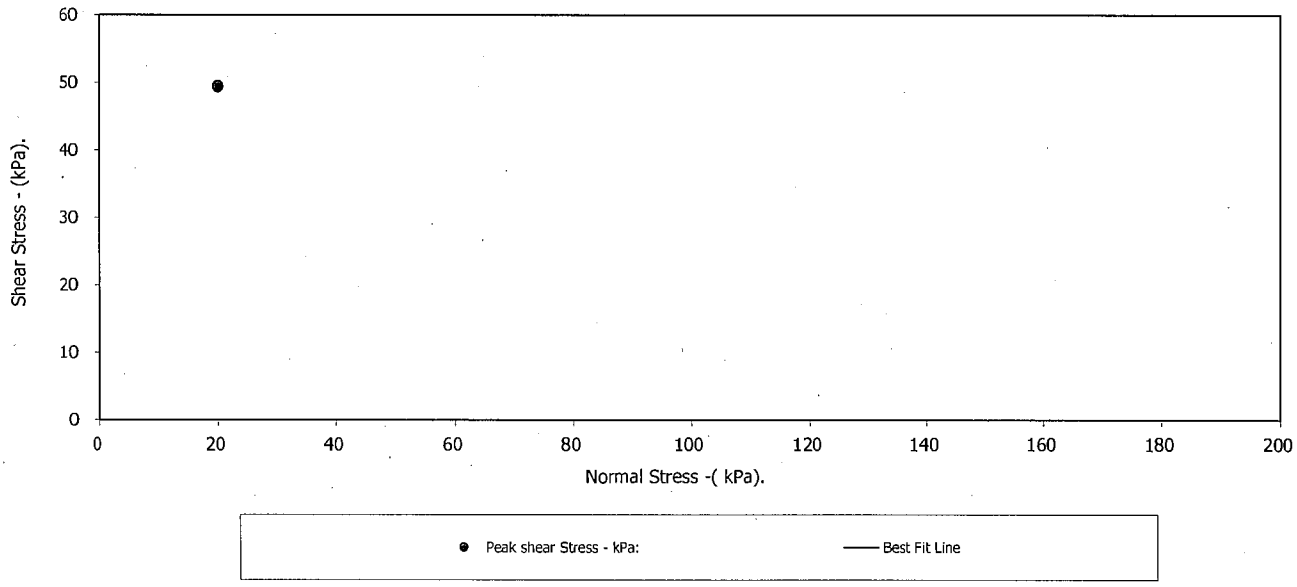
Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	At natural moisture content, Remoulded (Light Tamping) Material above 20mm removed.

Sample Description:
Dark brown slightly clayey sandy GRAVEL (fine-medium/angular-subrounded)

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	142.00		
Length - mm:	300.00		
Moisture Content - %:	17		
Bulk Density - Mg/m3:	1.69		
Dry Density - Mg/m3:	1.44		
Voids Ratio:	0.8391		
Normal Pressure- kPa	20		
Consolidation			
Consolidated Height - mm:	141.32		
Shear			
Rate of Strain (mm/min)	0.667		
Strain at peak shear stress (%)	32.44		
Peak shear Stress - kPa:	49		

PEAK	
Angle of Shearing Resistance:(θ)	**0.0**
Effective Cohesion - kPa:	**0**

FAILURE CONDITIONS



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Contract No.: **36162**

Redcar Site

Client Ref Number: **SLS1015**

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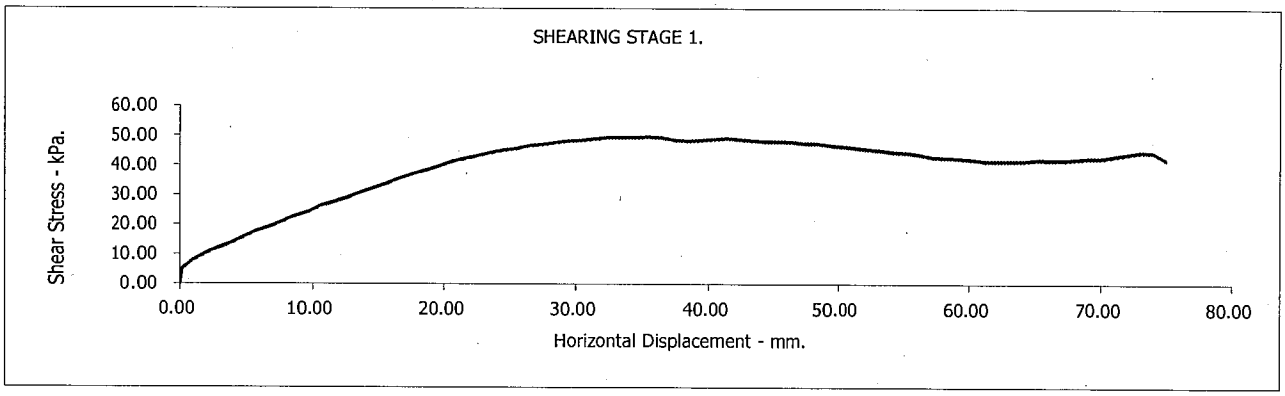
GEO SITE & TESTING SERVICES LTD

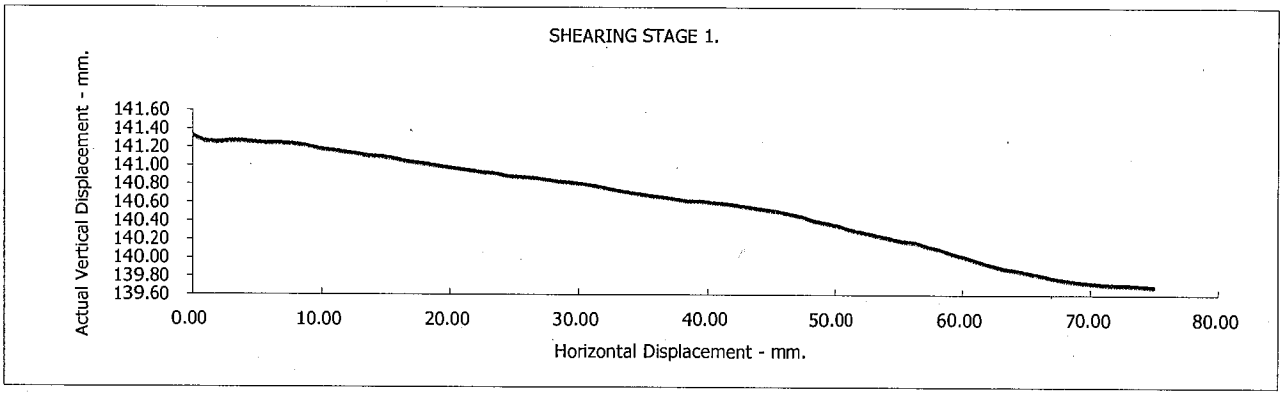
010705CD SBOX LARGE

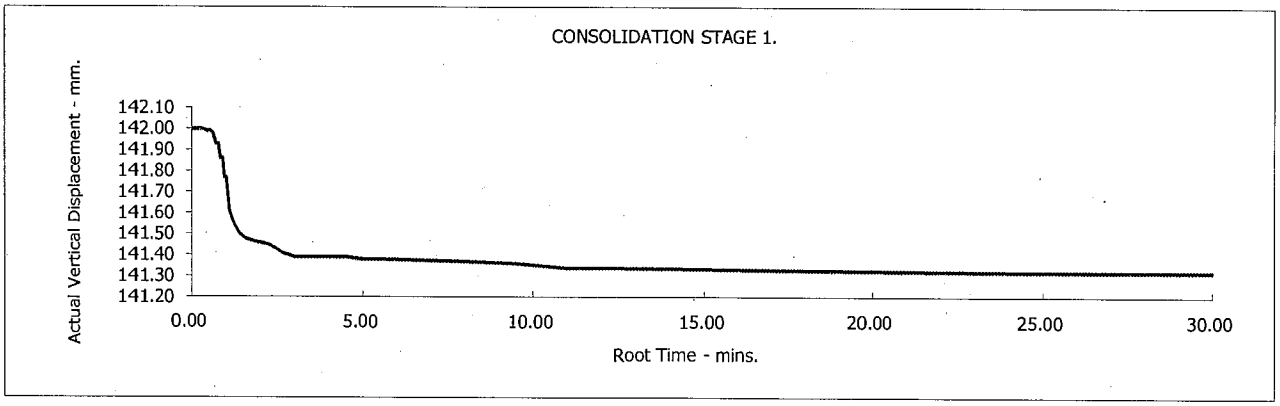
Test Report: CONSOLIDATED DRAINED LARGE SHEARBOX TEST.

BS1377:Part 7:5 :1990.

Borehole/Sample Number: TP-D42 + TP-D24 + TP Depth (m): 0.7 + 0.8 + 0.65







Redcar Site

Contract No.:
36162

Client Ref Number:
SLS1015

Figure.

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010705CD SBOX LARGE

Test Report: CONSOLIDATED DRAINED LARGE SHEARBOX TEST.

BS1377:Part 7:5 :1990.

Borehole Number:	TP-I08 + TP-I09	Depth from (m):	1.80
Sample Number :	B2	Depth to (m):	2.50

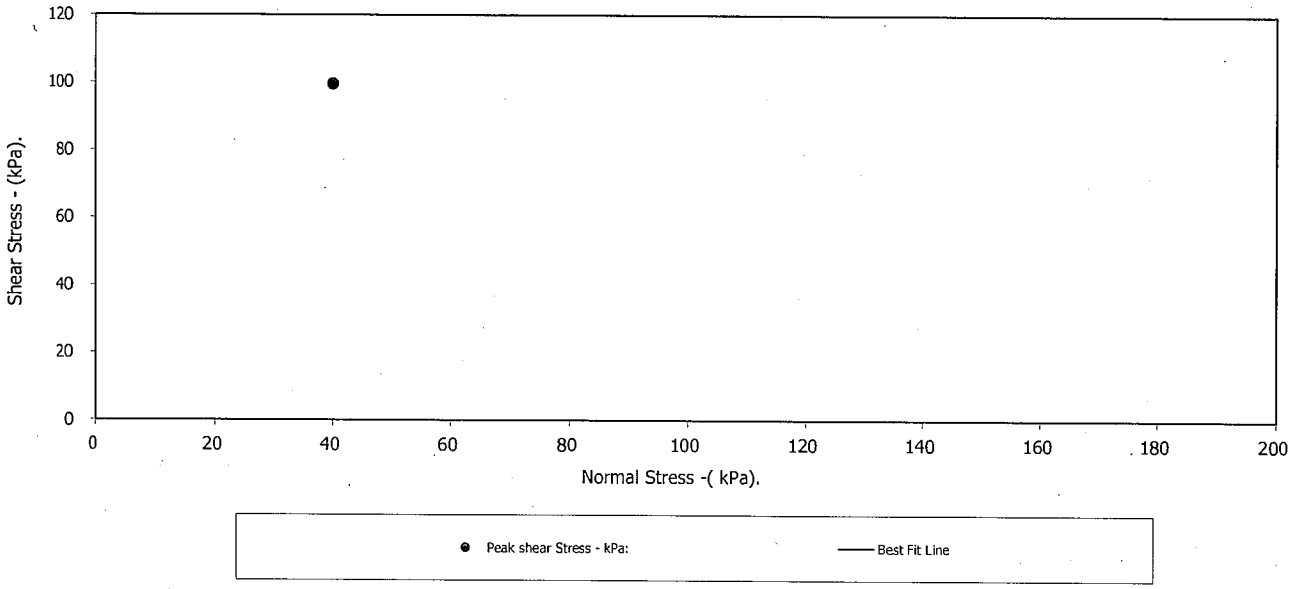
Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	At natural moisture content, Remoulded (Light Tamping) Material above 20mm removed.

Sample Description:
Dark brown slightly clayey sandy GRAVEL (fine-medium/angular-subrounded)

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	140.00		
Length - mm:	300.00		
Moisture Content - %:	13		
Bulk Density - Mg/m3:	1.80		
Dry Density - Mg/m3:	1.60		
Voids Ratio:	0.6539		
Normal Pressure- kPa	40		
Consolidation			
Consolidated Height - mm:	139.12		
Shear			
Rate of Strain (mm/min)	0.667		
Strain at peak shear stress (%)	39.01		
Peak shear Stress - kPa:	100		

PEAK	
Angle of Shearing Resistance:(θ)	**0.0**
Effective Cohesion - kPa:	**0**

FAILURE CONDITIONS



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Contract No.:
36162

Redcar Site

Client Ref Number:
SLS1015

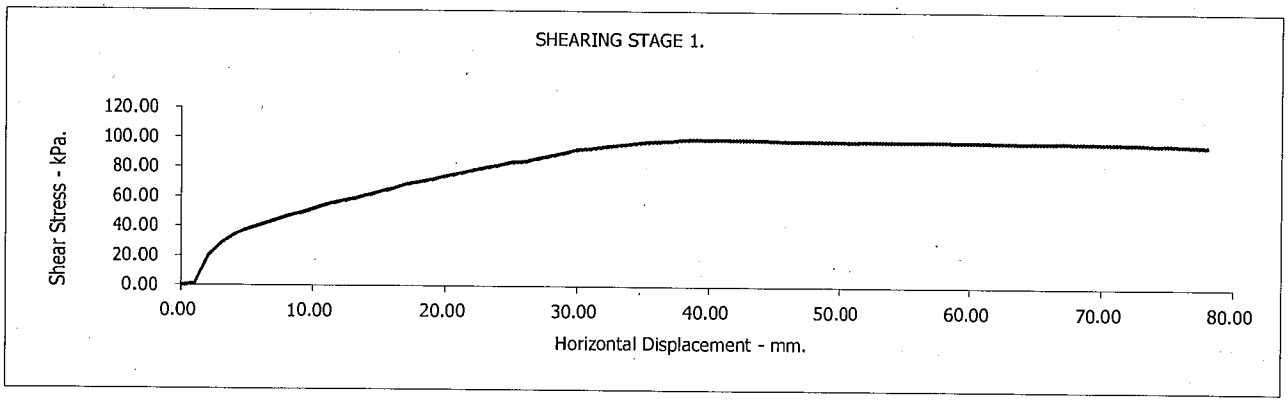
GSTL
GEO SITE & TESTING SERVICES LTD

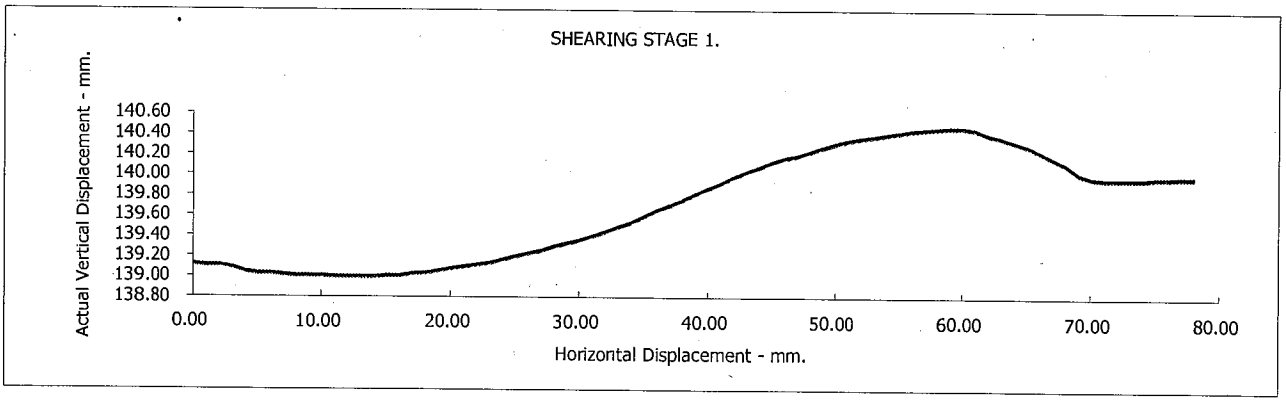
010705CD SBOX LARGE

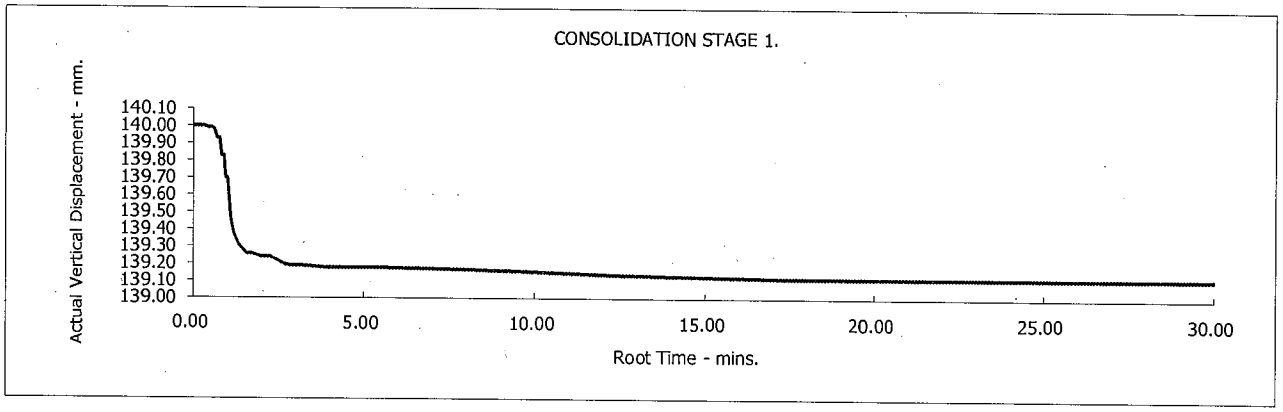
Test Report: CONSOLIDATED DRAINED LARGE SHEARBOX TEST.

BS1377:Part 7:5 :1990.

Borehole/Sample Number: TP-I08 + TP-I09 Depth (m): 1.80







Redcar Site

Contract No.:
36162

Client Ref Number:
SLS1015

Figure.

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GEO SITE & TESTING SERVICES LTD

010705CD SBOX LARGE

Test Report: CONSOLIDATED DRAINED LARGE SHEARBOX TEST.

BS1377:Part 7:5 :1990.

Borehole Number:	TP-I27 + TP-I21	Depth from (m):	0.70 + 1.90
Sample Number :	B2	Depth to (m):	0.00

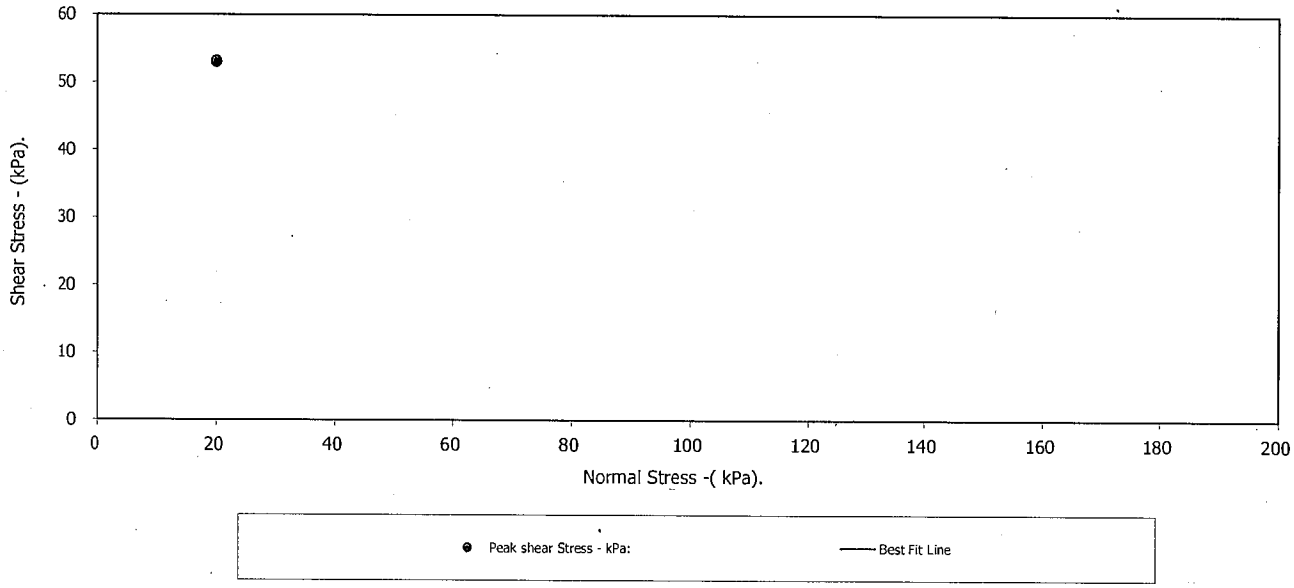
Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	At natural moisture content, Remoulded (Light Tamping) Material above 20mm removed.

Sample Description:
Dark brown sandy GRAVEL (fine-medium/angular-subrounded)

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	138.00		
Length - mm:	300.00		
Moisture Content - %:	11		
Bulk Density - Mg/m3:	1.63		
Dry Density - Mg/m3:	1.47		
Voids Ratio:	0.8082		
Normal Pressure- kPa	20		
Consolidation			
Consolidated Height - mm:	136.91		
Shear			
Rate of Strain (mm/min)	0.667		
Strain at peak shear stress (%)	40.07		
Peak shear Stress - kPa:	53		

PEAK	
Angle of Shearing Resistance:(θ)	**0.0**
Effective Cohesion - kPa:	**0**

FAILURE CONDITIONS



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Contract No.: **36162**

Redcar Site

Client Ref Number: **SLS1015**

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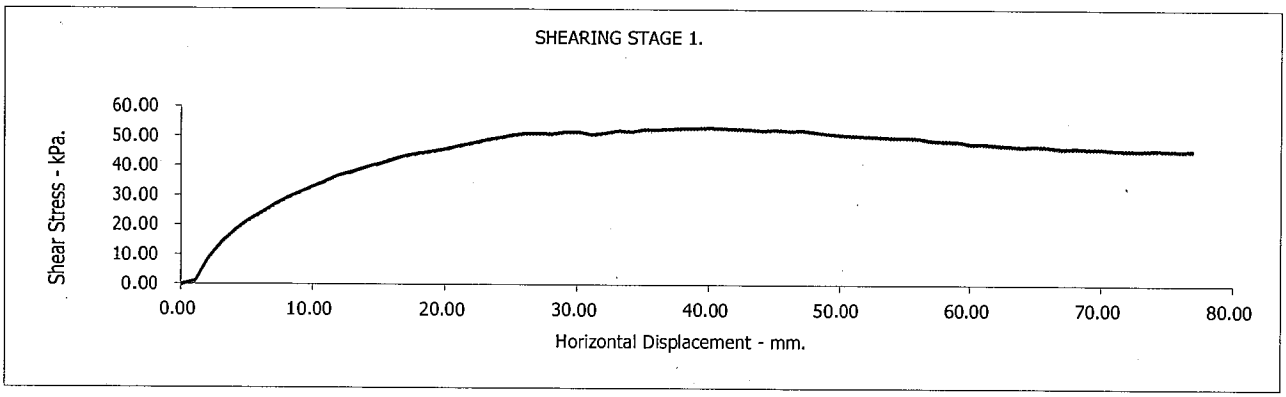
GEO SITE & TESTING SERVICES LTD

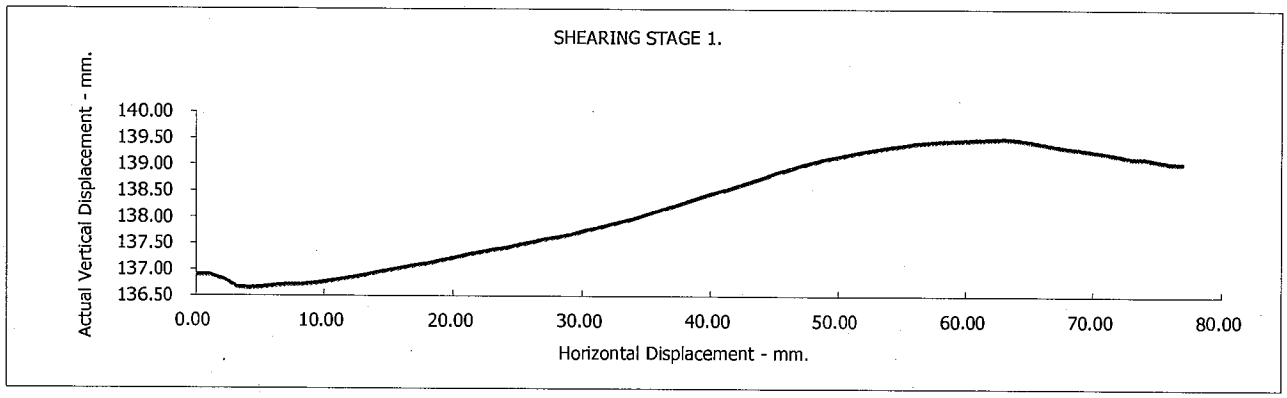
010705CD SBOX LARGE

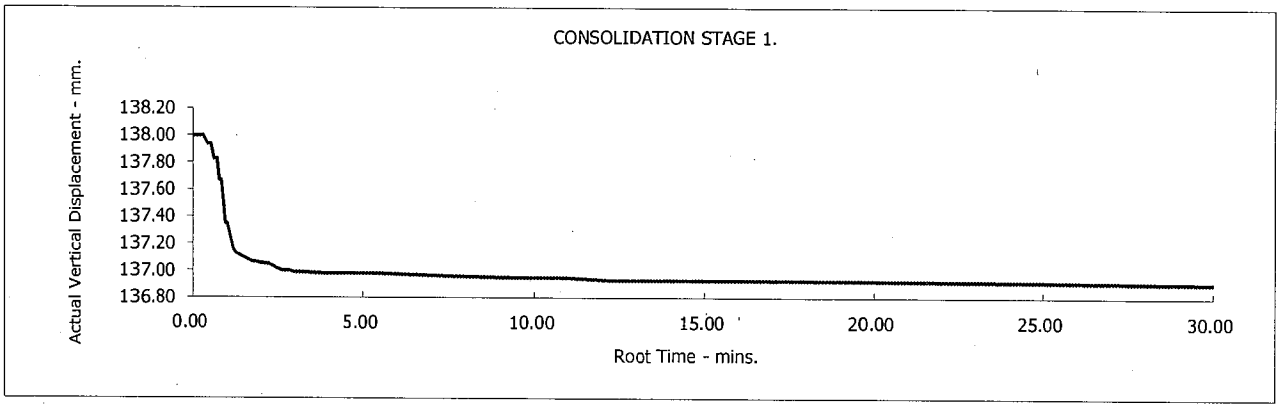
Test Report: CONSOLIDATED DRAINED LARGE SHEARBOX TEST.

BS1377:Part 7:5 :1990.

Borehole/Sample Number: TP-I27 + TP-I21 Depth (m): 0.70 + 1.90







Redcar Site

Contract No.:
36162

Client Ref Number:
SLS1015

Figure.

GSTL
GEO SITE & TESTING SERVICES LTD

010705CD SBOX LARGE

ALLIED EXPLORATION AND GEOTECHNICS LIMITED

Unit 25 Stella Gill Industrial Estate, Pelton Fell
Chester-le-Street, Co.Durham. DH2 2RG
a UKAS LABORATORY Testing No. 1367

Consolidated Drained Shear Box Test

BS 1377 : PART 7 : 1990 Clause 4

UKAS TESTING 1367

Site: Redcar Site
Client: CH2M **Job No.** SLS1015

Borehole: TPB-07 **Sample:** B **Depth:** 2.50 m

For sample description please refer to sample description sheet

Stage Number		1	2	3
Specific Depth	m.	N/A	N/A	N/A
Length	mm	60.0	60.0	60.0
Height	mm	22.5	21.9	22.4
Initial Moisture Content	%	5.0	5.0	5.0
Initial Wet density	mg/m^3	1.72	1.77	1.74
Initial Dry density	mg/m^3	1.64	1.68	1.65
CONSOLIDATION				
Normal Stress	kPa	25	50	100
Height at end of Stage	mm	22.4	21.3	21.8
Duration	Day(s)	0.5	1.0	1.0
SHEARING				
Rate of Strain	mm/min	0.168	0.178	0.178
Peak Shear Stress	kPa	14.6	24.3	52.8
Displacement at Peak Stress	mm	3.28	5.66	7.66
Rate for Residual Runs	mm/min	N/A	N/A	N/A
Residual Shear Stress	kPa	N/A	N/A	N/A
Duration	Day(s)	0.5	0.5	0.5
Final Moisture Content	%	17.4	16.7	16.5
Final Wet Density	mg/m^3	1.93	2.02	1.98
Final Dry Density	mg/m^3	1.64	1.73	1.70

PEAK SHEAR STRESS PARAMETERS

Apparent Cohesion C'	kPa	0
Angle of Shearing Resistance phi '	Deg	28°

RESIDUAL PARAMETERS

Apparent Cohesion C'	kPa	N/A
Angle of Shearing Resistance phi 'r	Deg	N/A

REMARKS:

DATE TESTED 09/08/2017
DATE OF ISSUE 15/08/2017

NAME APPROVED BY pp Nick Vater

ALLIED EXPLORATION AND GEOTECHNICS LIMITED

Unit 25 Stella Gill Industrial Estate, Pelton Fell
Chester-le-Street, Co.Durham. DH2 2RG
a UKAS LABORATORY Testing No. 1367

UKAS TESTING
1367

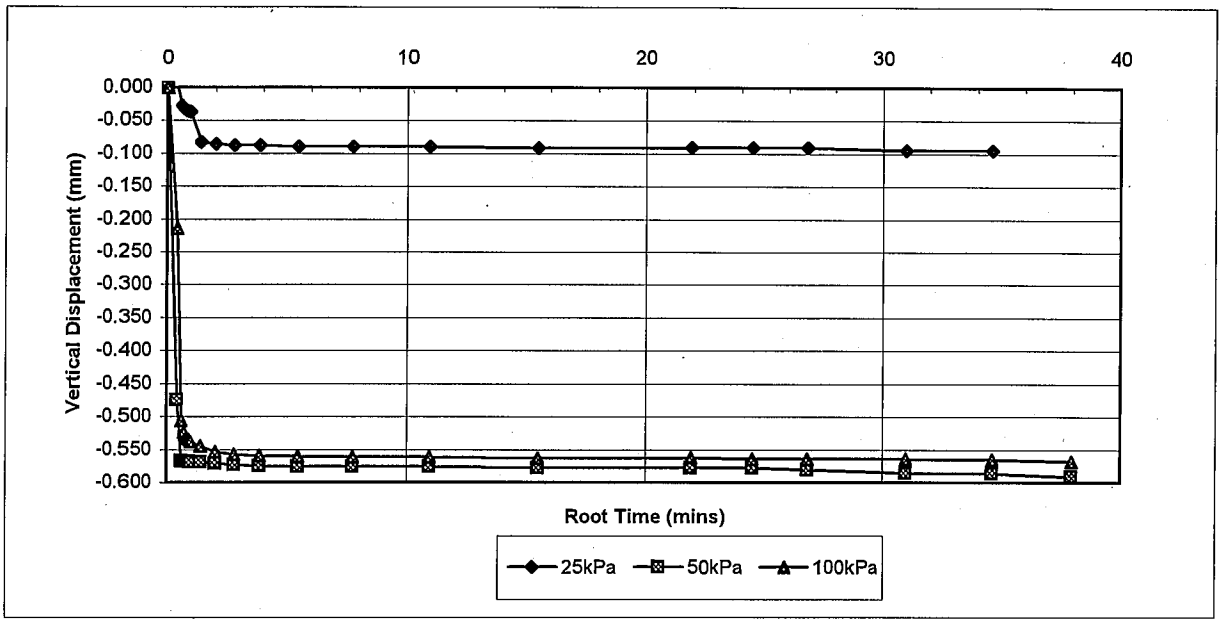
Consolidated Drained Shear Box Test

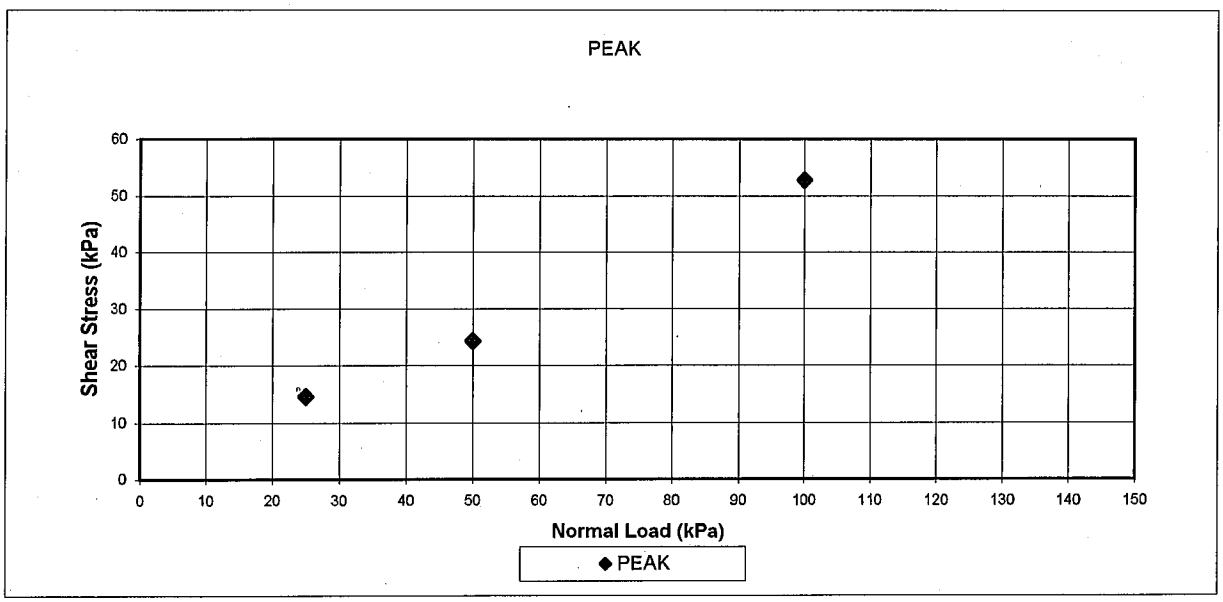
BS 1377 : PART 7 : 1990 Clause 4

Site: Redcar Site
Client: CH2M

Job No. SLS1015

Borehole: TPB-07 **Sample:** B **Depth:** 2.50 m.





ALLIED EXPLORATION AND GEOTECHNICS LIMITED

Unit 25 Stella Gill Industrial Estate, Pelton Fell
Chester-le-Street, Co.Durham. DH2 2RG
a UKAS LABORATORY Testing No. 1367

UKAS TESTING
1367

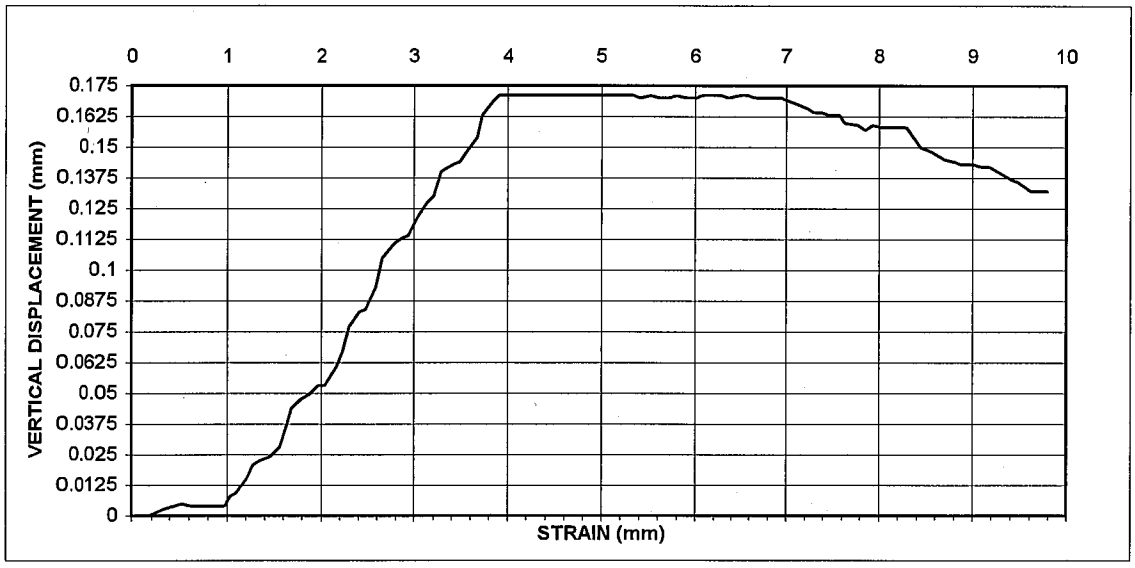
Consolidated Drained Shear Box Test

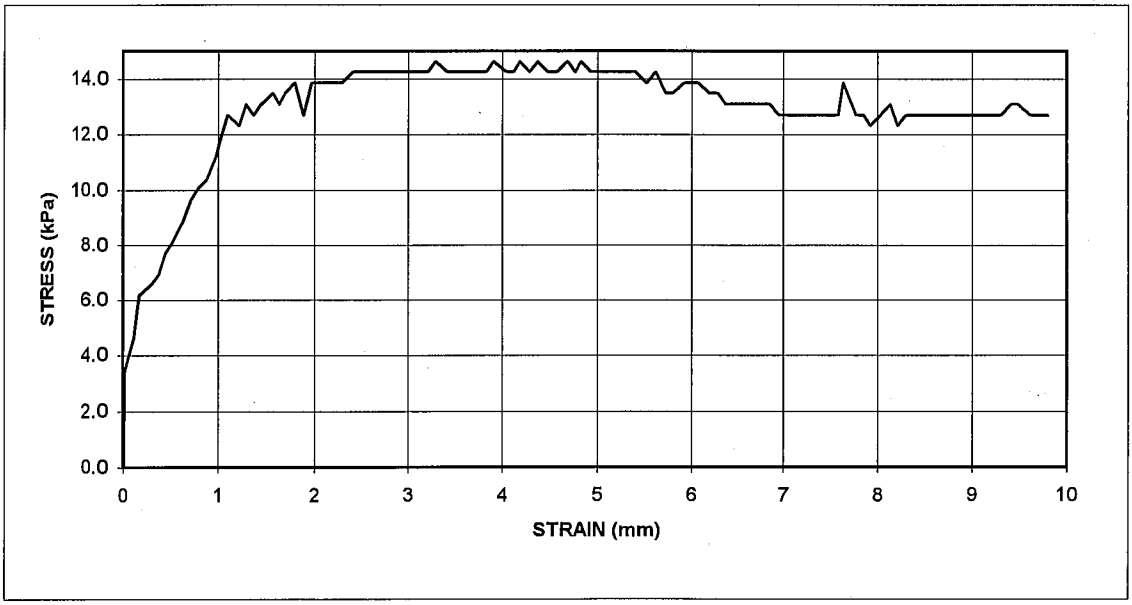
BS 1377 : PART 7 : 1990 Clause 4

Site: Redcar Site
Client: CH2M **Job No.:** SLS1015

Borehole: TPB-07 **Sample:** B **Depth:** 2.50 m.

Stage Number 1 **Pressure** 25 kPa





ALLIED EXPLORATION AND GEOTECHNICS LIMITED

Unit 25 Stella Gill Industrial Estate, Pelton Fell
Chester-le-Street, Co.Durham. DH2 2RG
a UKAS LABORATORY Testing No. 1367

UKAS TESTING
1367

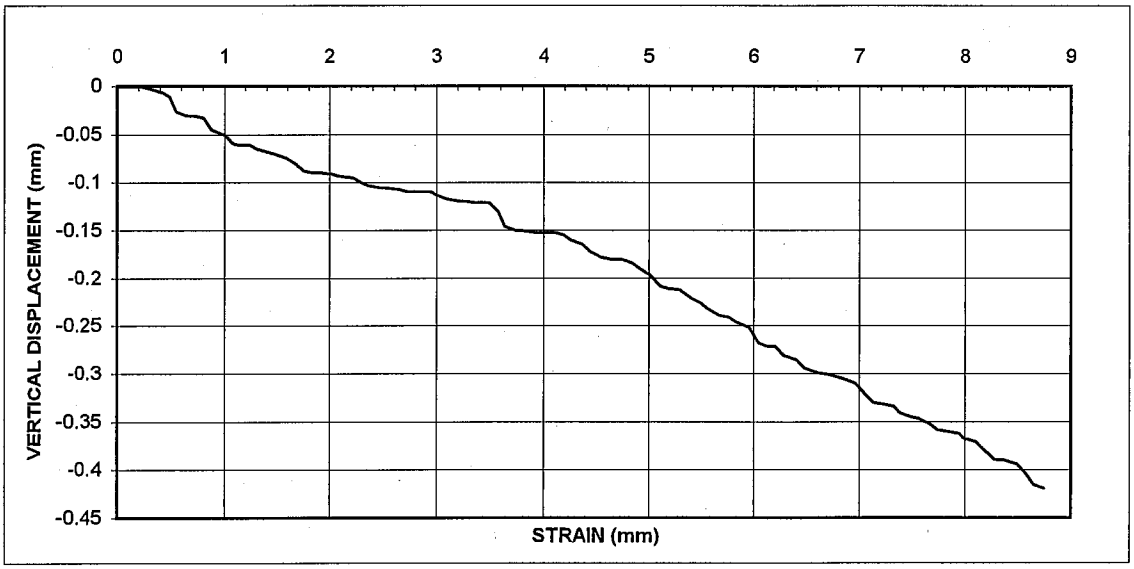
Consolidated Drained Shear Box Test

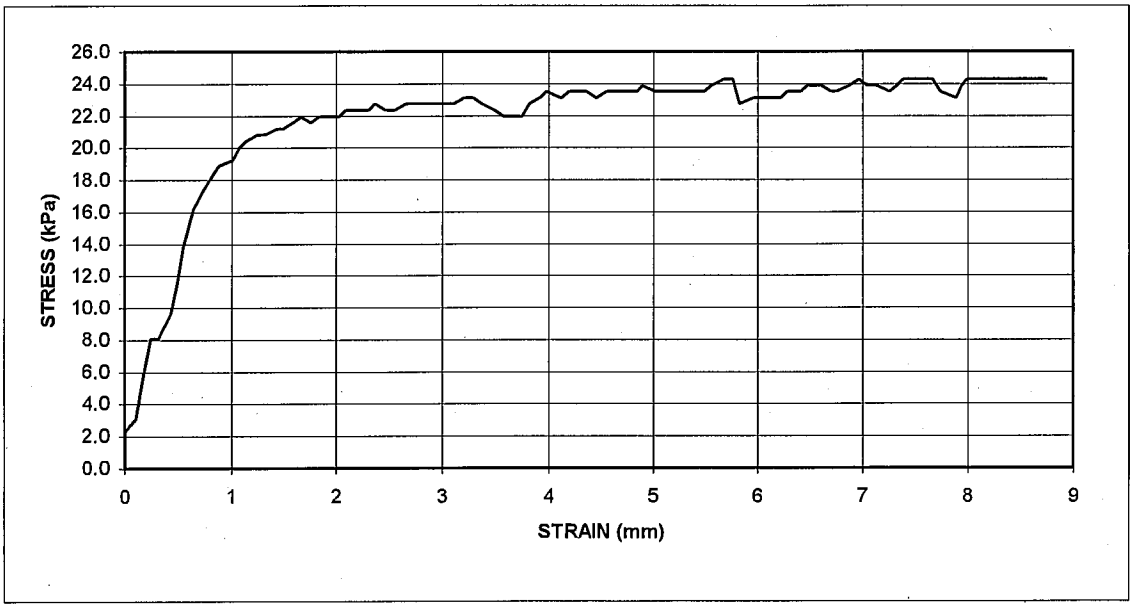
BS 1377 : PART 7 : 1990 Clause 4

Site: Redcar Site
Client: CH2M **Job No.:** SLS1015

Borehole: TPB-07 **Sample:** B **Depth:** 2.50 m.

Stage Number 2 **Pressure** 50 kPa





ALLIED EXPLORATION AND GEOTECHNICS LIMITED

Unit 25 Stella Gill Industrial Estate, Pelton Fell
Chester-le-Street, Co.Durham. DH2 2RG
a UKAS LABORATORY Testing No. 1367

Consolidated Drained Shear Box Test

BS 1377 : PART 7 : 1990 Clause 4

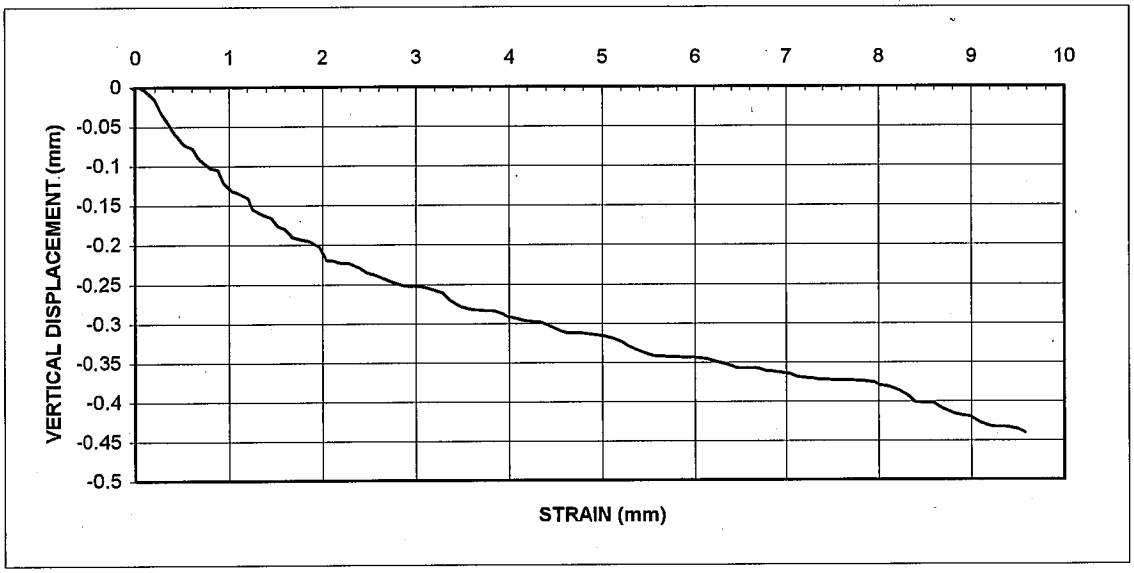
UKAS TESTING 1367

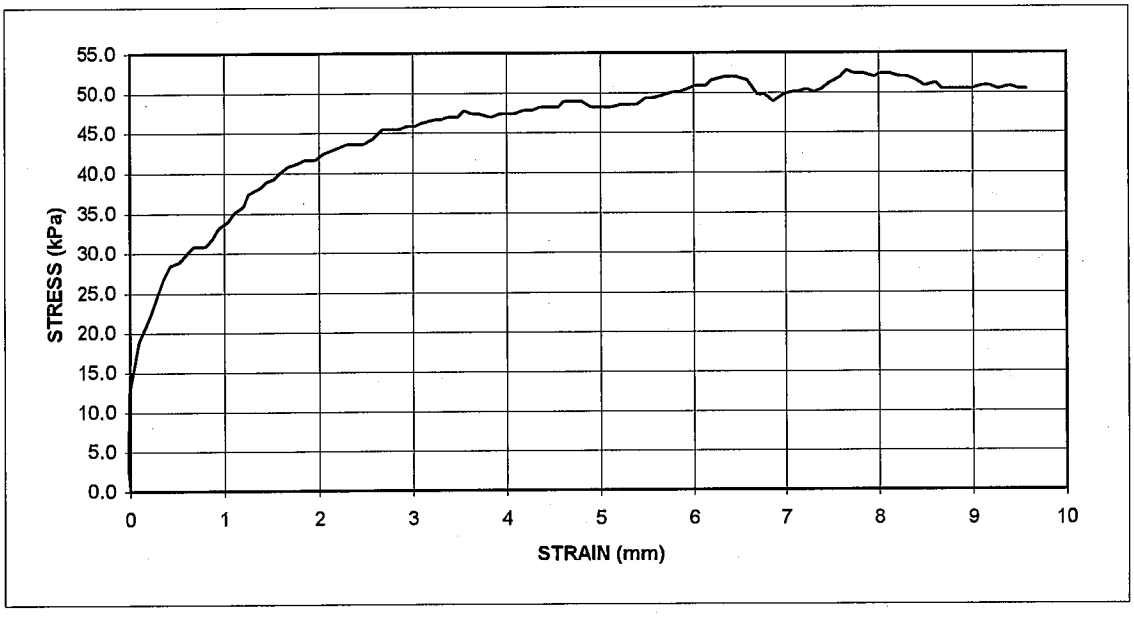
Site: Redcar Site
Client: CH2M

Job No.: SLS1015

Borehole: TPB-07 **Sample:** B **Depth:** 2.50 m.

Stage Number 3 **Pressure** 100 kPa





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Unit 25 Stella Gill Industrial Estate, Pelton Fell
Chester-le-Street, Co.Durham. DH2 2RG
a UKAS LABORATORY Testing No. 1367

UKAS TESTING
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Consolidated Drained Shear Box Test

BS 1377 : PART 7 : 1990 Clause 4

Site: Redcar Site
Client: CH2M **Job No.** SLS1015

Borehole: TPC-22 **Sample:** B **Depth:** 3.00 m

For sample description please refer to sample description sheet

Stage Number		1	2	3
Specific Depth	m.	N/A	N/A	N/A
Length	mm	60.0	60.0	60.0
Height	mm	23.9	22.4	23.4
Initial Moisture Content	%	50.5	50.5	50.5
Initial Wet density	mg/m^3	1.66	1.70	1.68
Initial Dry density	mg/m^3	1.10	1.13	1.11
CONSOLIDATION				
Normal Stress	kPa	30	60	120
Height at end of Stage	mm	22.9	21.0	21.8
Duration	Day(s)	0.5	0.5	0.5
SHEARING				
Rate of Strain	mm/min	0.219	0.220	0.215
Peak Shear Stress	kPa	23.8	40.7	84.0
Displacement at Peak Stress	mm	1.78	2.21	2.42
Rate for Residual Runs	mm/min	N/A	N/A	N/A
Residual Shear Stress	kPa	N/A	N/A	N/A
Duration	Day(s)	0.5	0.5	0.5
Final Moisture Content	%	42.5	42.6	42.2
Final Wet Density	mg/m^3	1.64	1.72	1.70
Final Dry Density	mg/m^3	1.15	1.21	1.19

PEAK SHEAR STRESS PARAMETERS

Apparent Cohesion C'	kPa	1
Angle of Shearing Resistance phi '	Deg	34.5°

RESIDUAL PARAMETERS

Apparent Cohesion C'	kPa	N/A
Angle of Shearing Resistance phi 'r	Deg	N/A

REMARKS:

DATE TESTED 04/08/2017
DATE OF ISSUE 16/08/2017

NAME APPROVED BY pp Nick Vater

ALLIED EXPLORATION AND GEOTECHNICS LIMITED

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UKAS TESTING
1367

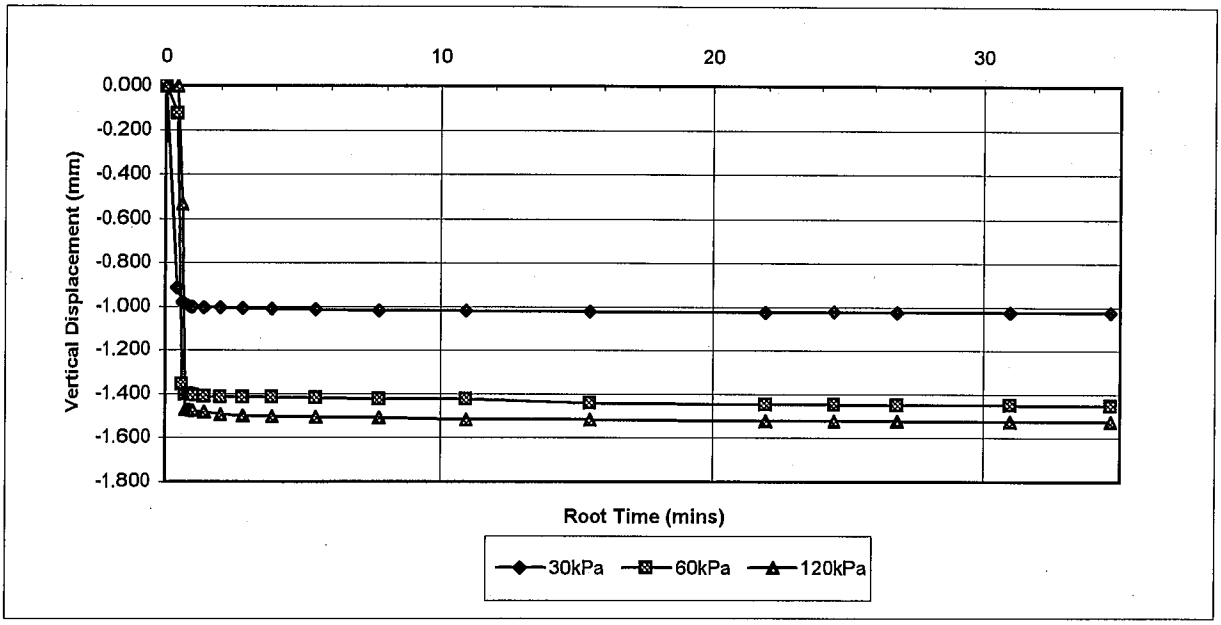
Consolidated Drained Shear Box Test

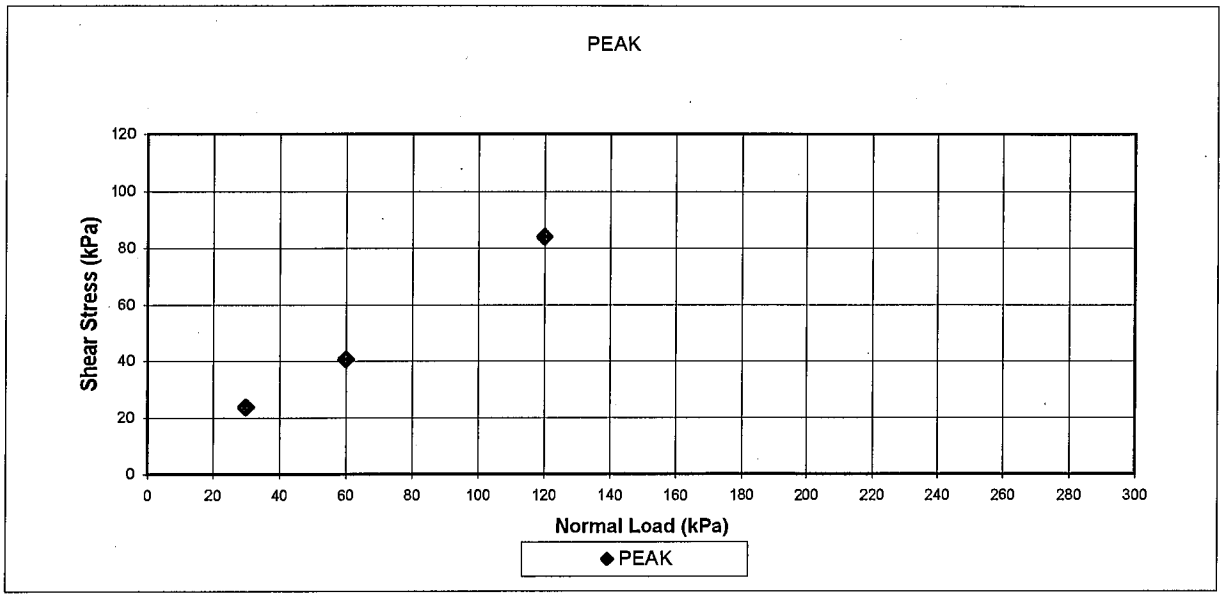
BS 1377 : PART 7 : 1990 Clause 4

Site: Redcar Site
Client: CH2M

Job No. SLS1015

Borehole: TPC-22 **Sample:** B **Depth:** 3.00 m.





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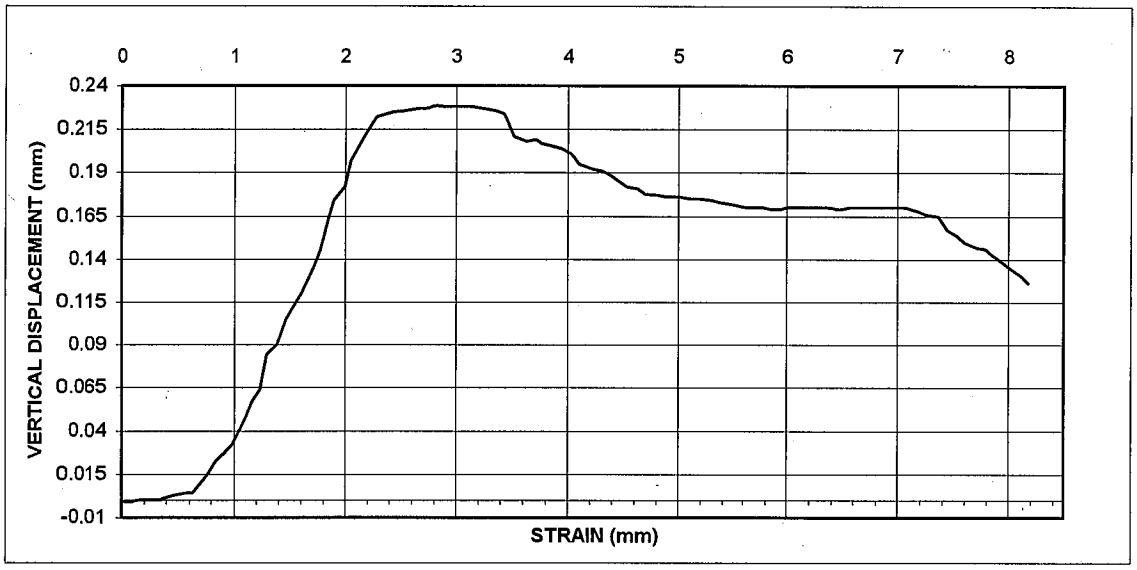
Consolidated Drained Shear Box Test

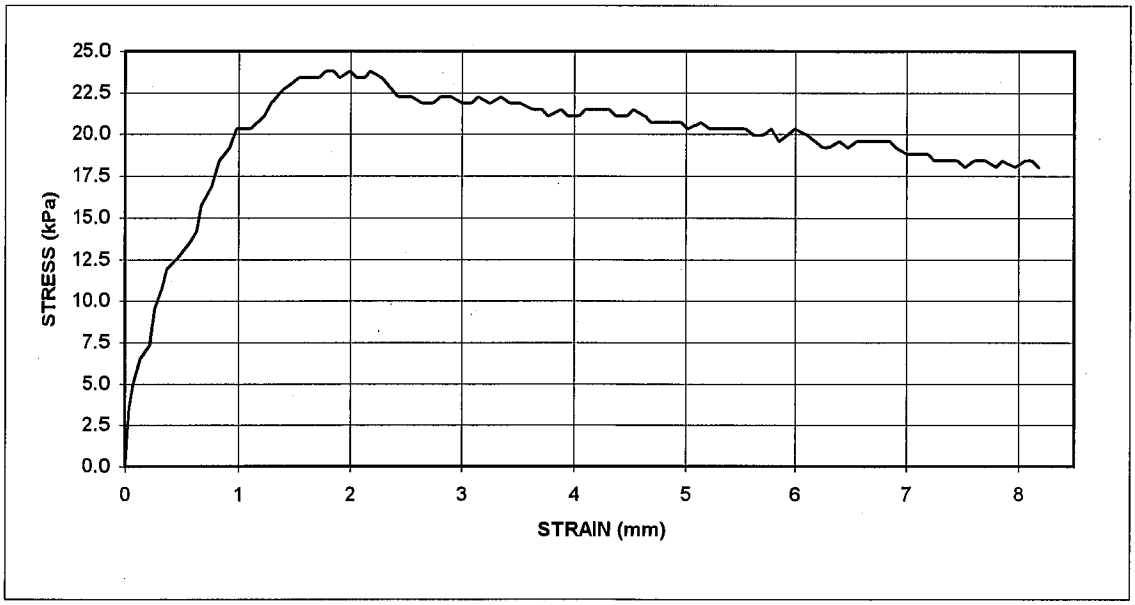
BS 1377 : PART 7 : 1990 Clause 4

Site: Redcar Site
Client: CH2M
Job No.: SLS1015

Borehole: TPC-22 **Sample:** B **Depth:** 3.00 m.

Stage Number 1 **Pressure** 30 kPa





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Consolidated Drained Shear Box Test

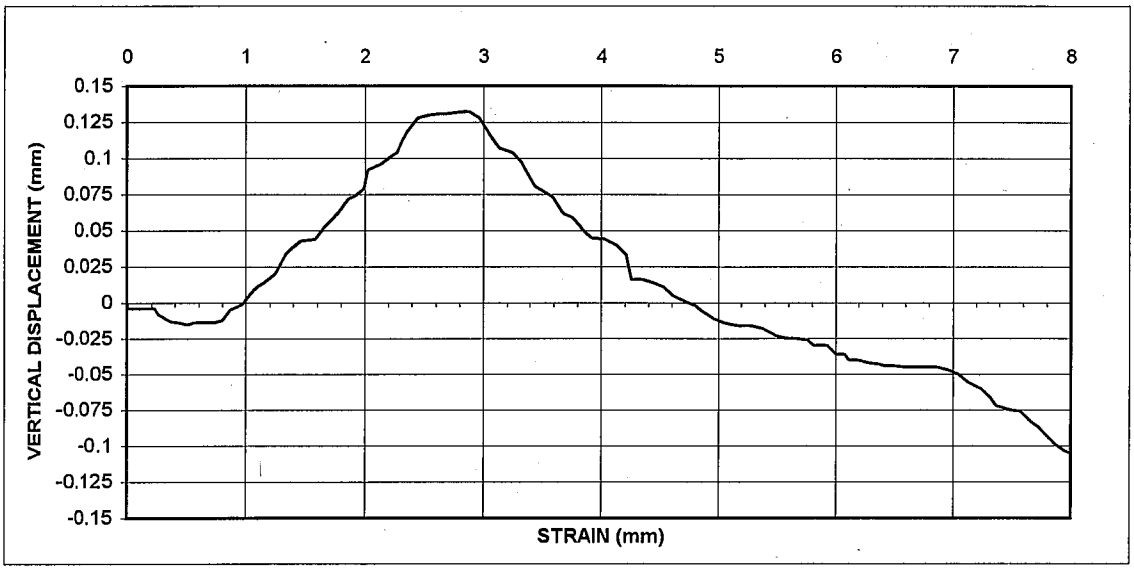
BS 1377 : PART 7 : 1990 Clause 4

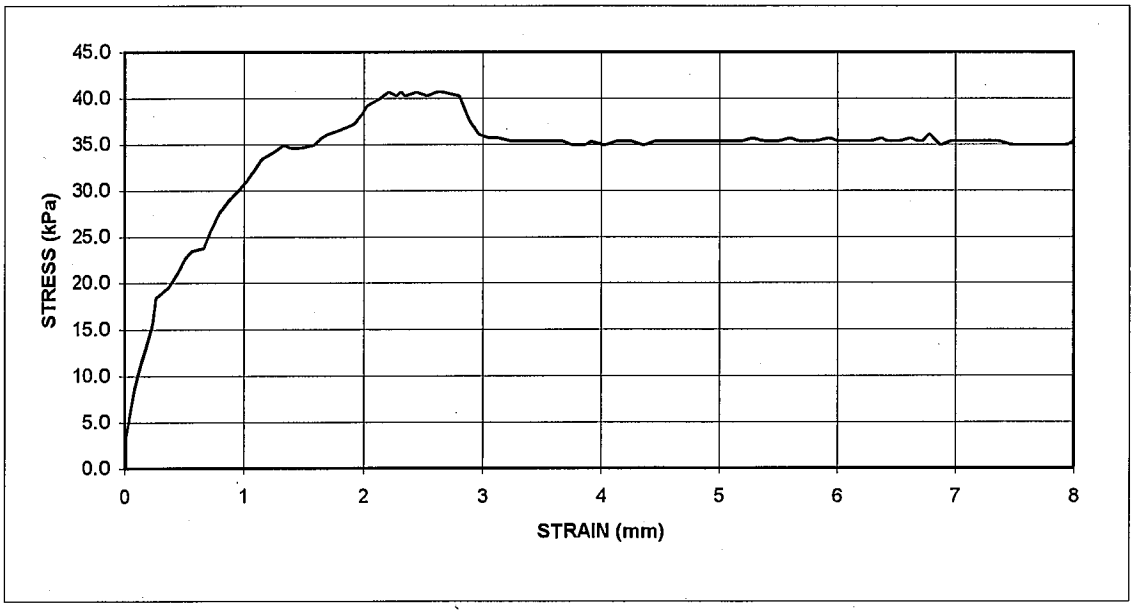
UKAS TESTING 1367

Site: Redcar Site
Client: CH2M **Job No.:** SLS1015

Borehole: TPC-22 **Sample:** B **Depth:** 3.00 m.

Stage Number 2 **Pressure** 60 kPa





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Unit 25 Stella Gill Industrial Estate, Pelton Fell
Chester-le-Street, Co.Durham. DH2 2RG
a UKAS LABORATORY Testing No. 1367

Consolidated Drained Shear Box Test

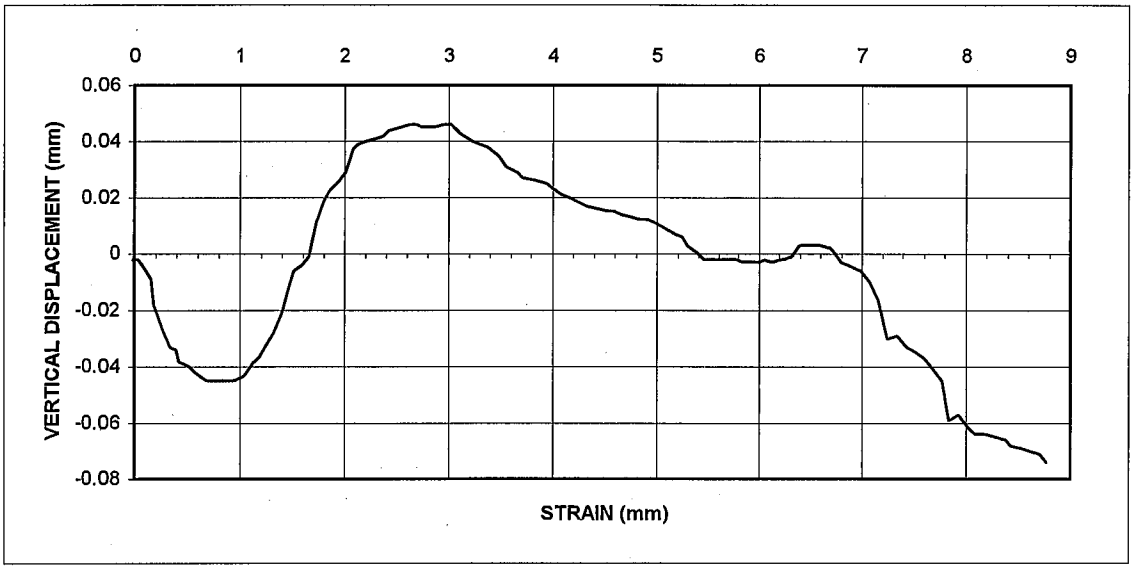
BS 1377 : PART 7 : 1990 Clause 4

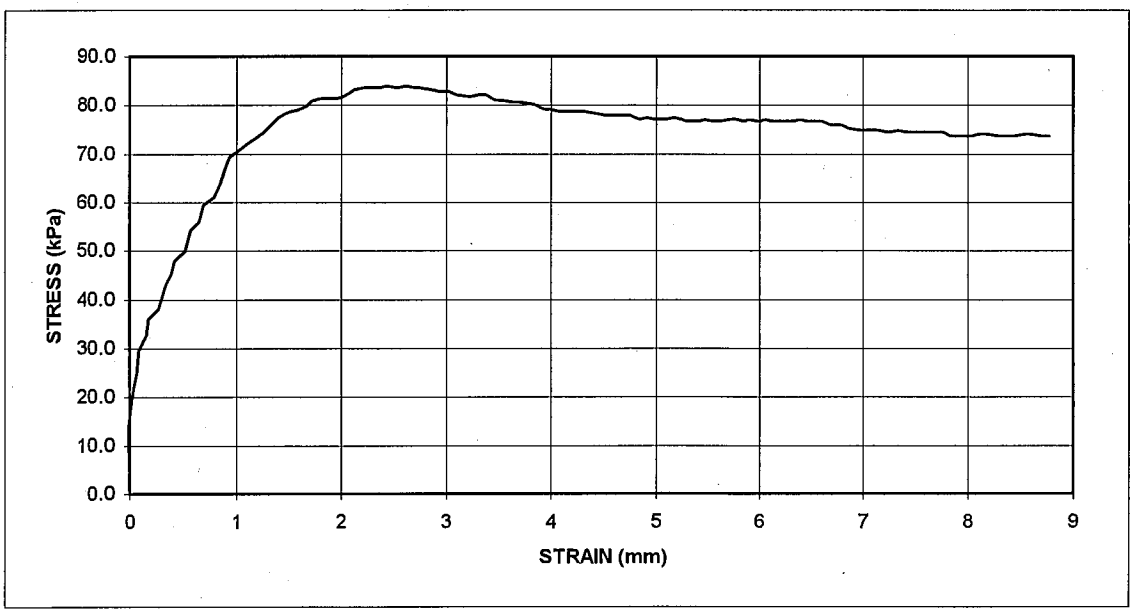
1367

Site: Redcar Site
Client: CH2M **Job No.:** SLS1015

Borehole: TPC-22 **Sample:** B **Depth:** 3.00 m.

Stage Number 3 **Pressure** 120 kPa





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Unit 25 Stella Gill Industrial Estate, Pelton Fell
Chester-le-Street, Co.Durham. DH2 2RG
a UKAS LABORATORY Testing No. 1367

UKAS TESTING 1367

Consolidated Drained Shear Box Test

BS 1377 : PART 7 : 1990 Clause 4

Site: Redcar Site
Client: CH2M **Job No.** SLS1015

Borehole: TPD-23 **Sample:** B **Depth:** 0.90 m

For sample description please refer to sample description sheet

Stage Number		1	2	3
Specific Depth	m.	N/A	N/A	N/A
Length	mm	60.0	60.0	60.0
Height	mm	24.6	25.2	25.2
Initial Moisture Content	%	18.4	18.4	18.4
Initial Wet density	mg/m^3	1.67	1.65	1.62
Initial Dry density	mg/m^3	1.41	1.40	1.37
CONSOLIDATION				
Normal Stress	kPa	15	30	60
Height at end of Stage	mm	24.5	25.0	24.4
Duration	Day(s)	0.5	0.5	0.5
SHEARING				
Rate of Strain	mm/min	0.076	0.072	0.070
Peak Shear Stress	kPa	8.1	17.3	30.8
Displacement at Peak Stress	mm	5.27	6.90	7.50
Rate for Residual Runs	mm/min	N/A	N/A	N/A
Residual Shear Stress	kPa	N/A	N/A	N/A
Duration	Day(s)	0.5	0.5	0.5
Final Moisture Content	%	26.4	25.9	25.9
Final Wet Density	mg/m^3	1.80	1.77	1.77
Final Dry Density	mg/m^3	1.42	1.41	1.41

PEAK SHEAR STRESS PARAMETERS

Apparent Cohesion C'	kPa	0
Angle of Shearing Resistance phi '	Deg	29°

RESIDUAL PARAMETERS

Apparent Cohesion C'	kPa	N/A
Angle of Shearing Resistance phi 'r	Deg	N/A

REMARKS:

DATE TESTED 01/08/2017
DATE OF ISSUE 10/08/2017

NAME APPROVED BY Nick Vater

ALLIED EXPLORATION AND GEOTECHNICS LIMITED

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Chester-le-Street, Co.Durham. DH2 2RG
a UKAS LABORATORY Testing No. 1367

UKAS TESTING
1367

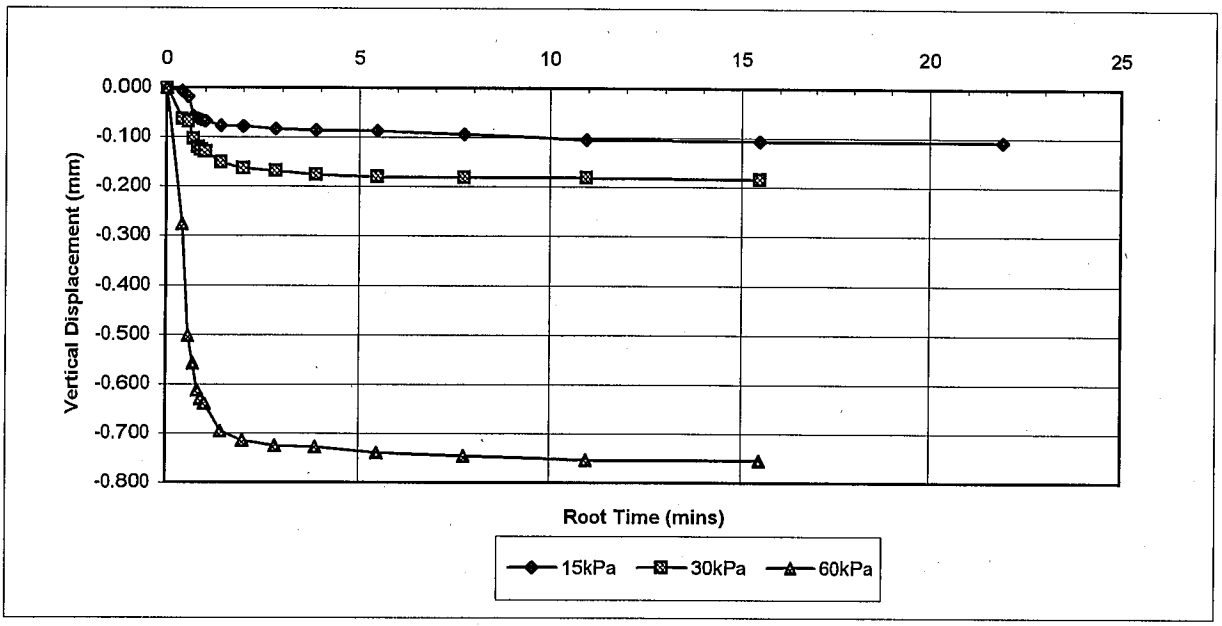
Consolidated Drained Shear Box Test

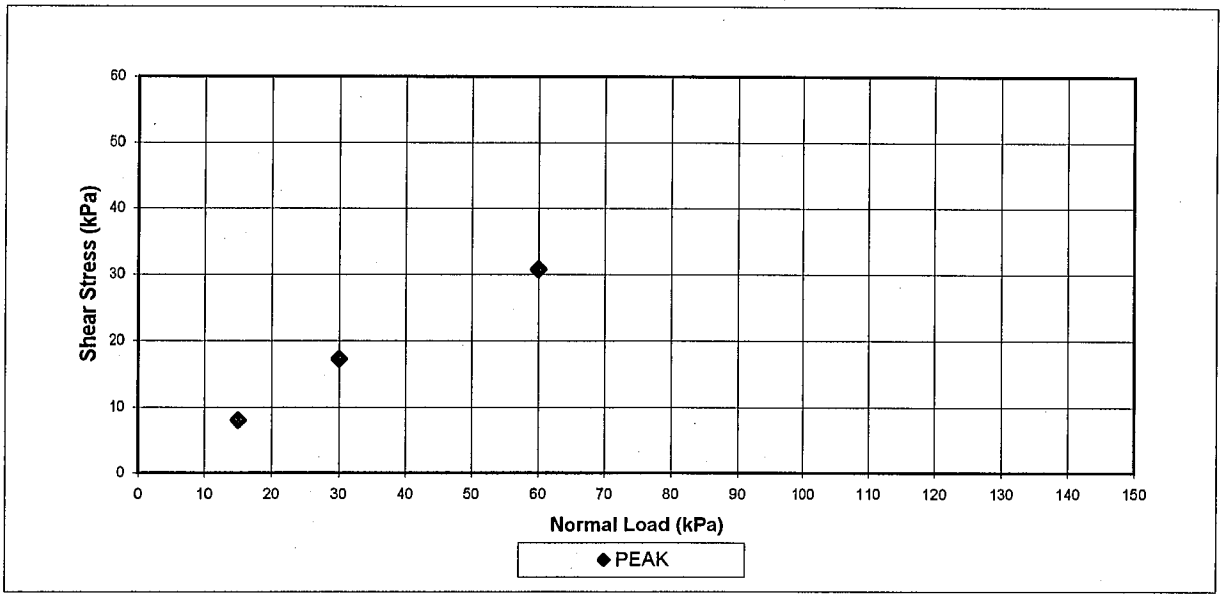
BS 1377 : PART 7 : 1990 Clause 4

Site: Redcar Site
Client: CH2M

Job No. SLS1015

Borehole: TPD-23 **Sample:** B **Depth:** 0.90 m.





ALLIED EXPLORATION AND GEOTECHNICS LIMITED

Unit 25 Stella Gill Industrial Estate, Pelton Fell
Chester-le-Street, Co.Durham. DH2 2RG
a UKAS LABORATORY Testing No. 1367

UKAS TESTING 1367

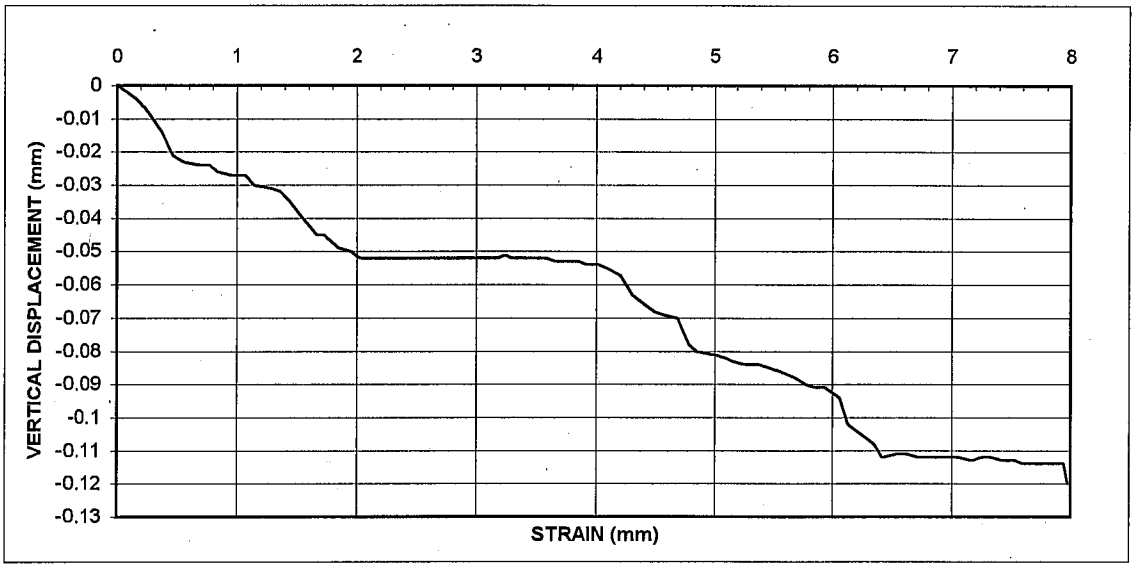
Consolidated Drained Shear Box Test

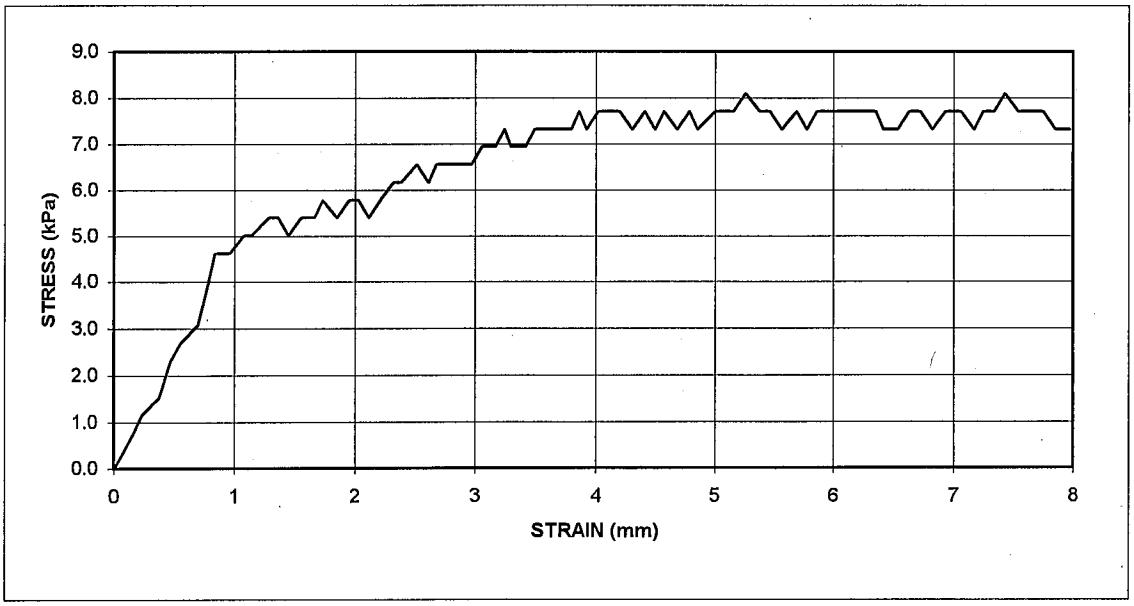
BS 1377 : PART 7 : 1990 Clause 4

Site: Redcar Site
Client: CH2M **Job No.:** SLS1015

Borehole: TPD-23 **Sample:** B **Depth:** 0.90 m.

Stage Number 1 **Pressure** 15 kPa





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Unit 25 Stella Gill Industrial Estate, Pelton Fell

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Consolidated Drained Shear Box Test

BS 1377 : PART 7 : 1990 Clause 4

UKAS TESTING 1367

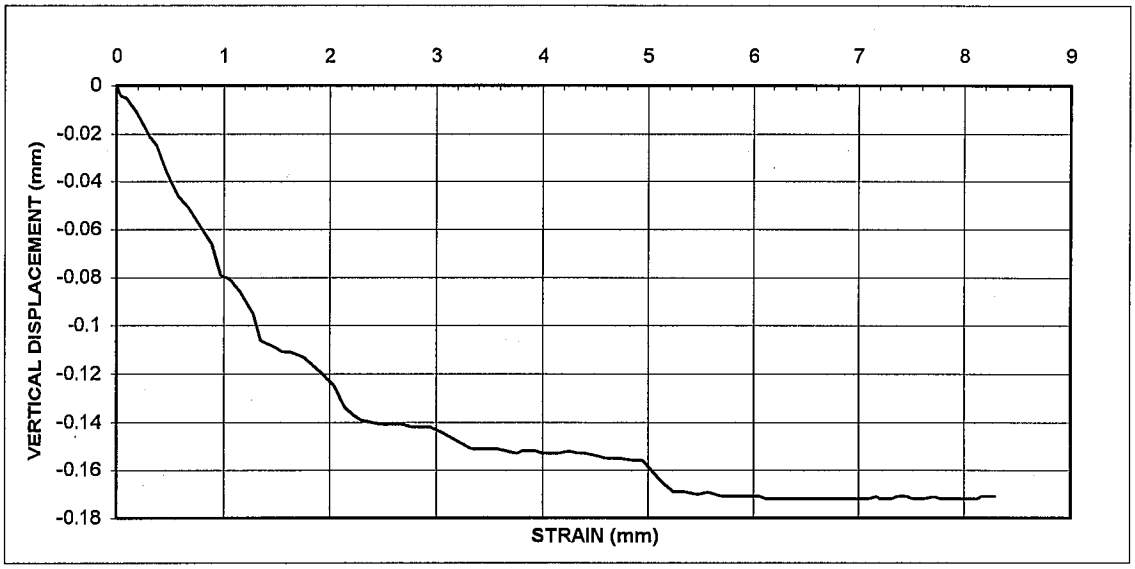
Site: Redcar Site

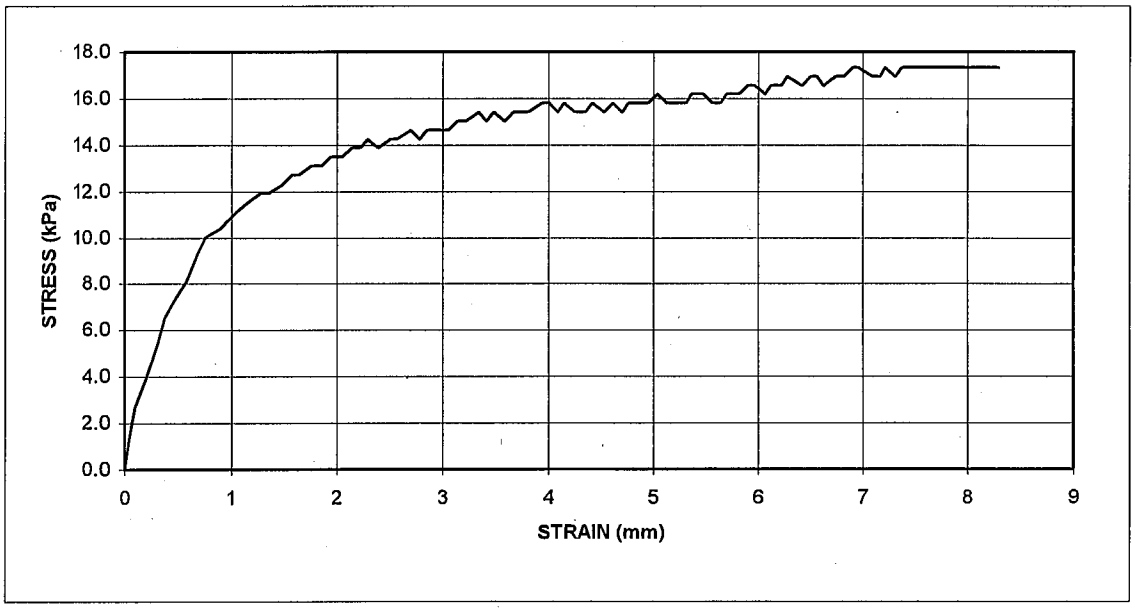
Client: CH2M

Job No.: SLS1015

Borehole: TPD-23 **Sample:** B **Depth:** 0.90 m.

Stage Number 2 **Pressure** 30 kPa





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Consolidated Drained Shear Box Test

BS 1377 : PART 7 : 1990 Clause 4

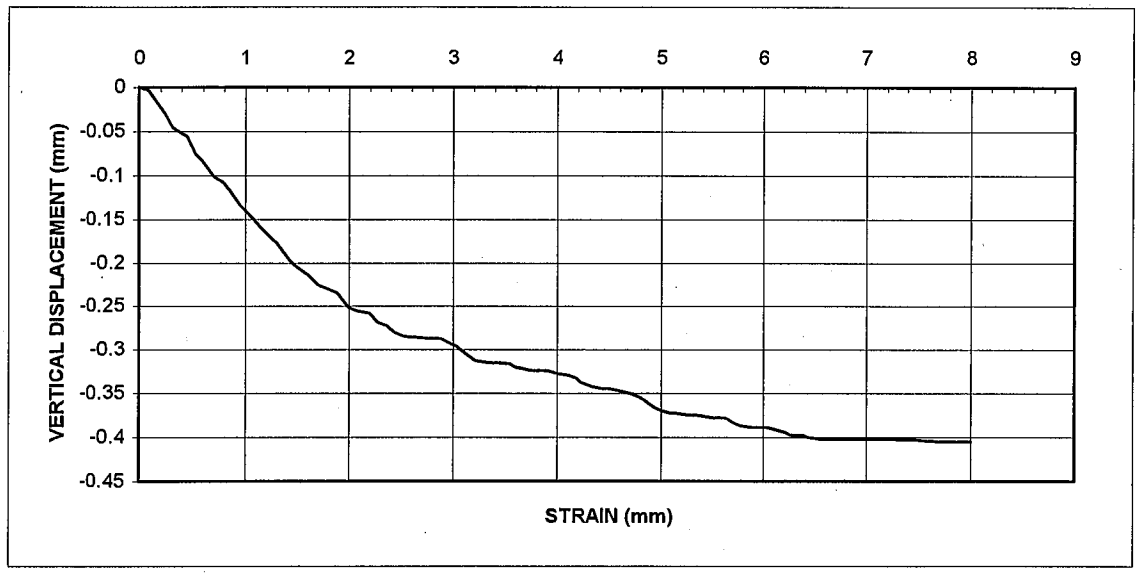
1367

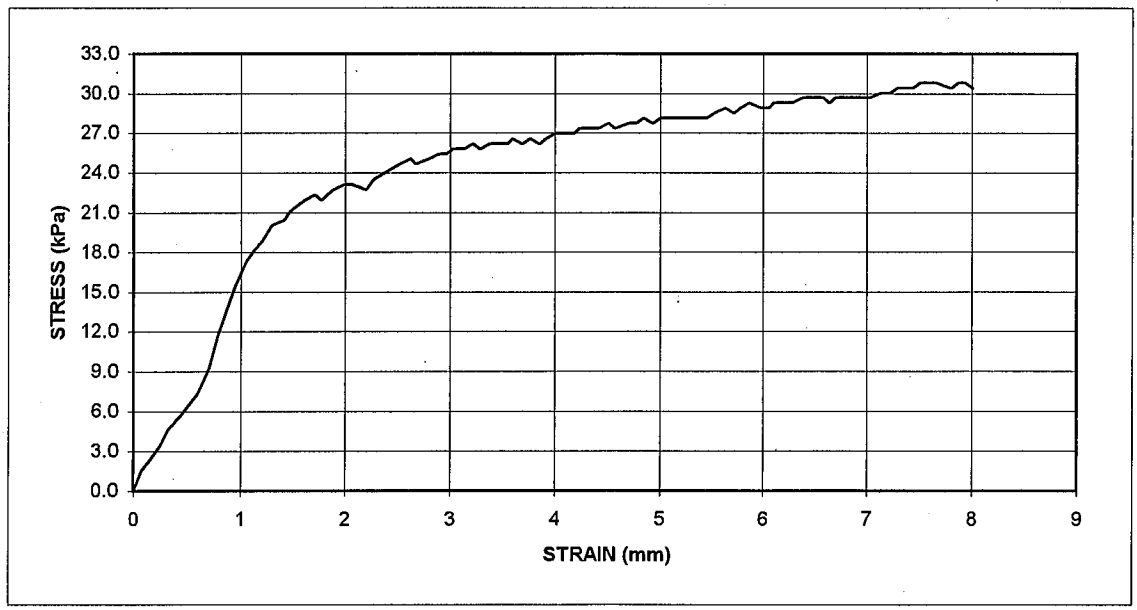
Site: Redcar Site
Client: CH2M

Job No.: SLS1015

Borehole: TPD-23 **Sample:** B **Depth:** 0.90 m.

Stage Number 3 **Pressure** 60 kPa





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UKAS TESTING
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Consolidated Drained Shear Box Test

BS 1377 : PART 7 : 1990 Clause 4

Site: Redcar Site
Client: CH2M **Job No.** SLS1015

Borehole: TPE-12 **Sample:** B **Depth:** 1.00 m

For sample description please refer to sample description sheet

Stage Number		1	2	3
Specific Depth	m.	N/A	N/A	N/A
Length	mm	60.0	60.0	60.0
Height	mm	25.5	25.1	25.2
Initial Moisture Content	%	5.7	5.7	5.7
Initial Wet density	mg/m^3	1.59	1.56	1.53
Initial Dry density	mg/m^3	1.50	1.48	1.45
CONSOLIDATION				
Normal Stress	kPa	20	40	80
Height at end of Stage	mm	25.4	24.8	24.8
Duration	Day(s)	0.5	0.5	0.5
SHEARING				
Rate of Strain	mm/min	0.306	0.310	0.312
Peak Shear Stress	kPa	8.1	21.1	45.7
Displacement at Peak Stress	mm	4.75	7.86	8.61
Rate for Residual Runs	mm/min	N/A	N/A	N/A
Residual Shear Stress	kPa	N/A	N/A	N/A
Duration	Day(s)	0.5	0.5	0.5
Final Moisture Content	%	22.3	21.2	21.8
Final Wet Density	mg/m^3	1.85	1.81	1.79
Final Dry Density	mg/m^3	1.51	1.50	1.47
PEAK SHEAR STRESS PARAMETERS				
Apparent Cohesion C'	kPa		0	
Angle of Shearing Resistance phi '	Deg		28.5°	
RESIDUAL PARAMETERS				
Apparent Cohesion C'	kPa		N/A	
Angle of Shearing Resistance phi 'r	Deg		N/A	

REMARKS:

DATE TESTED 09/08/2017
DATE OF ISSUE 16/08/2017

NAME APPROVED BY pp Nick Vater

ALLIED EXPLORATION AND GEOTECHNICS LIMITED

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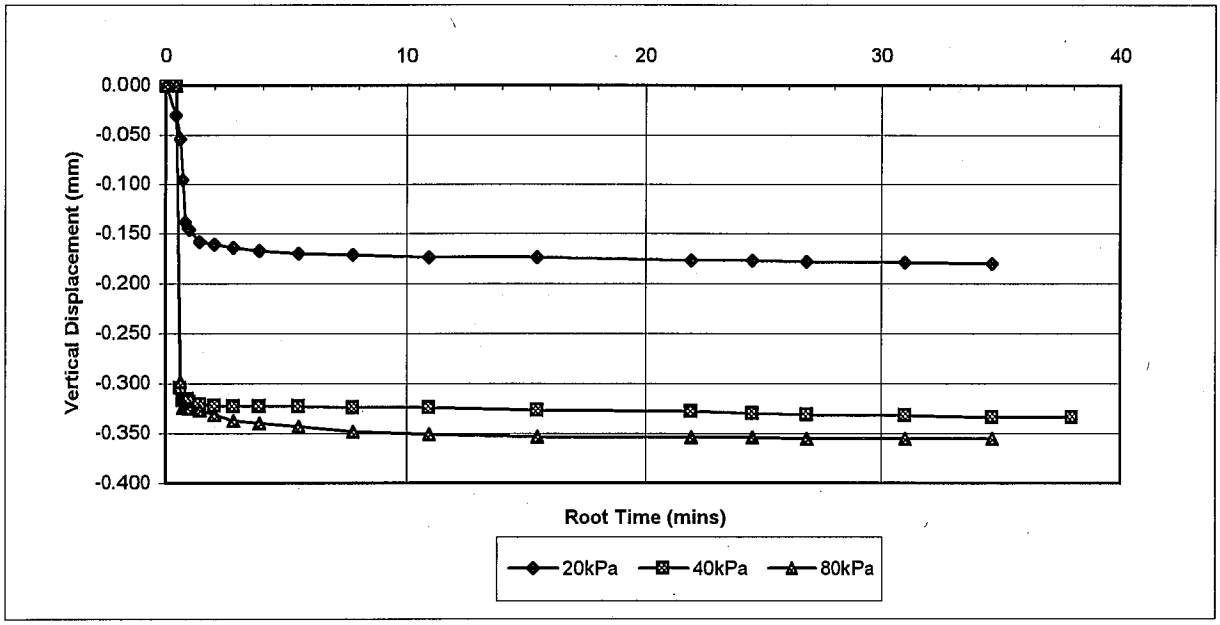
UKAS TESTING
1367

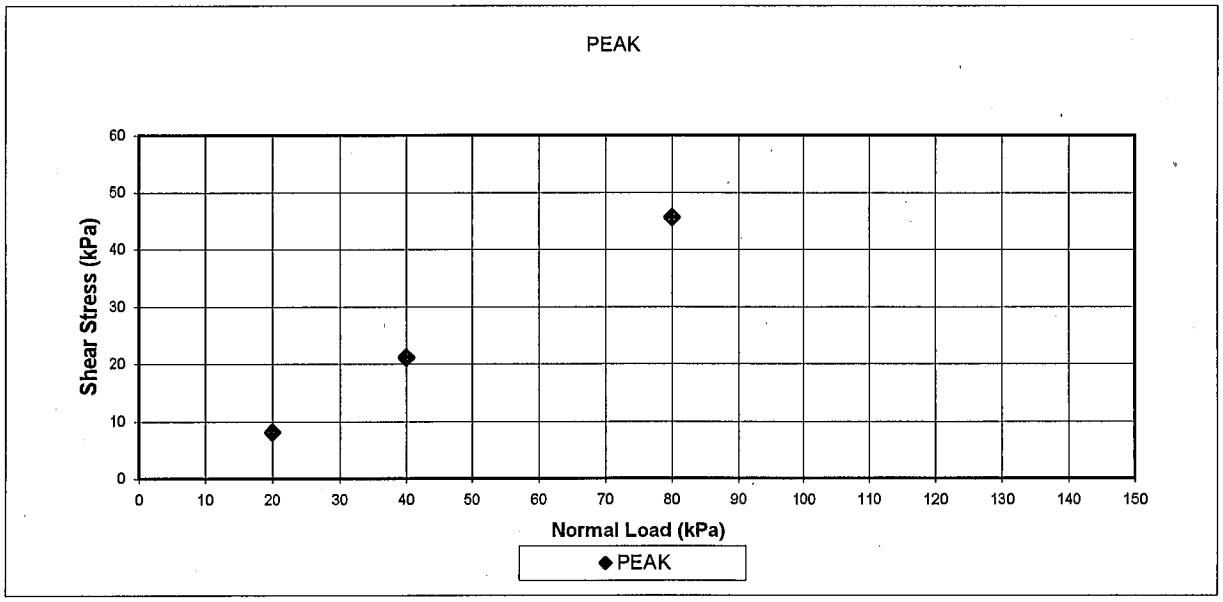
Consolidated Drained Shear Box Test

BS 1377 : PART 7 : 1990 Clause 4

Site: Redcar Site
Client: CH2M **Job No.** SLS1015

Borehole: TPE-12 **Sample:** B **Depth:** 1.00 m.





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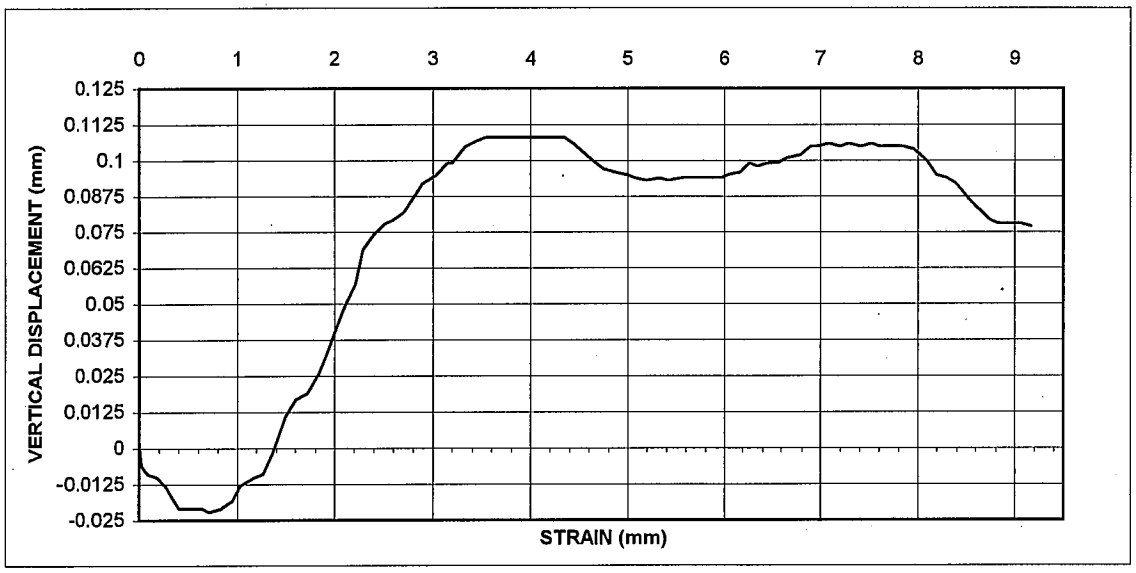
Consolidated Drained Shear Box Test

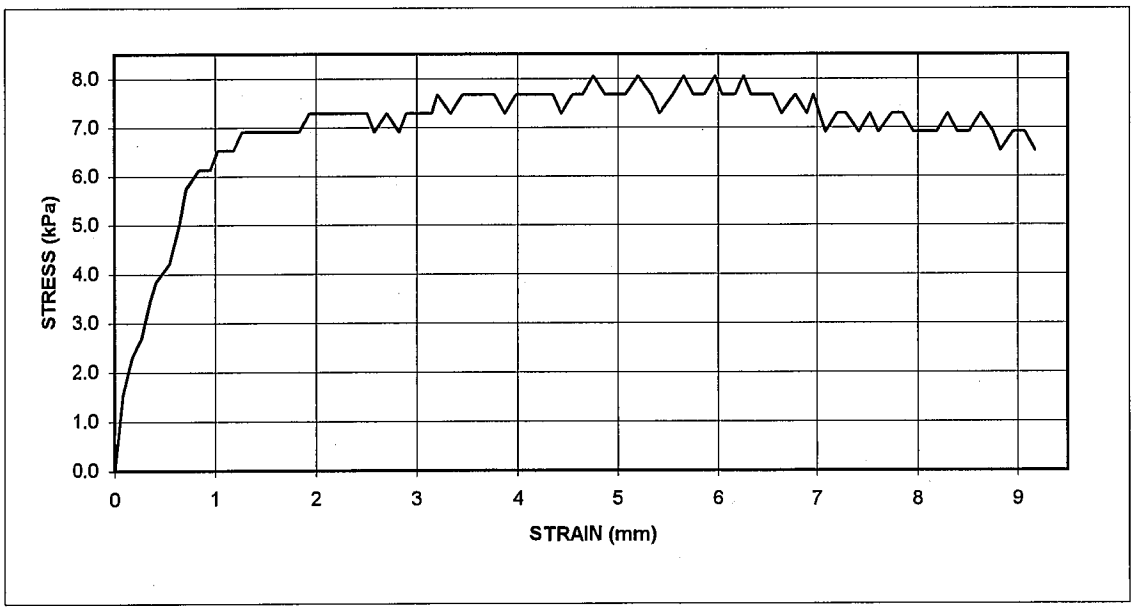
BS 1377 : PART 7 : 1990 Clause 4

Site: Redcar Site
Client: CH2M
Job No.: SLS1015

Borehole: TPE-12 **Sample:** B **Depth:** 1.00 m.

Stage Number 1 **Pressure** 20 kPa





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Consolidated Drained Shear Box Test

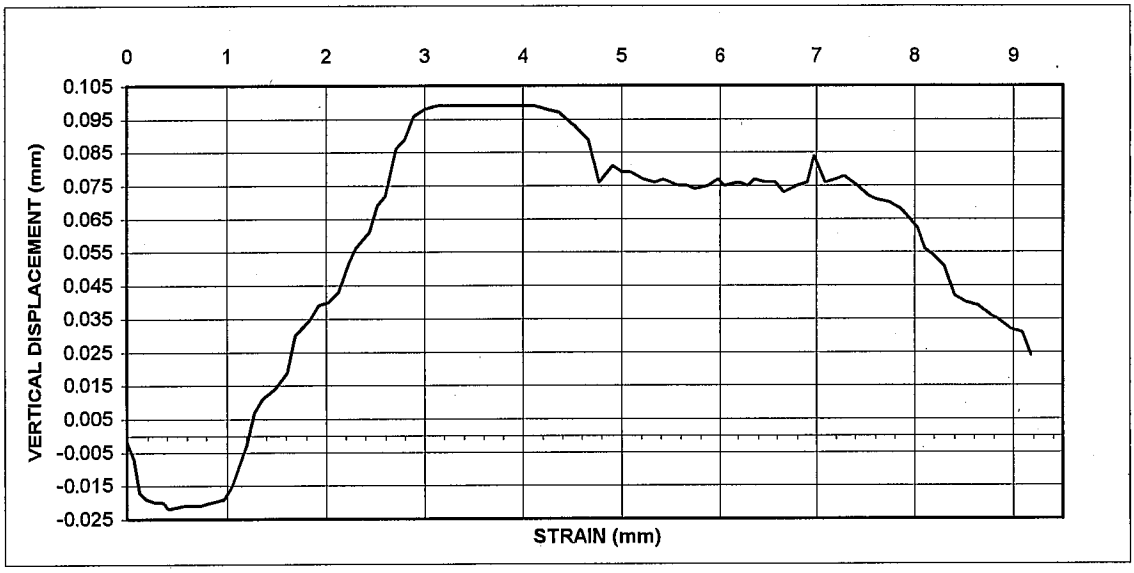
BS 1377 : PART 7 : 1990 Clause 4

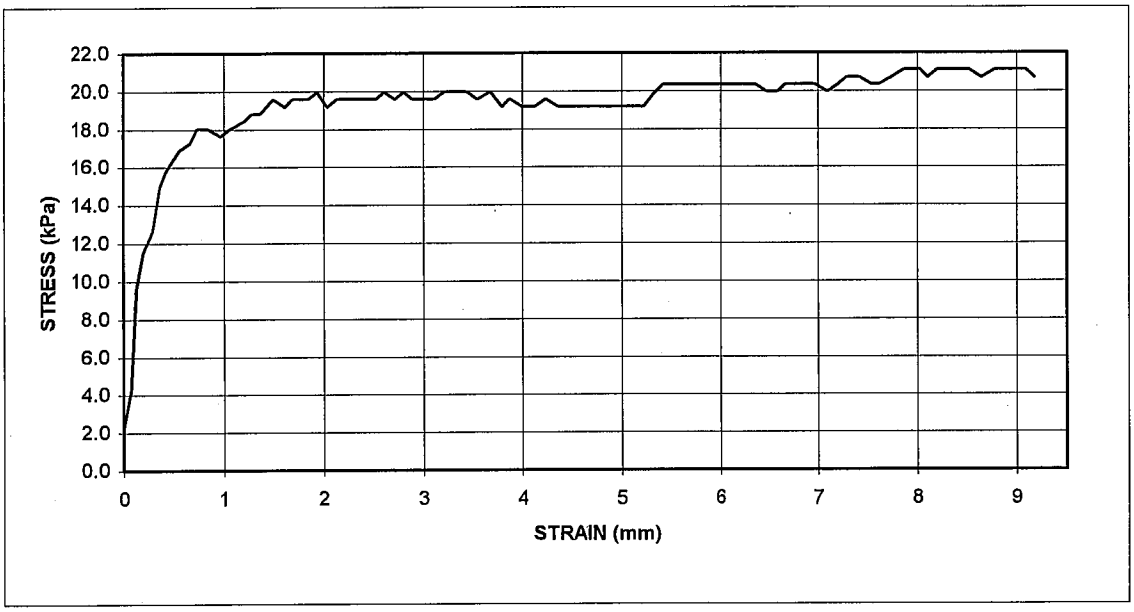
UKAS TESTING 1367

Site: Redcar Site
Client: CH2M **Job No.:** SLS1015

Borehole: TPE-12 **Sample:** B **Depth:** 1.00 m.

Stage Number 2 **Pressure** 40 kPa





ALLIED EXPLORATION AND GEOTECHNICS LIMITED

Unit 25 Stella Gill Industrial Estate, Pelton Fell
Chester-le-Street, Co.Durham. DH2 2RG
a UKAS LABORATORY Testing No. 1367

Consolidated Drained Shear Box Test

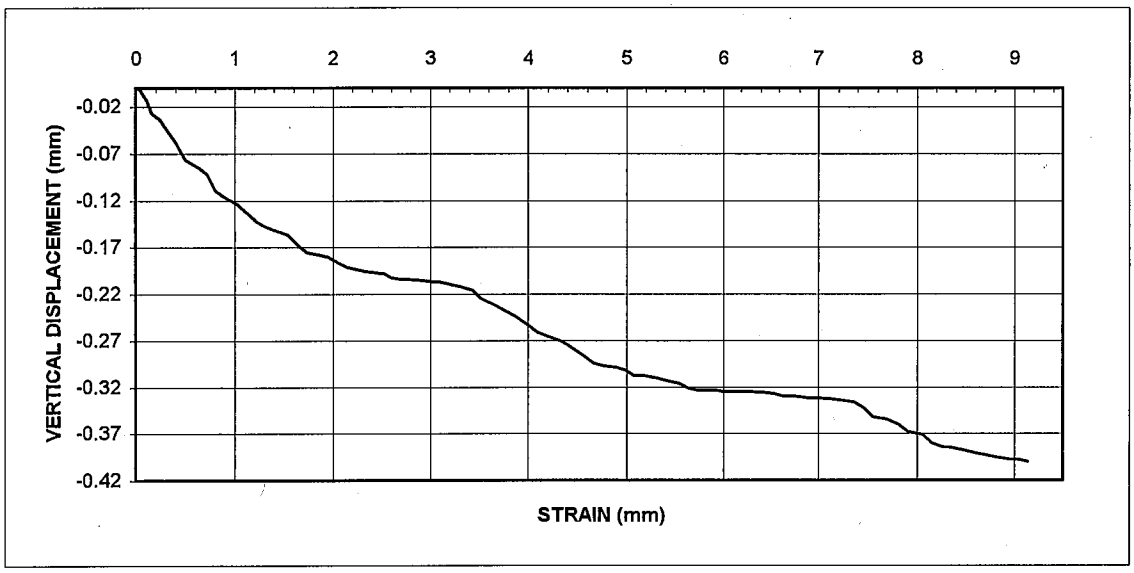
BS 1377 : PART 7 : 1990 Clause 4

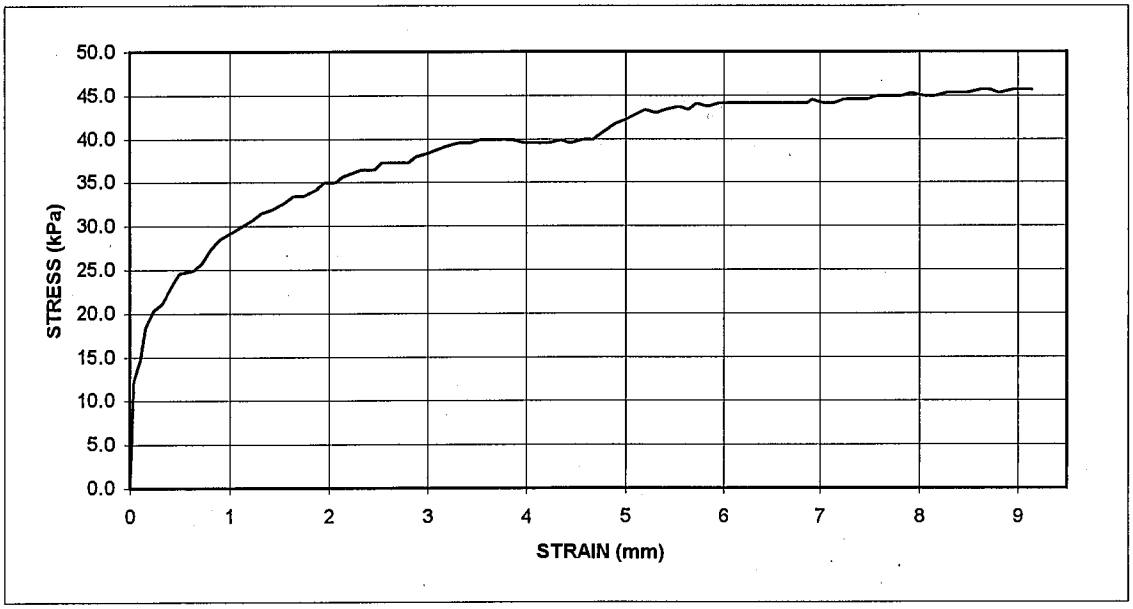
UKAS TESTING 1367

Site: Redcar Site
Client: CH2M
Job No.: SLS1015

Borehole: TPE-12 **Sample:** B **Depth:** 1.00 m.

Stage Number 3 **Pressure** 80 kPa





ALLIED EXPLORATION AND GEOTECHNICS LIMITED

Unit 25 Stella Gill Industrial Estate, Pelton Fell

Chester-le-Street, Co.Durham. DH2 2RG

a UKAS LABORATORY Testing No. 1367

UKAS TESTING 1367

Consolidated Drained Shear Box Test

BS 1377 : PART 7 : 1990 Clause 4

Site: Redcar Site

Client: CH2M **Job No.** SLS1015

Borehole: TPF-11 **Sample:** B **Depth:** 2.00 m

For sample description please refer to sample description sheet

Stage Number		1	2	3
Specific Depth	m.	N/A	N/A	N/A
Length	mm	60.0	60.0	60.0
Height	mm	24.6	23.6	24.7
Initial Moisture Content	%	7.4	7.4	7.4
Initial Wet density	mg/m^3	1.54	1.54	1.47
Initial Dry density	mg/m^3	1.43	1.44	1.37
CONSOLIDATION				
Normal Stress	kPa	20	40	80
Height at end of Stage	mm	24.2	23.3	24.2
Duration	Day(s)	0.5	0.5	0.5
SHEARING				
Rate of Strain	mm/min	0.264	0.275	0.291
Peak Shear Stress	kPa	11.9	12.7	41.2
Displacement at Peak Stress	mm	1.35	1.49	8.80
Rate for Residual Runs	mm/min	N/A	N/A	N/A
Residual Shear Stress	kPa	N/A	N/A	N/A
Duration	Day(s)	0.5	0.5	0.5
Final Moisture Content	%	26.0	24.6	24.8
Final Wet Density	mg/m^3	1.84	1.81	1.74
Final Dry Density	mg/m^3	1.46	1.45	1.39

PEAK SHEAR STRESS PARAMETERS

Apparent Cohesion C'	kPa	0
Angle of Shearing Resistance phi '	Deg	27°

RESIDUAL PARAMETERS

Apparent Cohesion C'	kPa	N/A
Angle of Shearing Resistance phi 'r	Deg	N/A

REMARKS:

DATE TESTED 04/08/2017

DATE OF ISSUE 11/08/2017

NAME APPROVED BY pp Nick Vater

ALLIED EXPLORATION AND GEOTECHNICS LIMITED

Unit 25 Stella Gill Industrial Estate, Pelton Fell
Chester-le-Street, Co.Durham. DH2 2RG
a UKAS LABORATORY Testing No. 1367

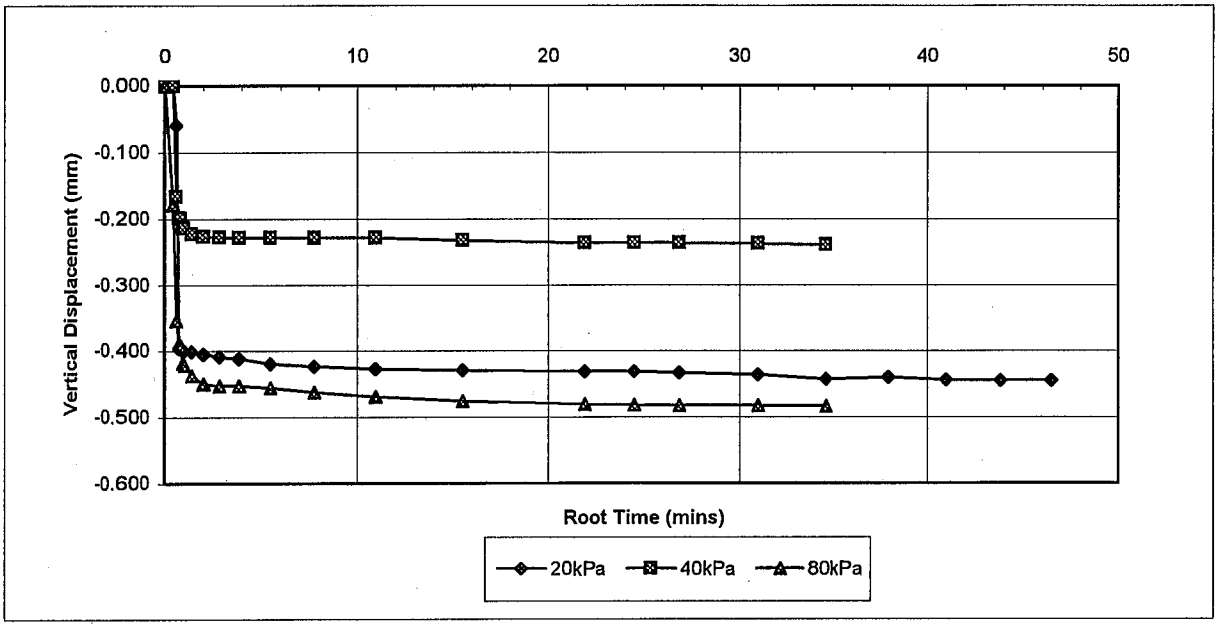
UKAS TESTING
1367

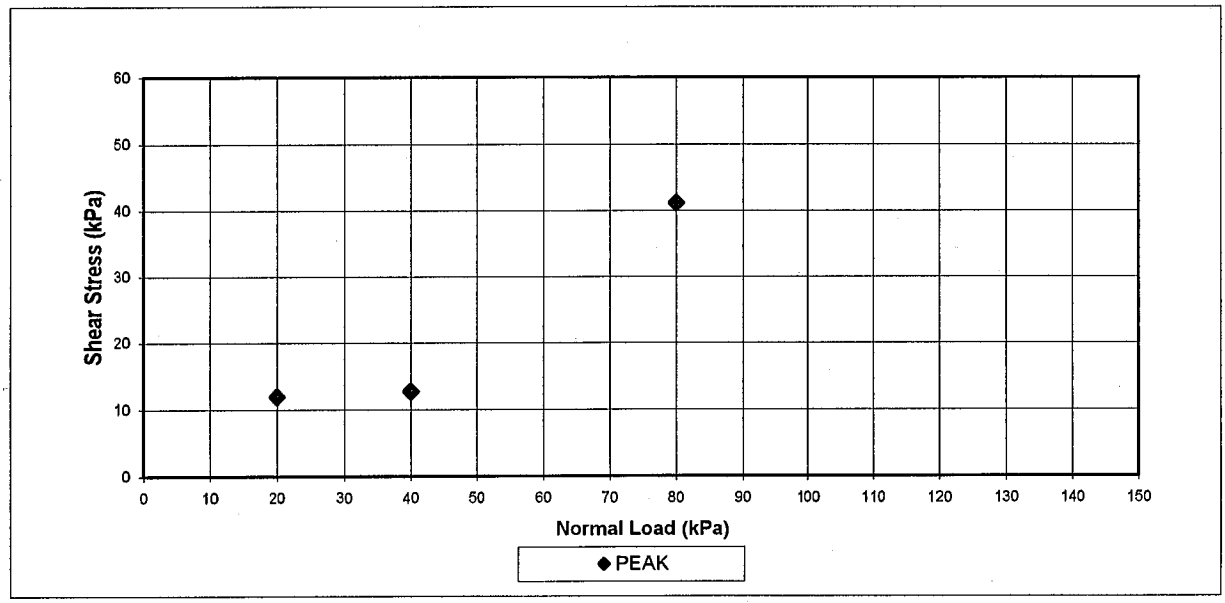
Consolidated Drained Shear Box Test

BS 1377 : PART 7 : 1990 Clause 4

Site: Redcar Site
Client: CH2M **Job No.** SLS1015

Borehole: TPF-11 **Sample:** B **Depth:** 2.00 m.





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a UKAS LABORATORY Testing No. 1367

Consolidated Drained Shear Box Test

BS 1377 : PART 7 : 1990 Clause 4

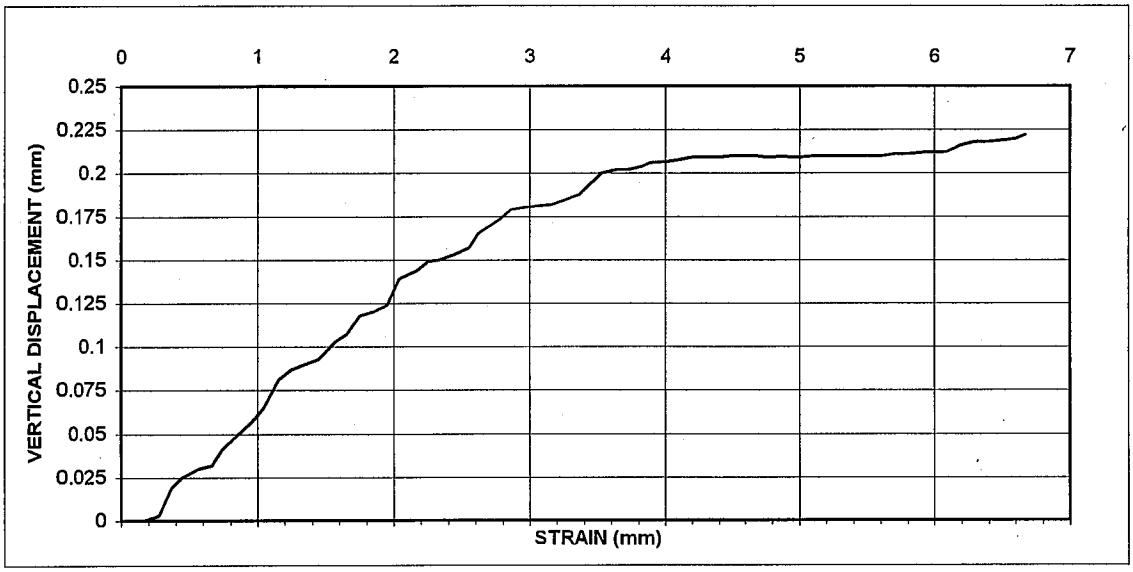
UKAS TESTING 1367

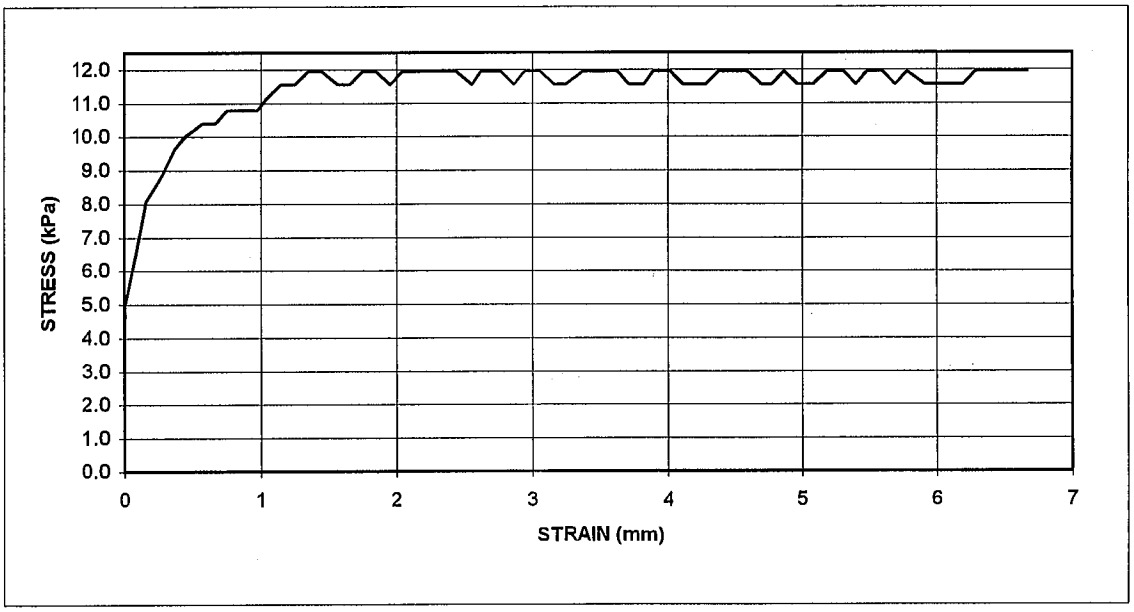
Site: Redcar Site
Client: CH2M

Job No.: SLS1015

Borehole: TPF-11 **Sample:** B **Depth:** 2.00 m.

Stage Number 1 **Pressure** 20 kPa





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a UKAS LABORATORY Testing No. 1367

Consolidated Drained Shear Box Test

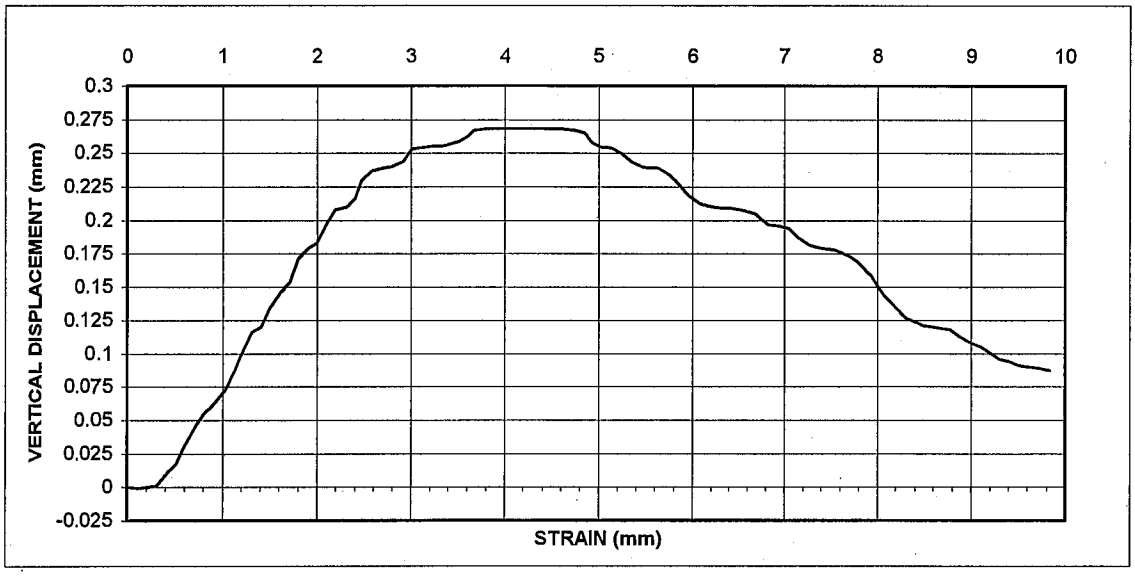
BS 1377 : PART 7 : 1990 Clause 4

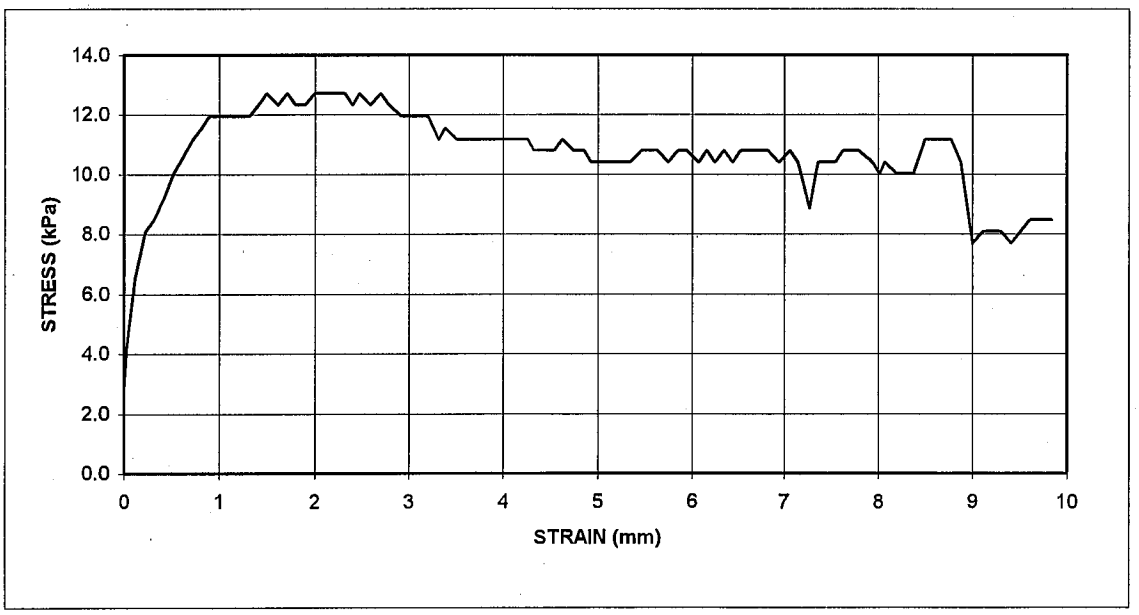
1367

Site: Redcar Site
Client: CH2M **Job No.:** SLS1015

Borehole: TPF-11 **Sample:** B **Depth:** 2.00 m.

Stage Number 2 **Pressure** 40 kPa





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Consolidated Drained Shear Box Test

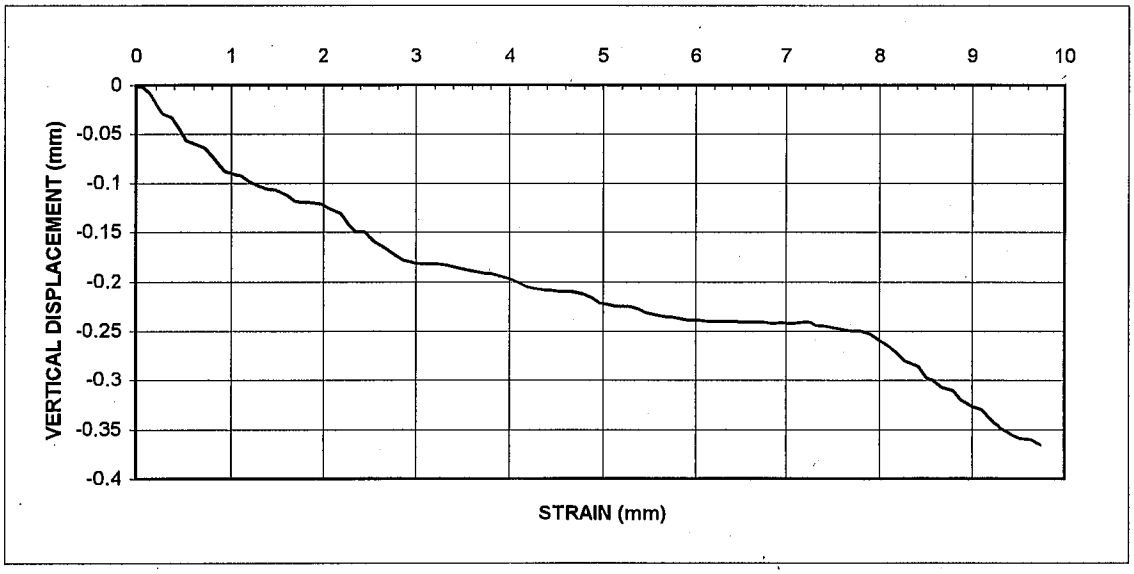
BS 1377 : PART 7 : 1990 Clause 4

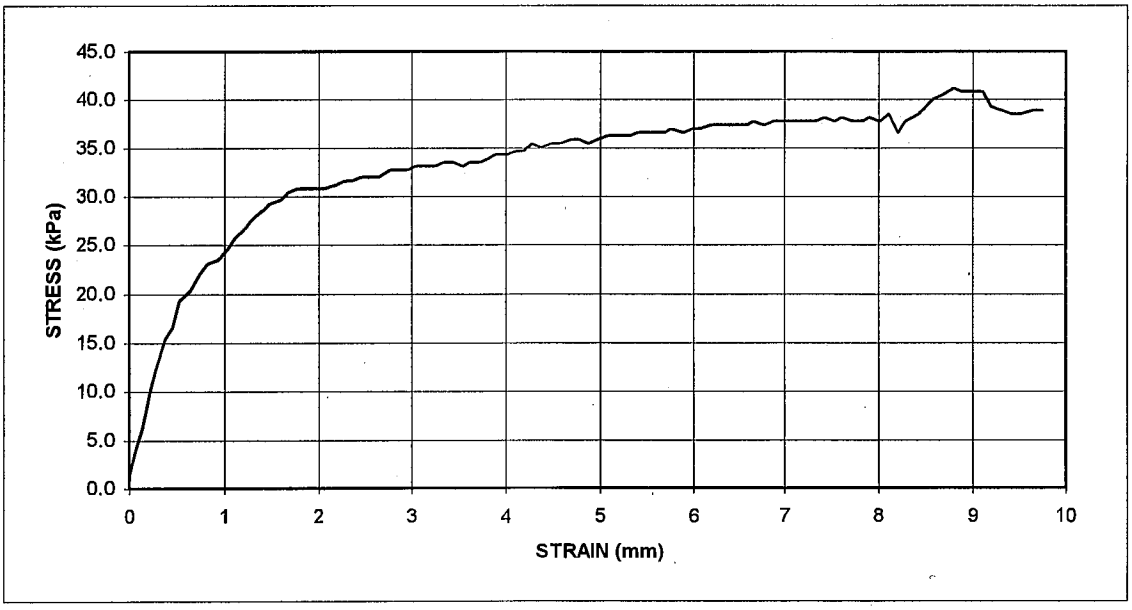
1367

Site: Redcar Site
Client: CH2M **Job No.:** SLS1015

Borehole: TPF-11 **Sample:** B **Depth:** 2.00 m.

Stage Number 3 **Pressure** 80 kPa





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Chester-le-Street, Co.Durham. DH2 2RG
a UKAS LABORATORY Testing No. 1367

UKAS TESTING
1367

Consolidated Drained Shear Box Test

BS 1377 : PART 7 : 1990 Clause 4

Site: Redcar Site
Client: CH2M
Job No. SLS1015

Borehole: TPH-10 **Sample:** B **Depth:** 1.70 m

For sample description please refer to sample description sheet

Stage Number		1	2	3
Specific Depth	m.	N/A	N/A	N/A
Length	mm	60.0	60.0	60.0
Height	mm	25.2	24.2	23.8
Initial Moisture Content	%	16.2	16.2	16.2
Initial Wet density	mg/m^3	1.73	1.73	1.75
Initial Dry density	mg/m^3	1.49	1.49	1.50
CONSOLIDATION				
Normal Stress	kPa	20	40	80
Height at end of Stage	mm	25.0	23.8	23.3
Duration	Day(s)	0.5	0.5	0.5
SHEARING				
Rate of Strain	mm/min	0.143	0.143	0.141
Peak Shear Stress	kPa	10.4	21.9	42.2
Displacement at Peak Stress	mm	4.14	4.83	5.19
Rate for Residual Runs	mm/min	N/A	N/A	N/A
Residual Shear Stress	kPa	N/A	N/A	N/A
Duration	Day(s)	0.5	0.5	0.5
Final Moisture Content	%	22.6	23.3	22.2
Final Wet Density	mg/m^3	1.84	1.86	1.88
Final Dry Density	mg/m^3	1.50	1.51	1.54

PEAK SHEAR STRESS PARAMETERS

Apparent Cohesion C'	kPa	0
Angle of Shearing Resistance phi '	Deg	28°

RESIDUAL PARAMETERS

Apparent Cohesion C'	kPa	N/A
Angle of Shearing Resistance phi 'r	Deg	N/A

REMARKS:

DATE TESTED 01/08/2017
DATE OF ISSUE 11/08/2017

NAME Nick Vater
APPROVED BY

ALLIED EXPLORATION AND GEOTECHNICS LIMITED

Unit 25 Stella Gill Industrial Estate, Pelton Fell
Chester-le-Street, Co.Durham. DH2 2RG
a UKAS LABORATORY Testing No. 1367

UKAS TESTING
1367

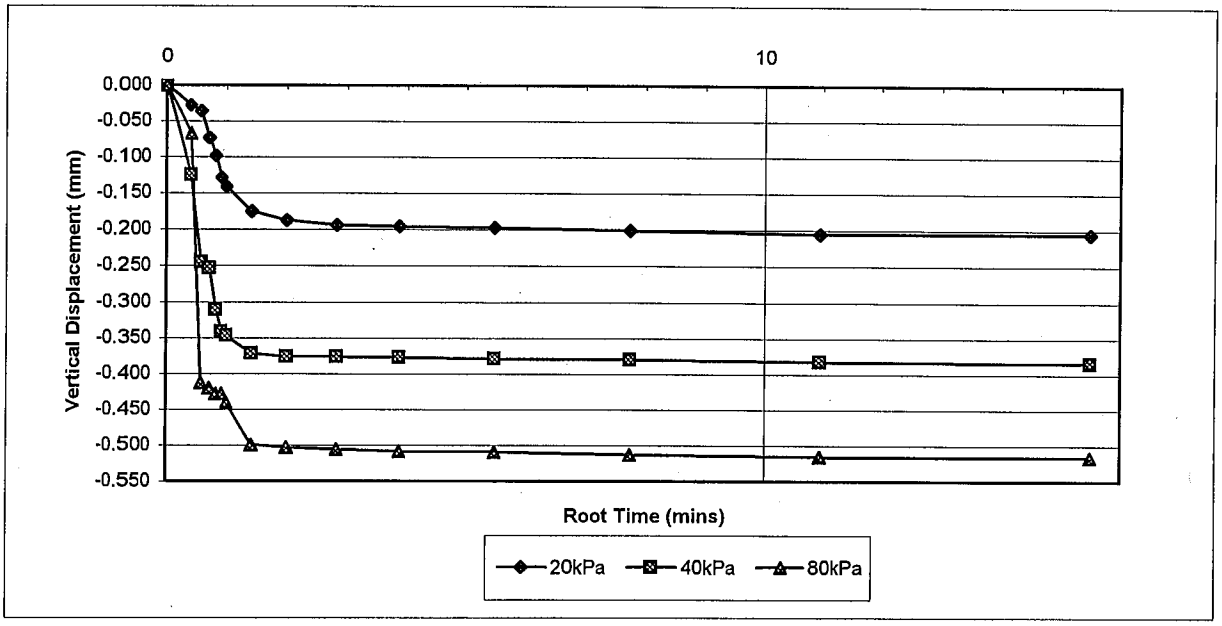
Consolidated Drained Shear Box Test

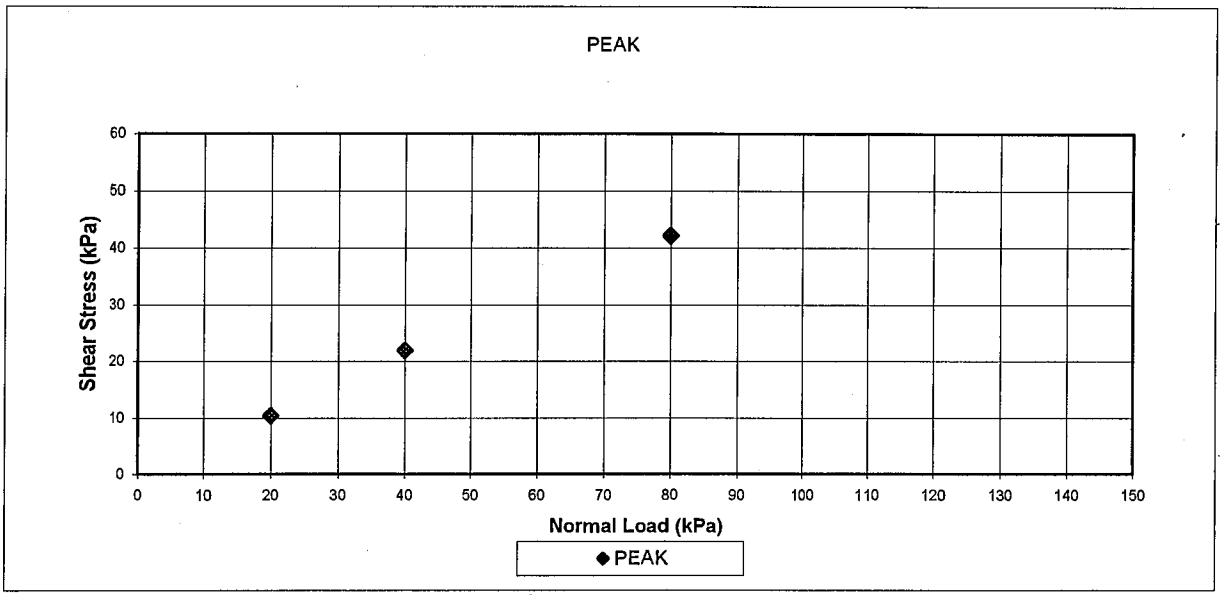
BS 1377 : PART 7 : 1990 Clause 4

Site: Redcar Site
Client: CH2M

Job No. SLS1015

Borehole: TPH-10 **Sample:** B **Depth:** 1.70 m.





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Chester-le-Street, Co.Durham. DH2 2RG
a UKAS LABORATORY Testing No. 1367

UKAS TESTING 1367

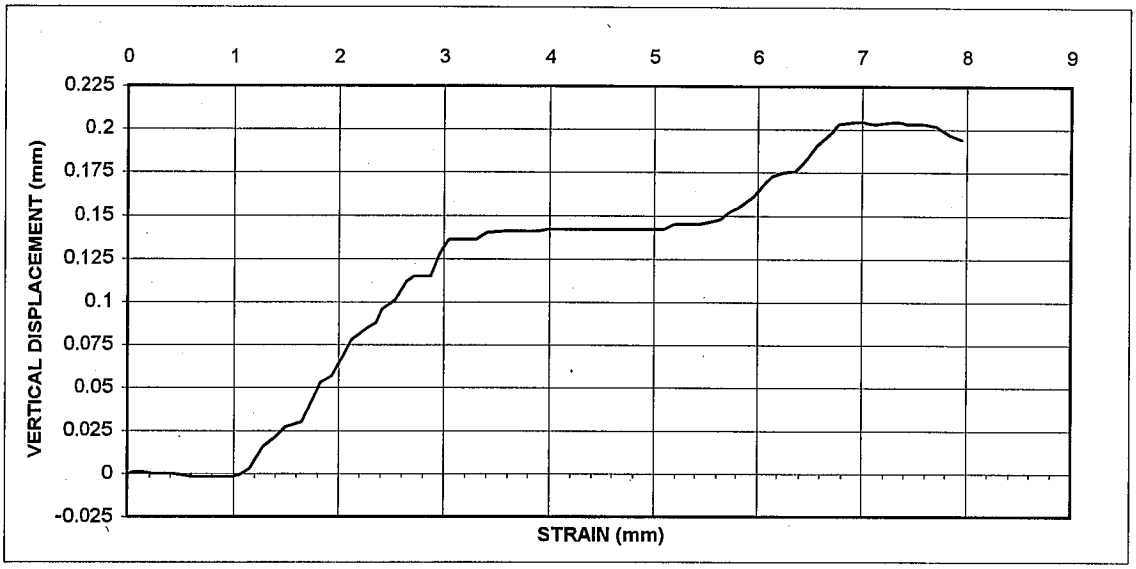
Consolidated Drained Shear Box Test

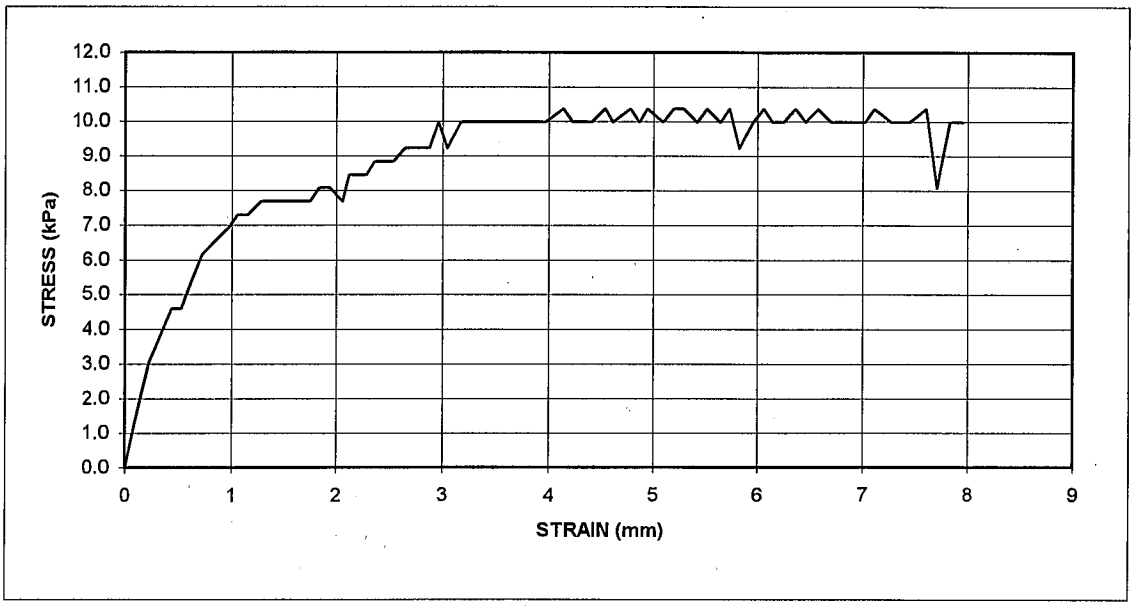
BS 1377 : PART 7 : 1990 Clause 4

Site: Redcar Site
Client: CH2M
Job No.: SLS1015

Borehole: TPH-10 **Sample:** B **Depth:** 1.70 m.

Stage Number 1 **Pressure** 20 kPa





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a UKAS LABORATORY Testing No. 1367

Consolidated Drained Shear Box Test

BS 1377 : PART 7 : 1990 Clause 4

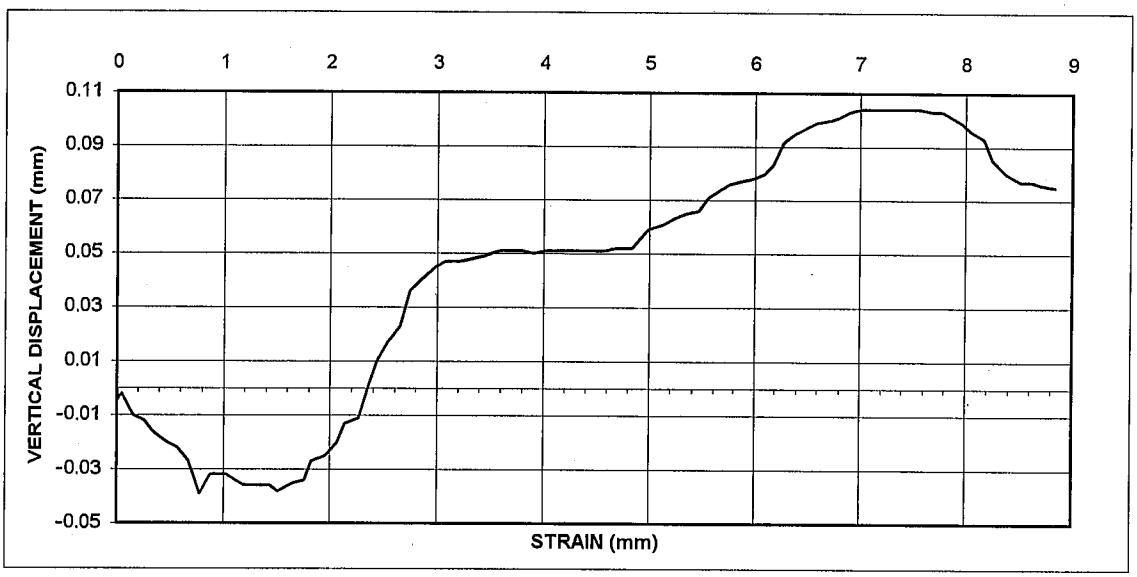
UKAS TESTING 1367

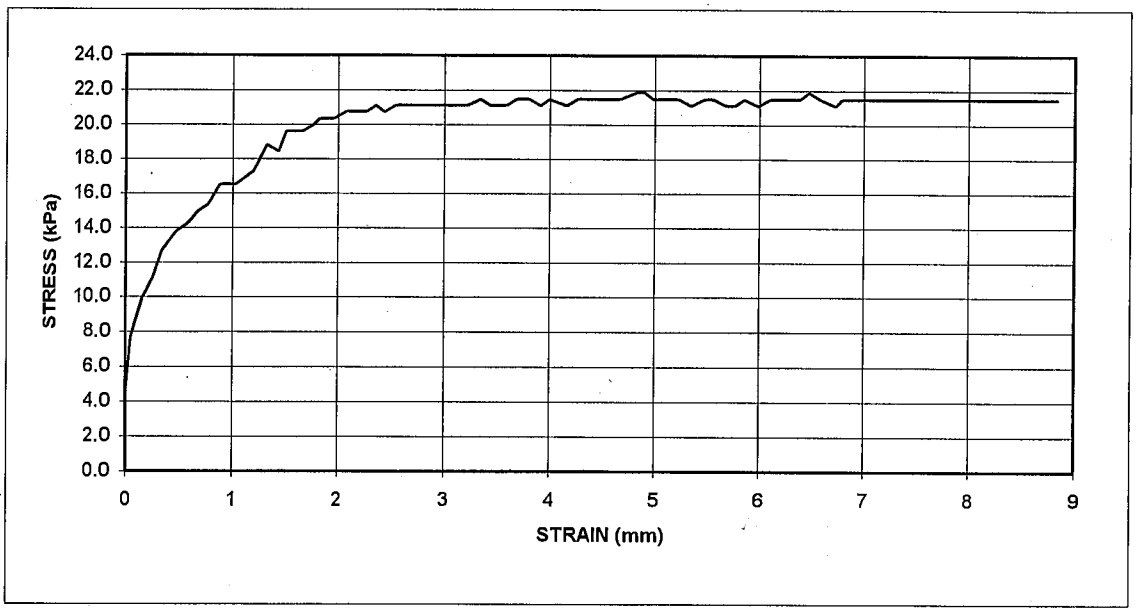
Site: Redcar Site
Client: CH2M

Job No.: SLS1015

Borehole: TPH-10 **Sample:** B **Depth:** 1.70 m.

Stage Number 2 **Pressure** 40 kPa





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Consolidated Drained Shear Box Test

BS 1377 : PART 7 : 1990 Clause 4

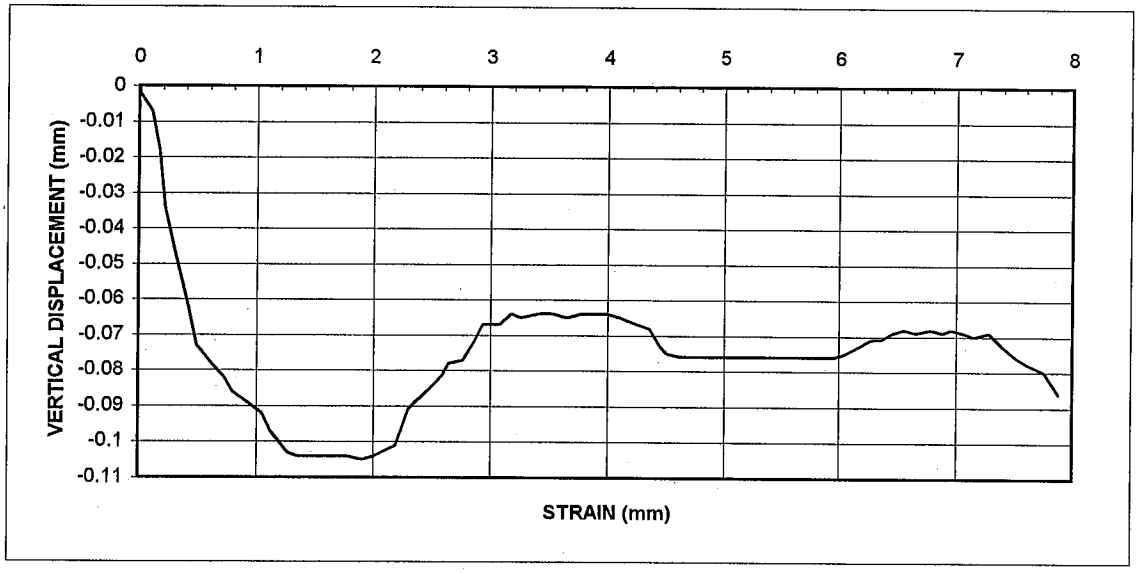
UKAS TESTING 1367

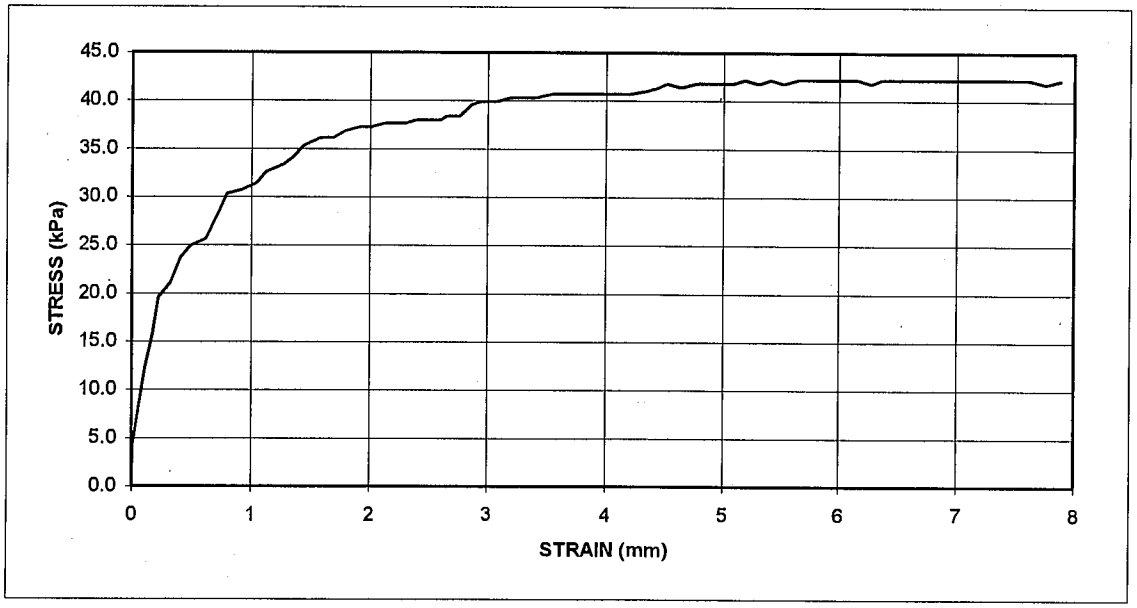
Site: Redcar Site
Client: CH2M

Job No.: SLS1015

Borehole: TPH-10 **Sample:** B **Depth:** 1.70 m.

Stage Number 3 **Pressure** 80 kPa





DETS

Certificate of Analysis

Certificate Number 17-05082

17-Jul-17

Client Allied Exploration & Geotechnics Limited
Unit 25
Stella Gill Industrial Estate
Pelton Fell
DH2 2RG

Our Reference 17-05082

Client Reference SLS1015

Order No LA1866

Contract Title Redcar Site

Description 9 Soil samples.

Date Received 12-Jul-17

Date Started 12-Jul-17

Date Completed 17-Jul-17

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

Notes Opinions and interpretations are outside the laboratory's scope of ISO 10725 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

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Asbestos Analysis
Soil Samples

Our Ref 17-05082
Client Ref SLS1015
Contract Title Redcar Site

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1203060	TP42 0.50	SOIL	NAD	none	A Christodoulou
1203061	TP42 1.70	SOIL	NAD	none	A Christodoulou
1203062	TP42 3.40	SOIL	NAD	none	A Christodoulou
1203063	TP22 0.70	SOIL	NAD	none	A Christodoulou
1203064	TPI03 0.40	SOIL	NAD	none	A Christodoulou
1203065	TPE05 0.50	SOIL	NAD	none	A Christodoulou
1203066	TPC19 0.80	SOIL	NAD	none	A Christodoulou
1203067	TPD41 1.40	SOIL	NAD	none	A Christodoulou
1203068	TPD25 1.70	SOIL	NAD	none	A Christodoulou

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 17-05082
Client Ref SLS1015
Contract Redcar Site

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1203060	TP42 0.50 SOIL	11/07/17	PG		
1203061	TP42 1.70 SOIL	11/07/17	PG		
1203062	TP42 3.40 SOIL	11/07/17	PG		
1203063	TP22 0.70 SOIL	11/07/17	PG		
1203064	TPI03 0.40 SOIL	11/07/17	PG		
1203065	TPE05 0.50 SOIL	11/07/17	PG		
1203066	TPC19 0.80 SOIL	11/07/17	PG		
1203067	TPD41 1.40 SOIL	11/07/17	PU		
1203068	TPD25 1.70 SOIL	11/07/17	PU		

Key: P-Plastic G-Bag U-Tube

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.

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

Appendix C
Geotechnical interpretation

FORMER SSI STEELWORKS, REDCAR - INITIAL GROUND INVESTIGATION WORKS

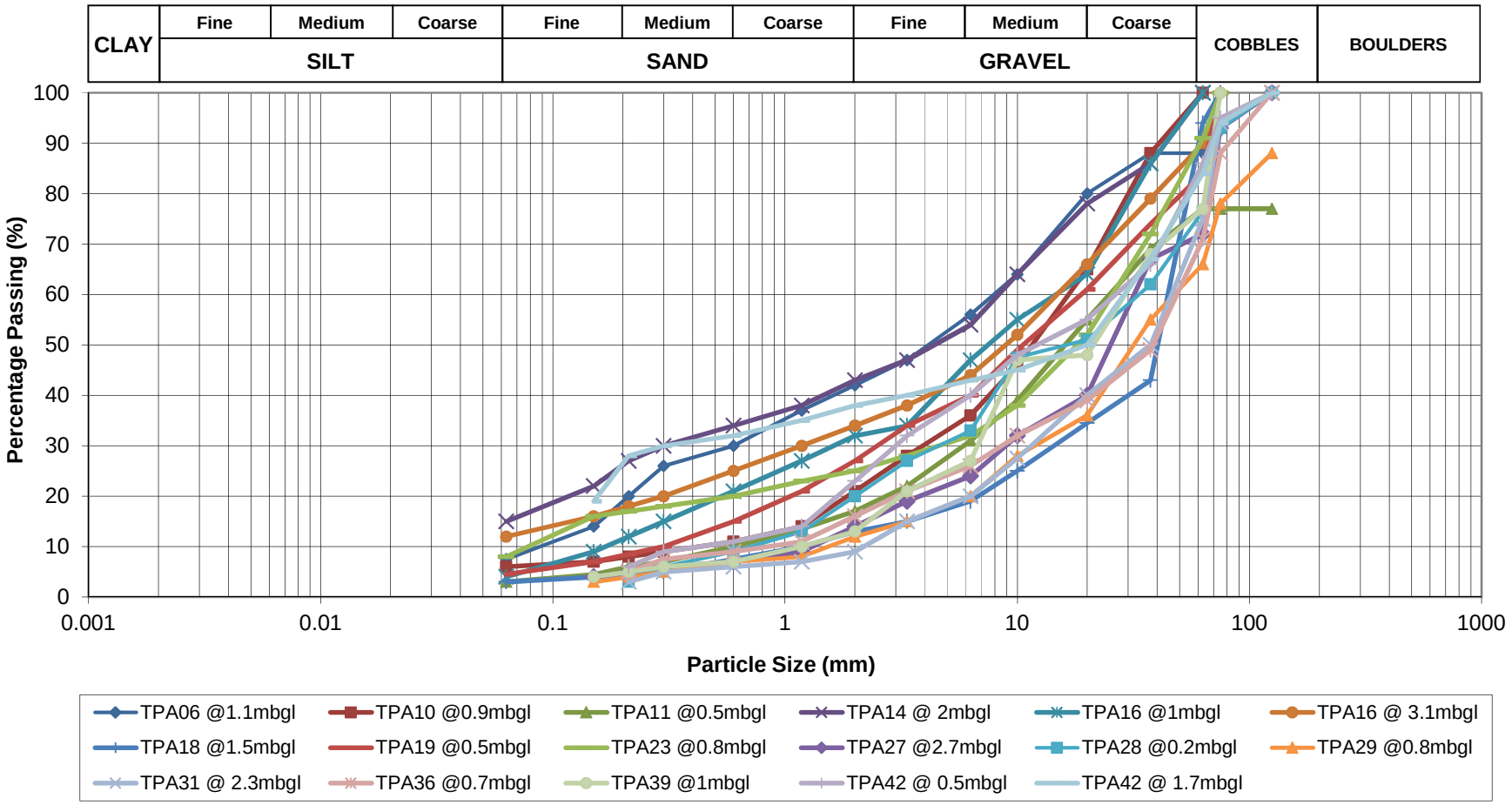


FIGURE C1A - PARTICLE SIZE DISTRIBUTION CURVE
FOR
GRANULAR MADE GROUND - SLAG

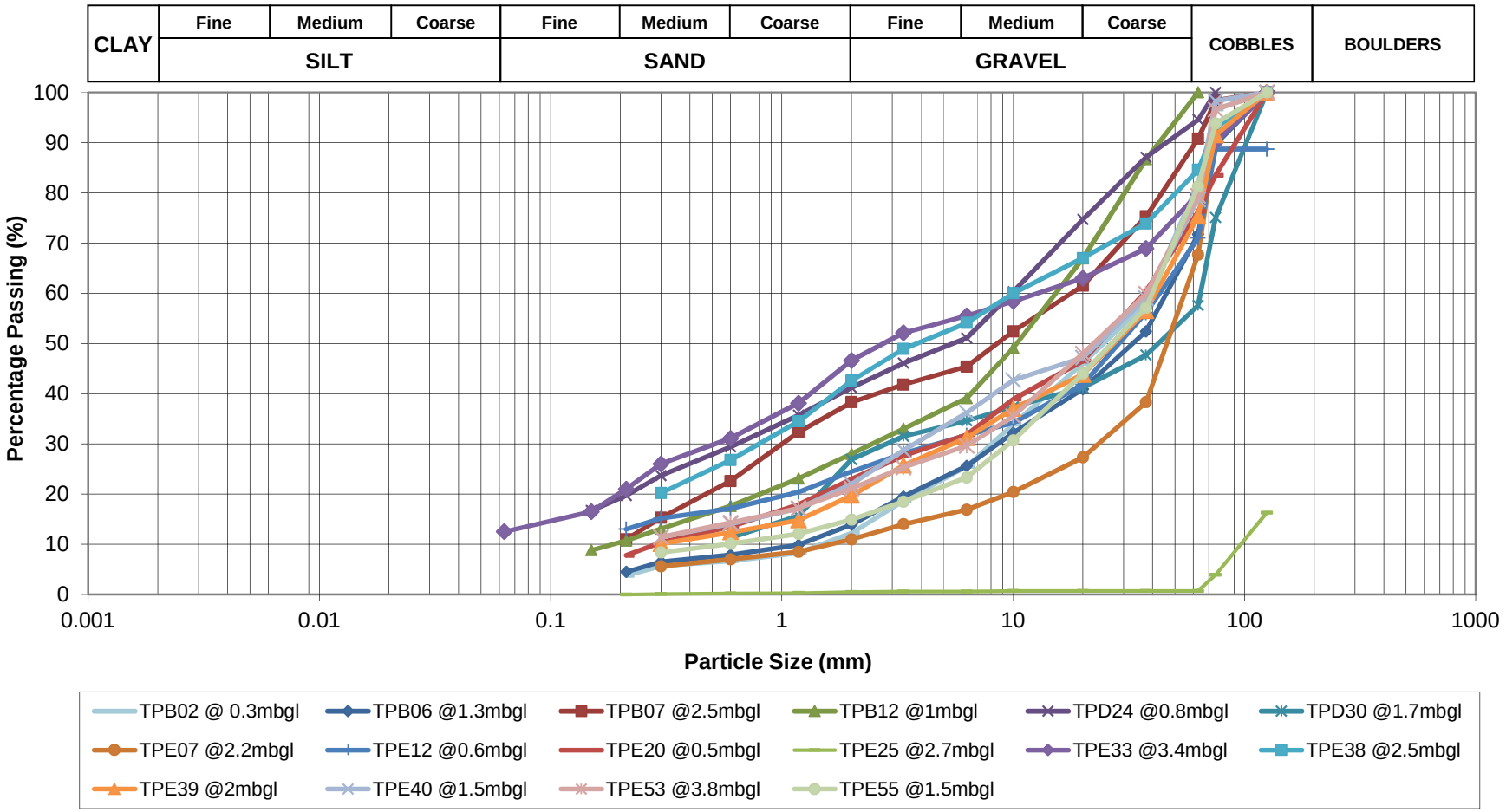


FIGURE C1B - PARTICLE SIZE DISTRIBUTION CURVE
FOR
GRANULAR MADE GROUND - SLAG

FORMER SSI SSI STEELWORKS, REDCAR - INITIAL GROUND INVESTIGATION WORKS

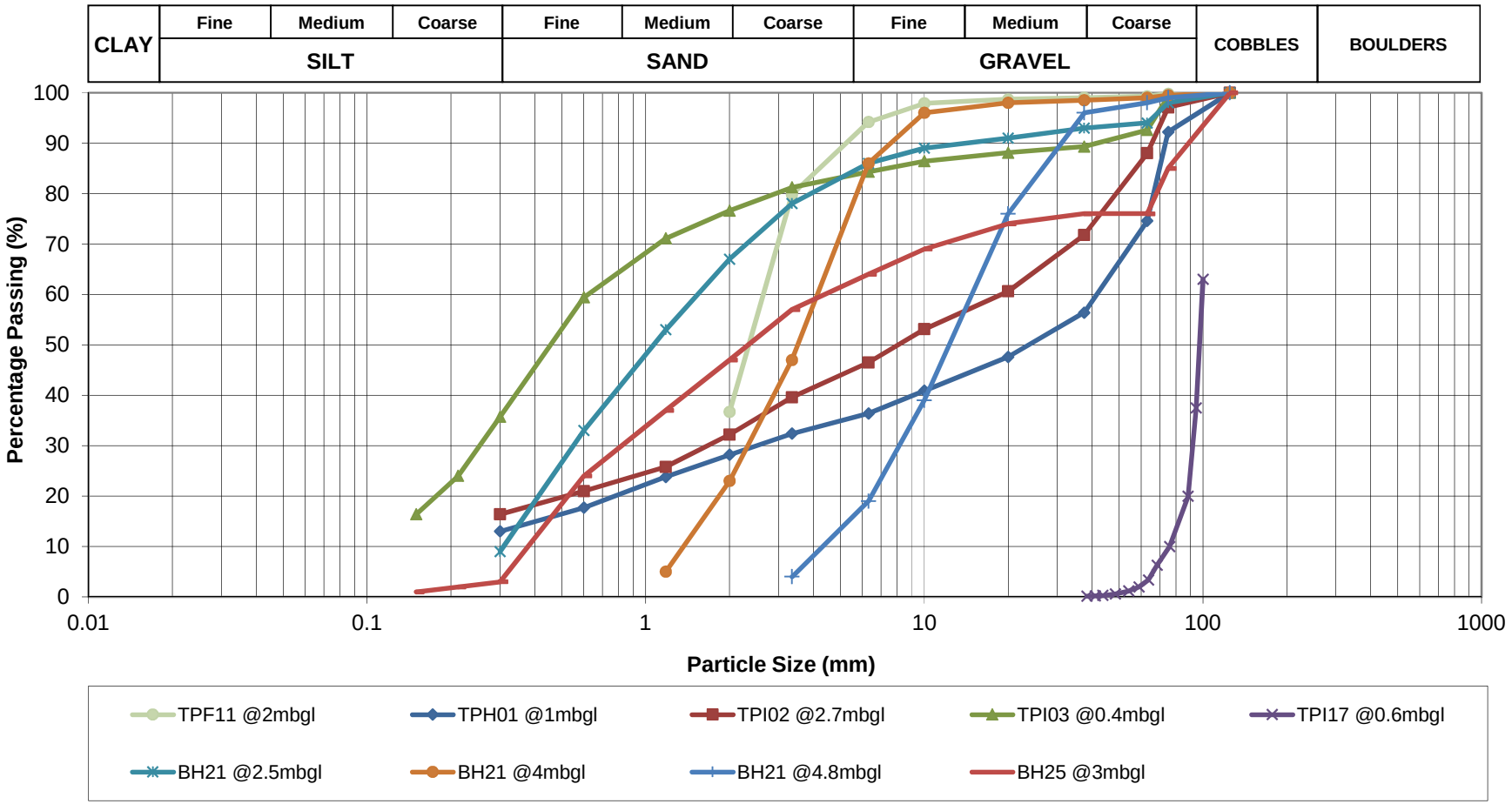


FIGURE C1C - PARTICLE SIZE DISTRIBUTION CURVE
FOR
GRANULAR MADE GROUND - SLAG

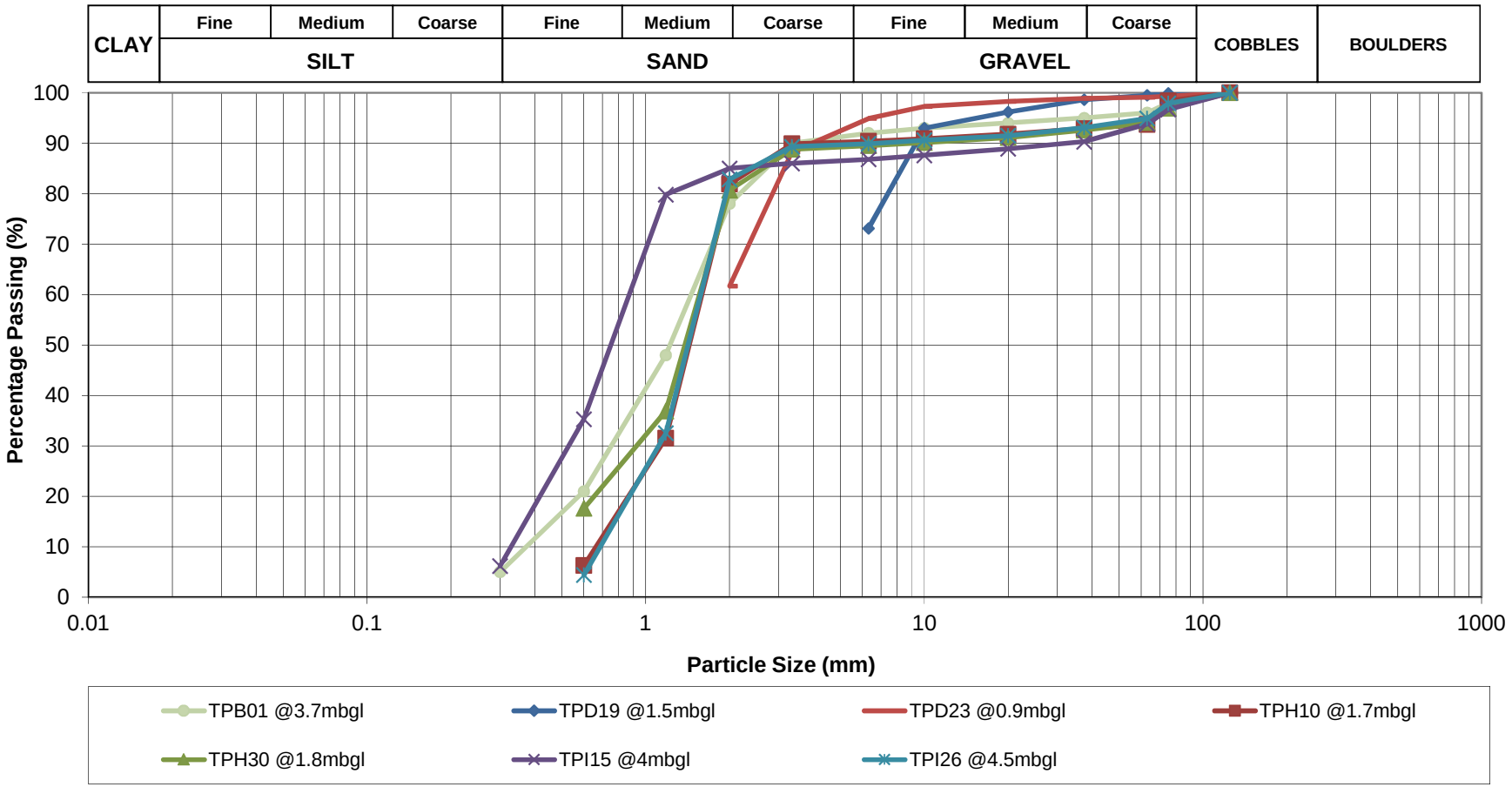


FIGURE C2 - PARTICLE SIZE DISTRIBUTION CURVE
FOR
GRANULAR MADE GROUND - HYDRAULICALLY PLACED FILL

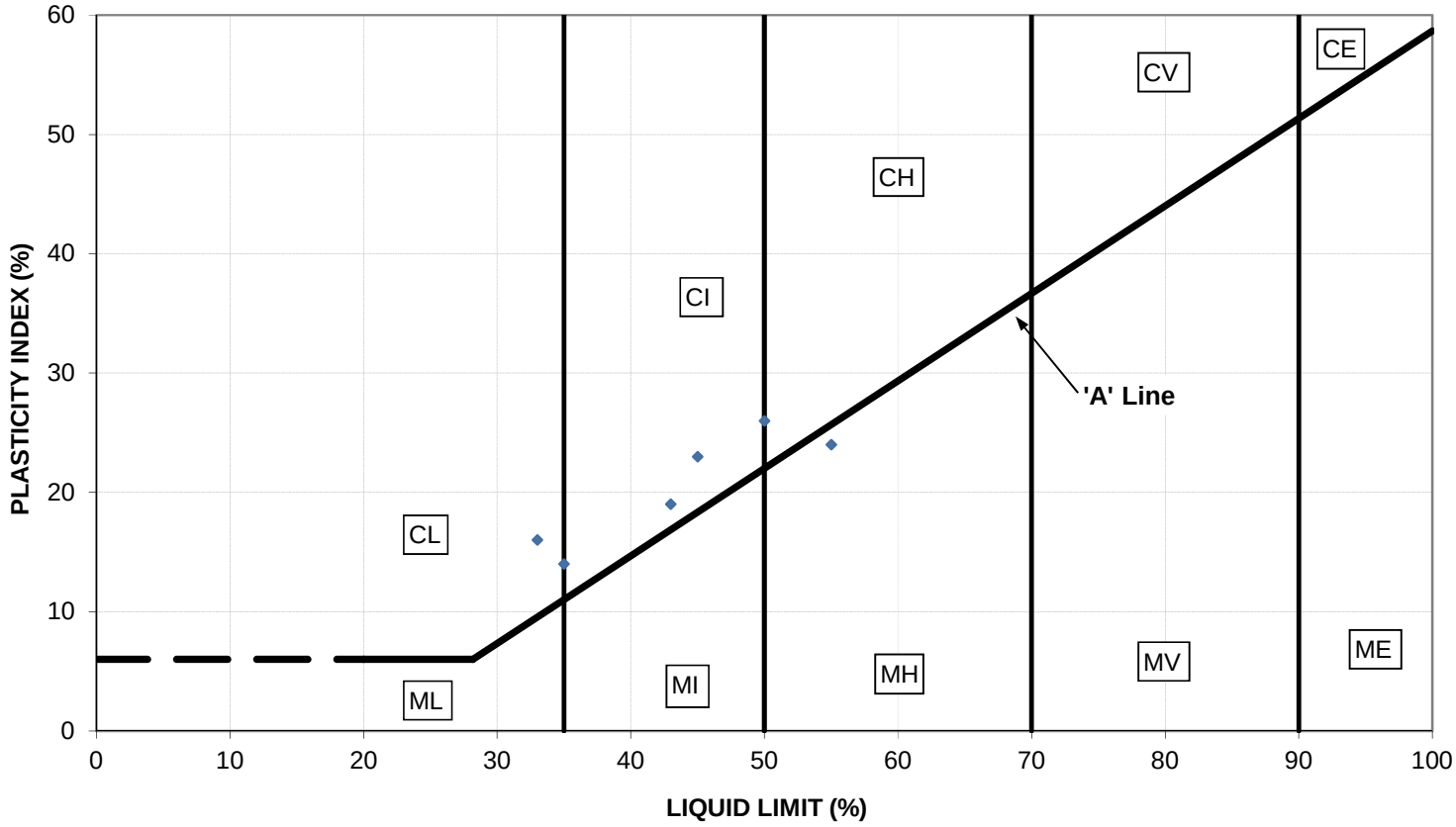


FIGURE C4 - PLASTICITY CHART
FOR
COHESIVE MADE GROUND

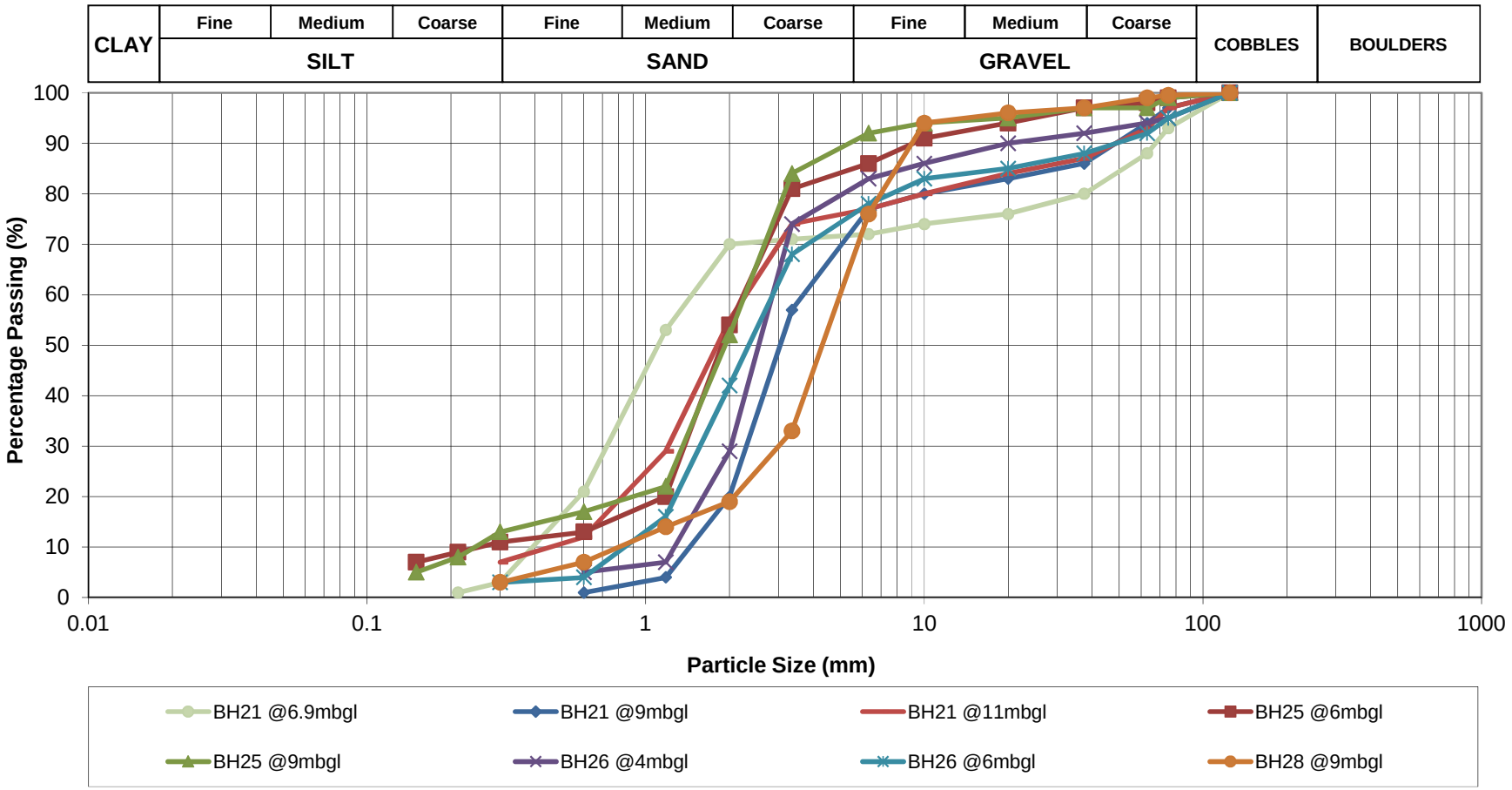


FIGURE C4 - PARTICLE SIZE DISTRIBUTION CURVE
FOR
NATURAL SUPERFICIAL DEPOSITS - SAND

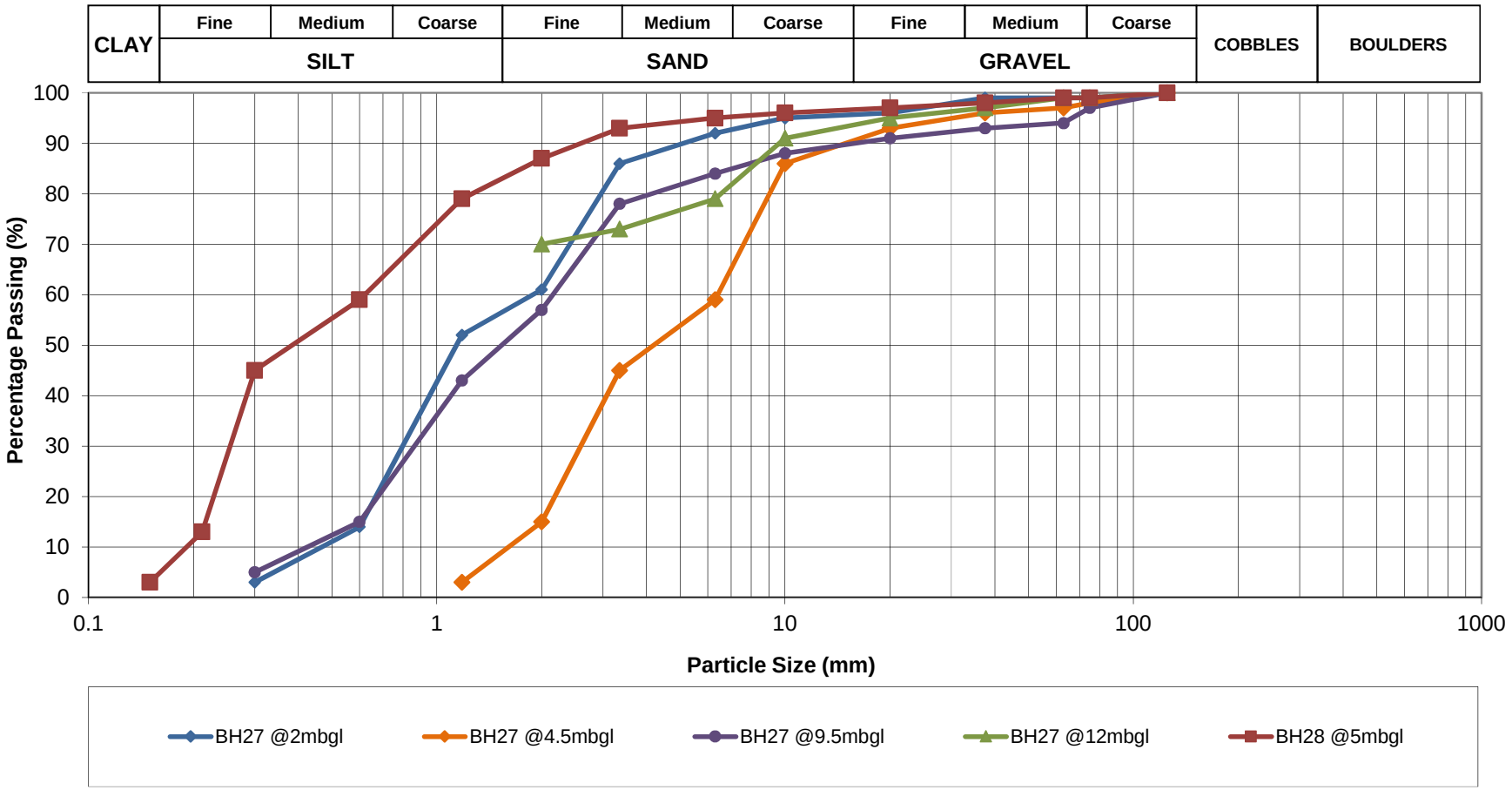


FIGURE C5 - PARTICLE SIZE DISTRIBUTION CURVE
FOR
NATURAL SUPERFICIAL DEPOSITS - SILT AND CLAY

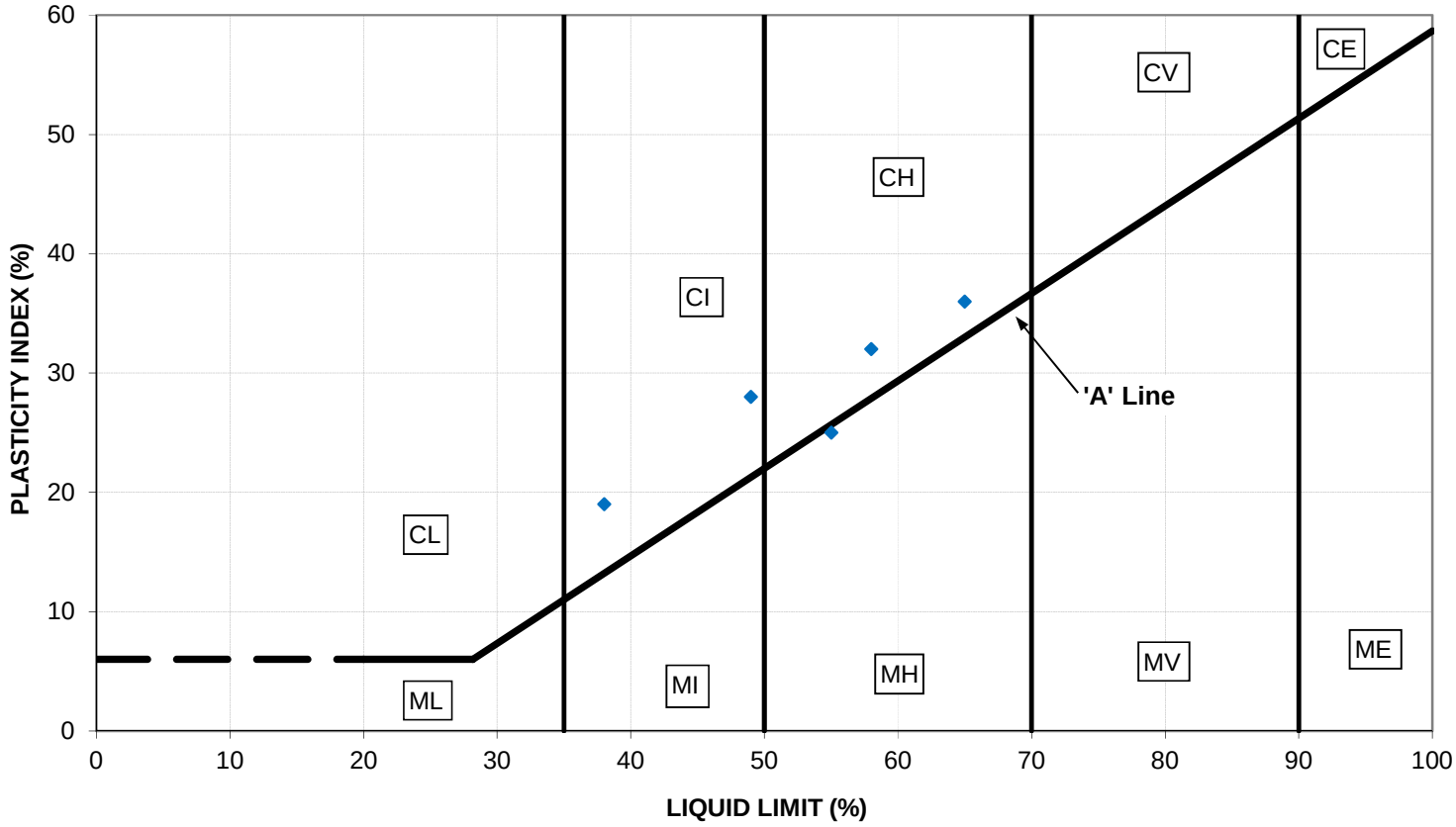


FIGURE C6 - PLASTICITY CHART
FOR
NATURAL SUPERFICIAL DEPOSITS - SILT AND CLAY

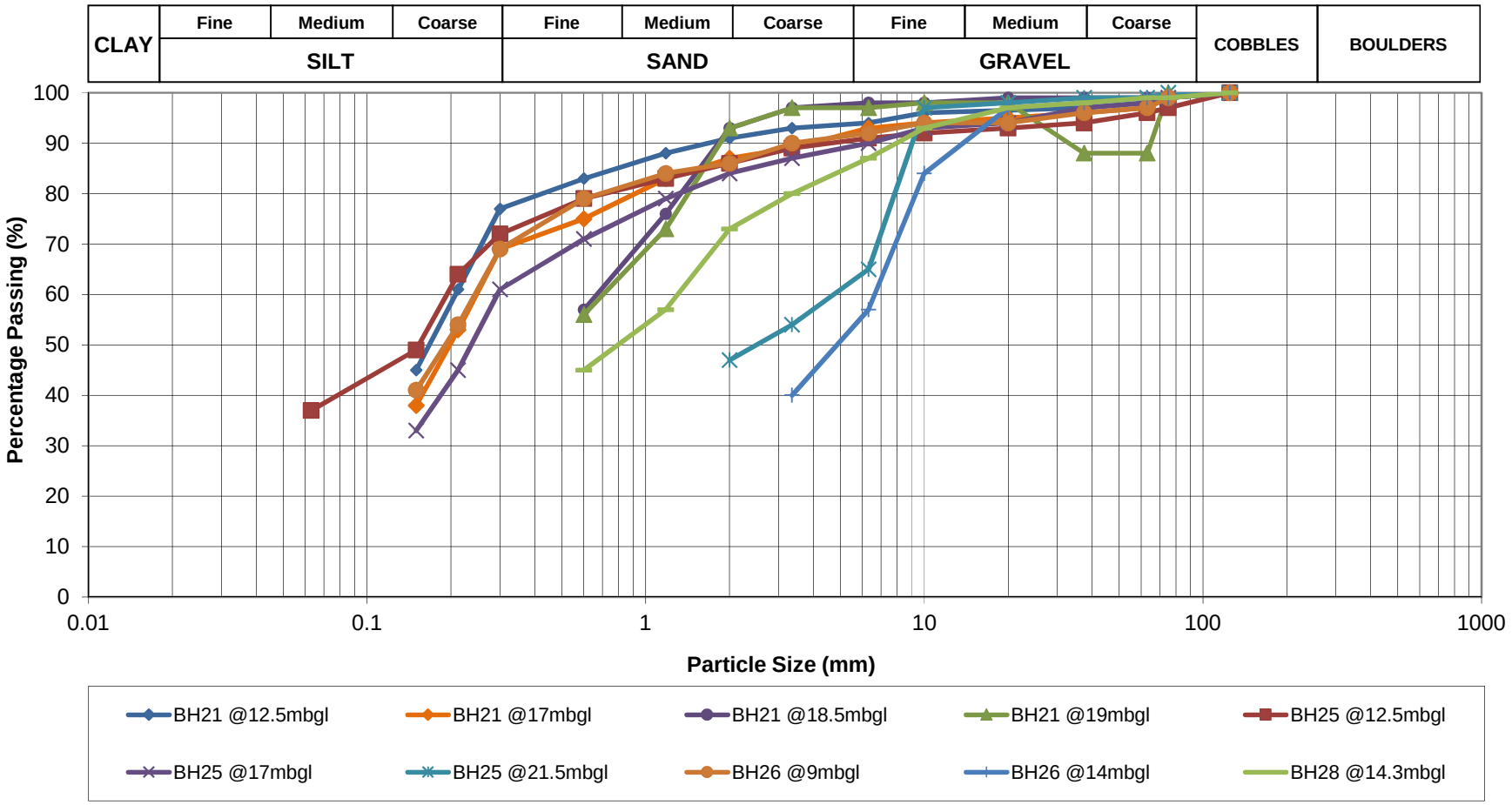


FIGURE C7 - PARTICLE SIZE DISTRIBUTION CURVE
FOR
NATURAL SUPERFICIAL DEPOSITS - GLACIAL TILL

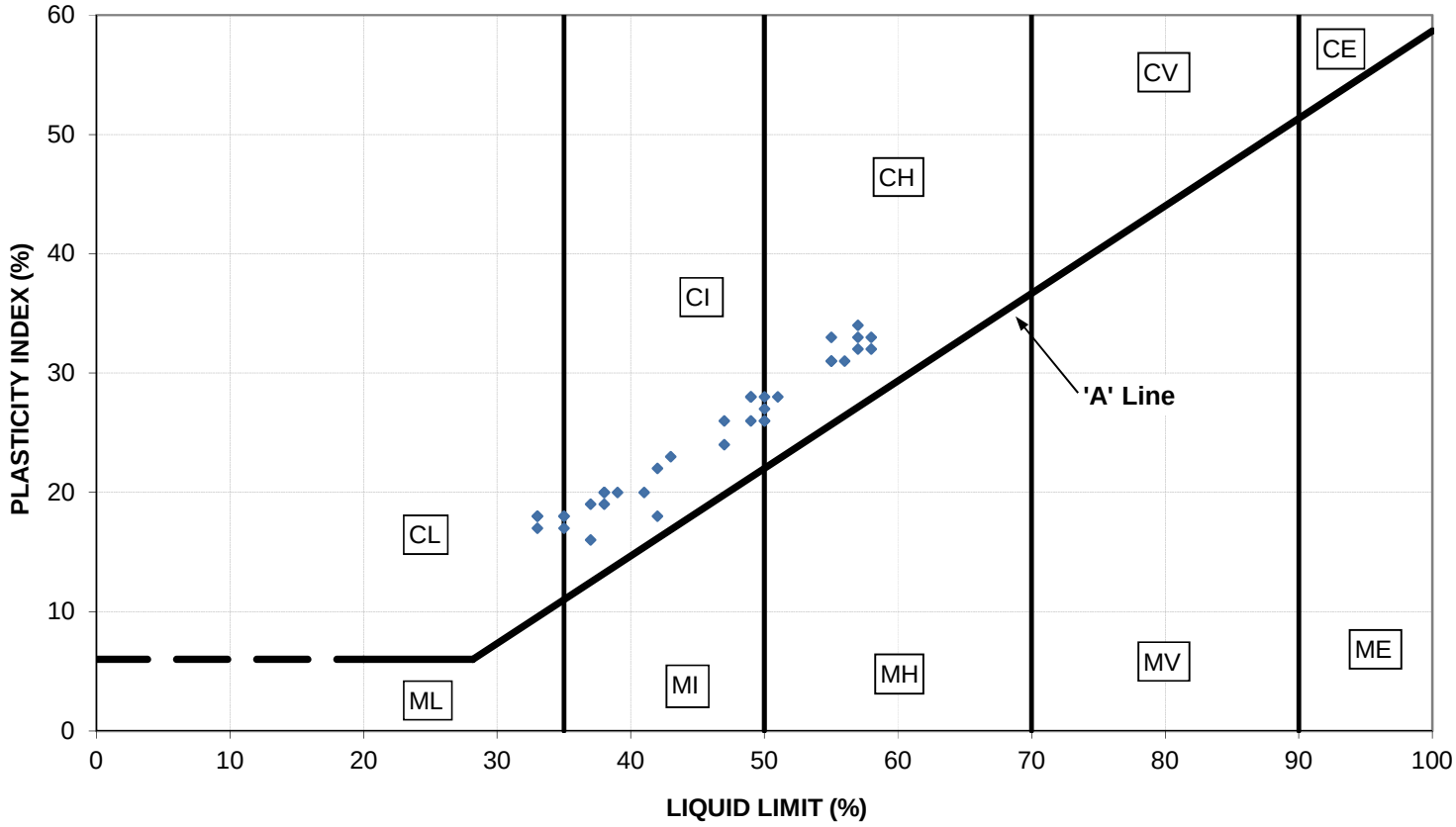


FIGURE C8 - PLASTICITY CHART
FOR
NATURAL SUPERFICIAL DEPOSITS - GLACIAL TILL