

**CYNGOR CASTELL-NEDD PORT TALBOT /NEATH
PORT TALBOT COUNCIL**

**ABERAVON COASTAL DEFENCE,
ABERAVON PROMINADE, SA12 6QP**

FACTUAL REPORT ON GROUND INVESTIGATION

Contract: 70478

Date: July 2018

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FACTUAL REPORT ON GROUND INVESTIGATION

carried out at

**ABERAVON COASTAL DEFENCE,
ABERAVON PROMINADE, SA12 6QP**

Prepared for

**CYNGOR CASTELL-NEDD PORT TALBOT/ /Neath Port Talbot Council
Civic Centre,
Port Talbot
SA13 1PJ**

Contract No: 70478

Date: July 2018

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EXECUTIVE SUMMARY

It is understood that the proposed development comprises of a rock armour revetment to provide scour protection to the toe of an existing concrete step revetment. On the instructions of Neath Port Talbot Council under the supervision of their Consulting Engineers, JBA Bentley, an investigation was undertaken to determine ground conditions to enable revetment design to be carried out. A Factual report only was required.

The site is situated at on and alongside the promenade at Aberavon and may be located by National Grid Reference SS 740 900. The promenade is approximately 2.1km in length and is orientated north west to south east with the sea on the south western side. The promenade is at approximately 10mAOD with the beach located at approximately 4mAOD and is south west of a concrete step revetment down from the promenade. The beach generally consists of marine sand and access steps lead down to the beach at intervals from the promenade.

The 1:50000 British Geological Survey map, Sheet No. 247, indicates the promenade to be underlain by superficial deposits of Blown Sand which is underlain by Middle Coal Measures that consist of mudstone, siltstone and sandstone.

The site work was carried out between 11th and 14th June 2018. Two boreholes, designated BH1 and BH2, were sunk by light cable percussion method, and six trial pits, designated TP1 to TP6, were dug by mechanical excavator at the positions shown on the exploratory hole location plan, Appendix 1, Figure A1.1.

Groundwater monitoring visits were undertaken on the 16th July 2018.

Made ground was encountered to 3.00m deep in BH1 and possible made ground was present to 2.00m in BH2. The made ground in BH1 consisted of a thin layer of asphalt overlying loose gravelly sand with occasional cobbles to 2.00m where loose gravelly fine sand with fragments of brick, concrete and limestone was present to 3.00m below ground level.

Made ground was encountered to 0.30m in BH2 which consisted of asphalt overlying sand and gravel sub-base. Below the made ground loose fine sand was encountered to 2.00m below ground level which was construed to be possible made ground due to the location on top of the promenade.

Marine sand was encountered to the full depths of the trial pits at between 1.10m and 2.40m where the trial pits were terminated due to instability of the sides of the trial pits. The marine sand generally consisted of fine to medium sand to between 0.30m and 1.40m where cobbles and black laminations were also present within the marine sand. The cobbles consisted of limestone, brick and concrete.

Medium dense light brown fine sand was encountered below the made ground and possible made ground in the boreholes and was proved to the full depth of BH1 at 15.00m below ground level. The sand in BH2 was present to 15.00m deep where soft very silty fine sand and fibrous peat continued to the full depth of the borehole at 15.45m.

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1.0 INTRODUCTION

- 1.1 It is understood that the proposed development comprises of a rock armour revetment to provide scour protection to the toe of an existing concrete step revetment.
- 1.2 On the instructions of Neath Port Talbot Council under the supervision of their Consulting Engineers, JBA Bentley, an investigation was undertaken to determine ground conditions to enable revetment design to be carried out. A Factual report only was required.
- 1.3 It is recommended that a copy of this report be submitted to the relevant authorities to enable them to carry out their own site assessments and provide any comments.
- 1.4 This report has been prepared for the sole use of the Client for the purpose described and no extended duty of care to any third party is implied or offered. Third parties using any information contained within this report do so at their own risk.
- 1.5 The comments given in this report and the opinions expressed herein are based on the information received, the conditions encountered during site works, and on the results of tests made in the field and laboratory. However, there may be conditions prevailing at the site which have not been disclosed by the investigation and which have not been taken into account in the report.
- 1.6 The comments on groundwater conditions are based on observations made at the time the site work was carried out. It should be noted that groundwater levels vary owing to seasonal or other effects.

2.0 SITE SETTING

2.1 Site Location and Description

- 2.1.1 The site is situated at on and alongside the promenade at Aberavon and may be located by National Grid Reference SS 740 900. The promenade is approximately 2.1km in length and is orientated north west to south east with the sea on the south western side.
- 2.1.2 The promenade is at approximately 10mAOD with the beach located at approximately 4mAOD and is south west of a concrete step revetment down from the promenade. The beach generally consists of marine sand and access steps lead down to the beach at intervals from the promenade.
- 2.1.3 The landward, north east, of the promenade was occupied by cafés, flats, car parking and children's play areas.
- 2.1.4 A site location plan is included in Appendix 1, Figure A1.1.

2.2 Geological Setting

- 2.2.1 The 1:50000 British Geological Survey map, Sheet No. 247, indicates the promenade to be underlain by superficial deposits of Blown Sand which is underlain by Middle Coal Measures that consist of mudstone, siltstone and sandstone.
- 2.2.2 Local boreholes from the British Geological Survey indicate that the site may be underlain by Blown Sand to approximately 7m to 9m and sandy clay to 14m.

3.0 SITE WORK

- 3.1 The site work was carried out between 11th and 14th June 2018. The locations of exploratory holes were selected by the Engineers.
- 3.2 Two boreholes, designated BH1 and BH2, were sunk by light cable percussion method, and six trial pits, designated TP1 to TP6, were dug by mechanical excavator at the positions shown on the exploratory hole location plan, Appendix 1, Figure A1.1. The depths of boreholes and trial pits, descriptions of strata encountered and comments on groundwater conditions are given in the borehole and trial pit records, Appendix 2, Figures A2.1 to A2.8.
- 3.3 Representative disturbed samples were taken at the depths shown on the borehole and trial pit records and despatched to the laboratory. Standard (split-barrel and cone) penetration tests, refs. 6.1 and 6.2, were carried out in the boreholes in the various strata to assess the relative density or consistency. The values of penetration resistance are given in the borehole records.
- 3.4 Samples for environmental purposes were collected in amber glass jars and kept in a cool box.
- 3.5 Standpipes were installed in selected boreholes as detailed in the table below. A visual representation of the standpipes is presented on the relevant borehole logs.

Borehole N°	Depth To Base (m)	Response Zone (m bgl)	Nominal Pipe Diameter (mm)	Lockable Stopcock Cover
BH1	15.0	3.00 – 15.00	50	Yes
BH2	13.5	3.00 – 13.50	50	Yes

- 3.6 The ground levels at the borehole and trial pit locations, reported on the records, were surveyed in on completion of the boreholes and trial pits.
- 3.7 Groundwater monitoring visits were undertaken on the 16th July 2018 where the water level in the borehole standpipes was monitored for two hours starting at 09:30 and again at 15:30. The results of these tests are included in Figure A2.9.

4.0 LABORATORY TESTS

4.1 Geotechnical Testing

4.1.1 Geotechnical soil analysis was undertaken of samples obtained during the investigation as follows:

- 1 No. Loss on Ignition
- 1 No. Organic Matter
- 10 No. Particle Size Distributions (by Wet Sieving)
- 2 No. pH Values
- 2 No. Sulphate Contents (Water Soluble)
- 2 No. Total Sulphur
- 2 No. Total Sulphate
- 1No. Organic Content
- 1No. Loss on Ignition

4.1.2 The laboratory test reports are given in Appendix 3, Figures 70478/1 and 18/05538.

4.2 Chemical Testing

4.2.1 The following suite of chemical analyses has been carried out on two soil samples:

4.2.2 **Metals Suite** - arsenic, boron (water soluble), cadmium, chromium (hexavalent), chromium (total), copper, lead, mercury, nickel, selenium and zinc.

4.2.3 **Organic Suite** – Total Petroleum Hydrocarbons CWG EPH carbon banded analysis, benzene, toluene, ethylbenzene and xylenes (BTEX), MTBE, polycyclic aromatic hydrocarbons (PAH) –16MS suite, phenols, polychlorinated biphenyls (PCBs) 25 congeners, Clostridium perfringens, coliforms, salmonella, Total Viable Count, Organochlorine pesticides, organotin.

4.2.4 **Inorganics Suite** - cyanide (Total) and sulphate (water soluble).

4.2.5 **Others** - pH, organic matter content, loss on ignition and asbestos.

4.2.6 The results of these tests are shown in Appendix 4, Figures 18/04933 and 18/73452-1.

5.0 GROUND CONDITIONS ENCOUNTERED

5.1 Made Ground and Possible Made Ground

- 5.1.1 Made ground was encountered to 3.00m deep in BH1 and possible made ground was present to 2.00m in BH2. The made ground in BH1 consisted of a thin layer of asphalt overlying loose gravelly sand with occasional cobbles to 2.00m where loose gravelly fine sand with fragments of brick, concrete and limestone was present to 3.00m below ground level.
- 5.1.2 Made ground was encountered to 0.30m in BH2 which consisted of asphalt overlying sand and gravel sub-base. Below the made ground loose fine sand was encountered to 2.00m below ground level which was construed to be possible made ground due to the location on top of the promenade and the loose nature of the sand.

5.2 Marine Sand

- 5.2.1 Marine sand was encountered to the full depths of the trial pits at between 1.10m and 2.40m where the trial pits were terminated due to instability of the sides of the trial pits. The marine sand generally consisted of fine to medium sand to between 0.30m and 1.40m where cobbles and black laminations were also present within the marine sand. The cobbles consisted of limestone, brick and concrete.
- 5.2.2 Medium dense light brown fine sand was encountered below the made ground and possible made ground in the boreholes and was proved to the full depth of BH1 at 15.00m below ground level. The sand in BH2 was present to 15.00m deep where soft very silty fine sand and fibrous peat continued to the full depth of the borehole at 15.45m.

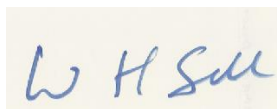
5.3 Groundwater

- 5.3.1 The ground water in the boreholes was masked by the water added to aid drilling. However, the ground water stood at 6.00m below ground level in BH1 on the morning of the 12th June.
- 5.3.2 Water was encountered in the trial pits at between 0.75m and 1.60m deep and stood at between 0.58m and 1.93m.
- 5.3.3 On the return visit to monitor the standpipes in BH1 and BH2 on 16th July 2018 the ground water stood at 5.92m below ground level in BH1 and at 6.03m in BH2 at 9.30am BST. The ground water level varied by 0.04m and 0.05m over the subsequent two-hour monitoring period in the boreholes respectively.
- 5.3.4 The ground water stood at 5.98m below ground level in BH1 and at 6.05m in BH2 at 15.30am BST on 16th July 2018. The ground water level varied by 0.03m and zero over the subsequent two-hour monitoring period in the boreholes respectively.

6.0 REFERENCES

- 6.1 British Standard 1377:1990, Part 9, 'Methods of Test for Soils for Civil Engineering Purposes'.
- 6.2 BS EN ISO 22476-3:2005+A1:2011 Incorporating corrigendum February 2007: 'Geotechnical investigation and testing – Field Testing - Part 3: Standard penetration test'.
- 6.3 British Standards Institute: BS EN 1997-2:2007 Incorporating corrigendum June 2010, 'Eurocode 7 - Geotechnical Design – Part 2: Ground investigation and testing.'
- 6.4 British Standards Institute: BS 5930:2015 'Code of practice for ground investigations', BSI 2015.
- 6.5 ISO 22475-1:2006, 'Geotechnical Investigation and Testing – Sampling Methods and Groundwater Measurements' Part 1: Technical Principles for Execution.
- 6.6 ISO 14688 Part 1:2002 and Part 2:2004, 'Geotechnical Investigation and Testing – Identification and Classification of Soil'.

For and on behalf of Ian Farmer Associates (1998) Limited

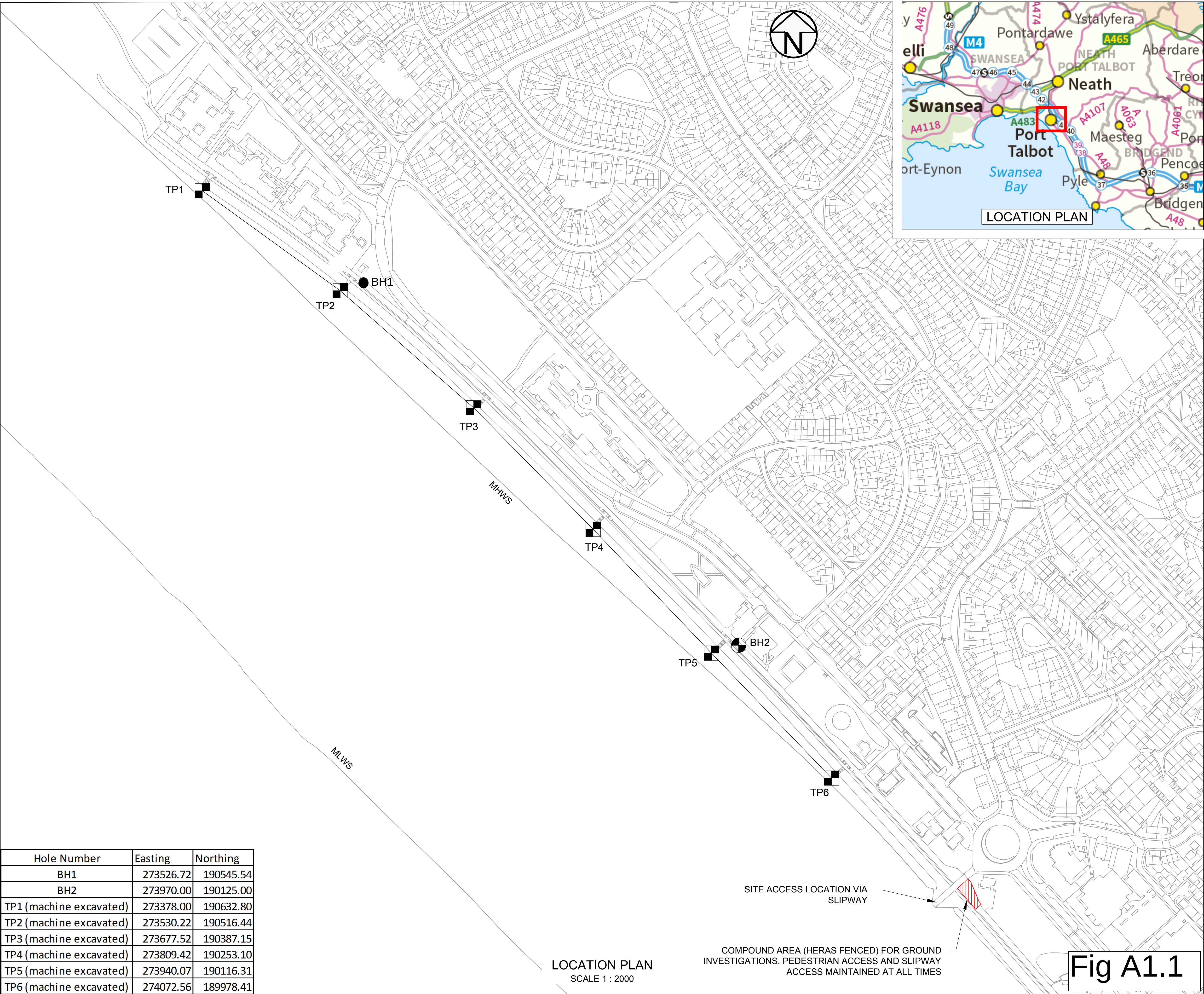


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Regional Manager

APPENDIX 1

DRAWINGS



- Beach is tidal with high water at existing sea wall - Working in an exposed coastal environment - Movement of plant in and around the sea - Unknown condition and structural capacity of existing revetment and access points	- On a public beach and promenade - Working on public amenity beach and public open space - Working adjacent to public right of way - Unauthorised site access	- Pollution hazards associated with working near the sea - Risk of damage to flora and fauna
Construction Risks	Public Risks	Environmental Risks
In addition to the hazards/risks normally associated with the types of work detailed on this drawing take note of the above. It is assumed that all works detailed on this drawing will be carried out by a competent contractor working, where appropriate, to an appropriate method statement.		

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

General Notes

- All dimensions shown are in millimetres unless otherwise stated and levels are in metres to Ordinance Datum.
- Do not scale from this drawing. All dimensions must be checked/verified on site.
- All works on the coast will be carried out with care to minimise the risk of pollution adhering to Pollution Prevention Guidelines.

Task Notes

- Statutory plan not shown. The Contractor is to confirm the location of any services prior to the commencement of any works.
- Care to be taken when excavating adjacent to the revetment.
- Cable percussion boreholes to be nominally 20m depth or refusal. SCPTs to be nominally 15m depth or refusal. Machine excavated trial pits to be nominally 3m depth or refusal.
- The SCPT holes, with Magcone, are to be located as close as possible to the front of the existing sheet piles in order to determine the likely depth of those piles.
- Locations of all exploratory holes to be confirmed by investigation supervisor.

Ground Investigation Legend

	BH	BH (Borehole)
	TP	Machine Excavated Trial Pits

	Comments									
Rev.:	Date		Drawn		Designed		Checked		Approved	
	Comments									
Rev.:	Date		Drawn		Designed		Checked		Approved	
	Comments									
Rev.:	Date		Drawn		Designed		Checked		Approved	
	Comments									
Rev.:	Date		Drawn		Designed		Checked		Approved	
	Comments									
P03	Minor amendments									
Rev.:	Date	24/05/18	Drawn	RG	Designed	GK	Checked	CV	Approved	AD
	Comments									
P02	Minor amendments									
Rev.:	Date	04/04/18	Drawn	RG	Designed	CV	Checked	IJ	Approved	GK
Client Approval										
	A - Approved									
	B - Approved with Revisions									
	C - Do Not Use									
Purpose of Issue Information									Status S8	

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ABERAVON PROMENADE DETAILED DESIGN AND BUSINESS CASE		
EXPLORATORY HOLE LOCATION PLAN		
for		
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Scale:	Drawn: R. Groves	31/01/18
	Designed: C. Vasquez	31/01/18
1:2500 @ A1	Checked: A. Dane	05/02/18
	Approved: G. Kenn	06/02/18
Digital File Name:	AJQ-JBA-00-00-DR-GT-1001-Exploratory Hole Location Plan	
Drawing Number:	AJQ-JBA-00-00-DR-GT-1001	
	Revision	P03

APPENDIX 2

SITE WORK

Borehole Log

Borehole No.

BH1

Sheet 1 of 2

Project Name: Aberavon Coastal Defence

Project No.
70478

Co-ords: 273558.54 - 190520.47

Hole Type
BH

Location: Aberavon Promenade

Level: 10.01

Scale
1:50

Client: Gyngor Castell-nedd Port Talbot Neath Port Talbot Council

Dates: 11/06/2018 - 12/06/2018

Logged By
MW

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
<									

Continued on next sheet

Remarks

Water added to aid drilling from 1.20m masked ground water inflow.
SPTs at 3.00m and 4.00m undertaken inside casing as sand blowing up casing.
No samples from 3m to 6m as sand inside casing

Fig A2.1



Borehole Log

Borehole No.

BH1

Sheet 2 of 2

Project Name: Aberavon Coastal Defence

Project No.
70478

Co-ords: 273558.54 - 190520.47

Hole Type
BH

Location: Aberavon Promenade

Level: 10.01

Scale
1:50

Client: Gyngor Castell-nedd Port Talbot Neath Port Talbot Council

Dates: 11/06/2018 - 12/06/2018

Logged By
MW

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.50 10.50 - 10.95	B	N=46 (6,8/8,11,13,14)					11
		12.00 12.00 - 12.45	B	N=49 (5,7/9,10,15,15)					12
		13.50 13.50 - 13.95	B	50 (6,10/50 for 157mm)					13
		15.00 - 15.45	B		15.00	-4.99			14
								End of borehole at 15.00 m	15
									16
									17
									18
									19
									20

Remarks

Water added to aid drilling from 1.20m masked ground water inflow.
SPTs at 3.00m and 4.00m undertaken inside casing as sand blowing up casing.
No samples from 3m to 6m as sand inside casing

Fig A2.1 cont

Borehole Log

Borehole No.

BH2

Sheet 1 of 2

Project Name: Aberavon Coastal Defence

Project No.
70478

Co-ords: 273969.17 - 190123.95

Hole Type
BH

Location: Aberavon Promenade

Level: 9.99

Scale
1:50

Client: Gyngor Castell-nedd Port Talbot Neath Port Talbot Council

Dates: 12/06/2018 - 13/06/2018

Logged By
WHS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.16 - 0.30	B		0.16	9.83		MADE GROUND Asphalt	
		0.30	ES		0.30	9.69		MADE GROUND Dark brown silty fine to coarse sand and fine gravel	
		0.30 - 1.20	B					POSSIBLE MADE GROUND Loose light brown fine SAND with occasional rounded medium gravel	
		0.50	ES						
		1.00	ES						
		1.20		N=5 (2,2/1,2,1,1)					
		1.20 - 1.65	B						
		2.00		N=9 (1,2/2,2,3,2)	2.00	7.99			
		2.00 - 2.45	B					Medium dense light brown fine SAND. Becoming dense at 7.50m	
		3.00		N=13 (2,3/3,3,4,3)					
		3.00 - 3.45	B						
		4.00		N=22 (3,4/6,6,5,5)					
		4.00 - 4.45	B						
		5.00		N=18 (3,5/4,4,5,5)					
		5.00 - 5.45	B						
		6.00		N=25 (4,4/6,6,6,7)					
		6.00 - 6.45	B						
		7.50		N=34 (5,6/8,9,9,8)					
		7.50 - 7.95	B						
		9.00		N=35 (4,6/8,8,9,10)					
		9.00 - 9.45	B						

Continued on next sheet

Remarks

Water added to aid drilling from 1.60m masked ground water inflow

Fig A2.2



Borehole Log

Borehole No.

BH2

Sheet 2 of 2

Project Name: Aberavon Coastal Defence

Project No.
70478

Co-ords: 273969.17 - 190123.95

Hole Type
BH

Location: Aberavon Promenade

Level: 9.99

Scale
1:50

Client: Gyngor Castell-nedd Port Talbot Neath Port Talbot Council

Dates: 12/06/2018 - 13/06/2018

Logged By
WHS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.50 10.50 - 10.95	B	N=39 (6,8/8,9,10,12)					11
		12.00 12.00 - 12.45	B	N=49 (7,8/9,13,14,13)					12
		13.50 13.50 - 13.95	B	N=51 (8,8/10,12,14,15)					13
		15.00 15.00 - 15.45	B	N=4 (1,0/1,1,1,1)	15.00 15.45	-5.01 -5.46			14
								Soft grey very silty fine SAND and fibrous PEAT	15
								End of borehole at 15.45 m	16
									17
									18
									19
									20

Remarks

Water added to aid drilling from 1.60m masked ground water inflow

Fig A2.2 cont



Project Name: Aberavon Coastal Defence

Project No.
70478

Co-ords:	273381.89 - 190628.84
----------	-----------------------

Level: 3.10

Date _____

13/06/2018

Location: Aberavon Promenade

Dimensions
(m):

Depth
1.10

Scale
1:25

Logged
MW

Client: Gyngor Castell-nedd Port Talbot Neath Port Talbot Council

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
▼ ▽	0.00 - 0.70	B					MARINE SAND Yellow brown fine to medium SAND	1 -
	0.00 - 0.70	D						
	0.20	ES						
	0.50	ES						
	0.75	B						
0.75	D	0.70	2.40		MARINE SAND Yellow brown with occasional black laminations slightly gravelly fine SAND with occasional cobbles. GRavel composed of concrete, bricks and shell fragments. cobbles composed of brick, concrete and limestone	2 -		
0.75	ES							
			1.10	2.00		End of pit at 1.10 m		3 -
								4 -
								5 -

Remarks:	Ground water encountered at 0.75m and rose to 0.58m after 30 mins. Trial pit terminated as sides unstable
----------	--

Stability:



Trial Pit Log

Trialpit No

TP2

Sheet 1 of 1

Project Name: Aberavon Coastal Defence

Project No.
70478

Co-ords: 273532.90 - 190521.13
Level: 4.76

Date
13/06/2018

Location: Aberavon Promenade

Dimensions
(m):

Scale
1:25

Client: Gyngor Castell-nedd Port Talbot Neath Port Talbot Council

Depth
2.40

Logged
MW

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	ES					MARINE SAND Yellow brown fine to medium SAND	
	0.50 0.50 0.50	B D ES						
	1.00 1.00	B D						1
▽	1.40	ES		1.40	3.36		MARINE SAND Yellow brown with occasional black laminations slightly gravelly fine SAND with occasional cobbles. Gravel composed of concrete, bricks and shell fragments. cobbles composed of brick, concrete and limestone	
▼	2.00 2.00	B D						2
				2.40	2.36		End of pit at 2.40 m	
								3
								4
								5

Remarks: Ground water encountered at 1.43m at 12:30 and stood at 1.93m at 15:08.
Trial pit terminated as sides unstable
Sub horizontal pipe or reinforcing bar at approx 2m deep in west side of trial pit

Stability:



Project Name: Aberavon Coastal Defence

Project No.
70478

Co-ords:	273681.91 - 190390.23
----------	-----------------------

Level: 5.33

Date _____

13/06/2018

Location: Aberavon Promenade

Dimensions
(m):

Scale
1:25

Client: Gyngor Castell-nedd Port Talbot Neath Port Talbot Council

Depth
1.70

Logged
MW

[illegible]

Remarks:	Ground water encountered at 1.60m at 14:25 and rose to 1.70m by 15:55. Trial pit terminated as sides unstable
----------	--

Stability:



Project Name:	Aberavon Coastal Defence
---------------	--------------------------

Project No.
70478

Co-ords: 273816.35 - 190257.24

Level: 5.14

Date

14/06/2018

Location: Aberavon Promenade

Dimensions
(m):

Depth
1.20

Scale
1:25

Logged
MW

Client: Gyngor Castell-nedd Port Talbot Neath Port Talbot Council

[illegible]

Remarks:	Ground water encountered at 1.20m and stood at 1.00m after 20mins Trial pit terminated as sides unstable
----------	---

Stability:



Trial Pit Log

Trialpit No

TP5

Sheet 1 of 1

Project Name: Aberavon Coastal Defence

Project No.
70478

Co-ords: 273949.65 - 190121.37
Level: 4.70

Date
14/06/2018

Location: Aberavon Promenade

Dimensions
(m):

Scale
1:25

Client: Gyngor Castell-nedd Port Talbot Neath Port Talbot Council

Depth
1.25

Logged
MW

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
 	0.20 0.25	ES B		0.30	4.40		MARINE SAND Yellow brown fine to medium SAND	1 2 3 4 5
							MARINE SAND Yellow brown with occasional black laminations slightly gravelly fine SAND. Gravel composed of concrete, bricks and shell fragments. Cobbles composed of brick, concrete and limestone	
	1.00	ES						
	1.20	B		1.25	3.45		End of pit at 1.25 m	

Remarks: Ground water encountered at 0.84m and stood at 1.20m after 20mins
Trial pit terminated as sides unstable

Stability:

Trial Pit Log

Trialpit No

TP6

Sheet 1 of 1

Project Name: Aberavon Coastal Defence

Project No.
70478

Co-ords: 274078.58 - 189982.60
Level: 4.31

Date
14/06/2018

Location: Aberavon Promenade

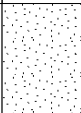
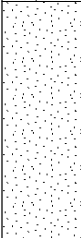
Dimensions
(m):

Scale
1:25

Client: Gyngor Castell-nedd Port Talbot Neath Port Talbot Council

Depth
1.20

Logged
MW

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20 0.30	ES B		0.40	3.91		MARINE SAND Yellow brown fine to medium SAND	
	0.80	ES					MARINE SAND Yellow brown with occasional black laminations slightly gravelly fine SAND with occasional boulders. Gavel composed of concrete, bricks and shell fragments. cobbles composed of brick, concrete and limestone	1
	1.20	B		1.20	3.11		----- End of pit at 1.20 m -----	2
								3
								4
								5

Remarks: Ground water encountered at 0.84m and stood at 1.20m after 20mins.
Trial pit terminated as sides unstable

Stability:

Aberavon Coastal Defence

Date	Borehole	Time	Depth to Water (m)	Elevation (mOD)
16/07/2018	BH1	09:30	5.92	4.09
		09:40	5.89	4.12
		09:50	5.88	4.13
		10:00	5.87	4.14
		10:10	5.87	4.14
		10:20	5.88	4.13
		10:30	5.88	4.13
		10:40	5.88	4.13
		10:50	5.89	4.12
		11:00	5.90	4.11
		11:10	5.90	4.11
		11:20	5.91	4.10
		11:30	5.92	4.09
		15:30	5.98	4.03
		15:40	5.99	4.02
		15:50	6.00	4.01
		16:00	6.01	4.00
		16:10	6.01	4.00
		16:20	6.01	4.00
		16:30	6.01	4.00
		16:40	6.00	4.01
		16:50	6.00	4.01
		17:00	6.00	4.01
		17:10	5.99	4.02
		17:20	5.99	4.02
		17:30	5.99	4.02

Aberavon Coastal Defence

Date	Borehole	Time	Depth to Water (m)	Elevation (mOD)
16/07/2018	BH2	09:30	6.03	3.96
		09:40	6.01	3.98
		09:50	6.00	3.99
		10:00	5.99	4.00
		10:10	5.98	4.01
		10:20	5.99	4.00
		10:30	5.99	4.00
		10:40	5.99	4.00
		10:50	6.00	3.99
		11:00	6.00	3.99
		11:10	6.00	3.99
		11:20	6.00	3.99
		11:30	6.00	3.99
		15:30	6.05	3.94
		15:40	6.05	3.94
		15:50	6.05	3.94
		16:00	6.05	3.94
		16:10	6.05	3.94
		16:20	6.05	3.94
		16:30	6.05	3.94
		16:40	6.05	3.94
		16:50	6.05	3.94
		17:00	6.05	3.94
		17:10	6.05	3.94
		17:20	6.05	3.94
		17:30	6.05	3.94

APPENDIX 2

GENERAL NOTES ON SITE WORKS

A2.1 SITE WORK

A2.1.1 General

Site work is carried out in general accordance with the guidelines given in ISO 1997, 6.3 and BS 5930, ref. 6.4.

A2.1.2 Trial Pits

Shallow trial pits are generally dug by mechanical excavator, however, in difficult access locations or adjacent to structures, such pits may be hand dug. Pits are best used where the ground will stand unsupported and generally, the maximum depth of machine dug pits is 4m to 5m. Where personnel are required to enter pits, it is essential that side support is provided. Entry by personnel into unsupported pits deeper than 1.2m is not allowed for health and safety reasons.

Trial pits allow the in-situ condition of the ground to be examined both laterally and vertically and also allow discontinuities to be recorded. The field record should give the orientation of the pit with details of which face was logged, assessment of stability of sides of pit and groundwater as well as the strata encountered. Photographs of the pit should also be taken.

In-situ testing, such as hand penetrometer, hand vane, Macintosh probe, or similar, can be undertaken in the sides or base of pits while both disturbed and undisturbed samples recovered.

It is generally advisable to backfill the pits as soon as possible, open pits should not be left unattended.

A2.1.3 Light Cable Percussion Boring

For routine soil exploration to depths in excess of 3m, the light cable percussion rig is generally employed for boring through soils and weak rocks, refs 6.4, 6.3 and 6.2. It consists of a powered winch and tripod frame, with running wheels that are permanently attached so that the rig may be towed behind a suitable vehicle. The rig is towed into position and set up using its own winching system.

The locations of services are checked to make sure the borehole is not situated unacceptably near any services. Regardless of the proximity of services, a CAT scan is undertaken at the borehole location and a trial hole dug to 1.20m by hand.

Boreholes are advanced in soil by the percussive action of the cable tool. The force of the cylindrical tool as it is dropped a short distance cuts a plug of cohesive soil that is removed by the tool.

In non-cohesive soils, the borehole is advanced by a 'shell', otherwise known as a 'bailer' or 'sand pump', which incorporates a clack valve. Material is transferred into the shell and retained by the clack valve. The water level in a borehole is maintained above that in the surrounding granular soil to allow for temporary reductions in the head of water as the shell is withdrawn from the borehole. Water should flow from the borehole into the surrounding soil at all times to prevent 'piping' and loosening the soil at the base of the hole. The casing is always advanced with the borehole in granular soil so that material is drawn from the base rather than the borehole sides.

Obstructions to boring are overcome by fitting a serrated chiselling ring to the base of the percussion tool. For large obstructions, a heavy chisel with a hardened cutting edge may have to be used.

Disturbed samples are taken in polythene bags, jars or tubs that are sealed against air or water loss.

Undisturbed samples are generally taken in cohesive materials at changes in strata and at one metre intervals to 5 metres then at 1.5 metre intervals to the full depths of the borehole. The general purpose open-tube sampler is suitable for firm to stiff clays, but is often used to retrieve disturbed samples of weak rocks, soft or hard clay and also clayey sand or silts. This has been adopted for routine use, and usually consists of a 100mm internal diameter tube (U100), which is capable of taking soil samples up to 450mm in length. The undisturbed samples are sealed at each end using micro-crystalline wax to prevent drying.

Standard penetration tests are generally carried out in non-cohesive soils but also in stiff clays and soft rocks at frequencies similar to that of undisturbed sampling.

A2.2 IN-SITU TESTS

A2.2.1 Standard Penetration Test

The Standard Penetration Test is carried out in accordance with the proposals recommended by ISO 1997, ref. 6.3, BS 1377, Part 9, 1990 ref. 6.1 and ISO 22476 ref. 6.2.

The standard penetration test, **SPT**, covers the determination of the resistance of soils to the penetration of a split barrel sampler. A 50mm diameter split barrel sampler is driven 450mm into the soil using a 63.5kg hammer with a 760mm drop. The penetration resistance is expressed as the number of blows required to obtain 300mm penetration below an initial seating drive of 150mm through any disturbed ground at the bottom of the borehole. The number of blows to achieve the standard penetration of 300mm is reported as the 'N' value.

The 'N' value reported on the borehole logs is as measured but may be corrected for the energy ratio (E_r) of the specific test equipment.

E_r for the drilling apparatus used for this ground investigation is

$$E_r = 65\%$$

The test is generally carried out in fine soils, however, it may also be carried out in coarse granular soils, weak rocks and glacial tills using the same procedure as for the SPT but with a 50mm diameter, 60° apex solid cone replacing the split spoon sampler, **CPT**.

When attempting the standard penetration test in very dense material or weathered rocks it may be necessary to terminate the test before completion to prevent damage to the equipment. In these circumstances it is important to distinguish how the blow count relates to the penetration of the sampler. This may be achieved in the following manner:

- Where the seating drive has been completed, the test drive is terminated if 50 blows are reached before the full penetration of 300mm is achieved. The penetration for 50 blows is recorded and an approximate N value obtained by linear extrapolation of the number of blows for the partial test drive.
- If the seating drive of 150mm is not achieved within the first 25 blows, the penetration after 25 blows is recorded and the test drive then commenced.
- For tests in soft rocks, the test drive should be terminated after 100 blows where the penetration of 300mm has not been achieved.

The N-value obtained from the Standard Penetration Test may be used to assess the relative density of sands and gravels as follows:

Term	SPT N-Value : Blows/300mm Penetration
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	Over 50

A2.3 SAMPLES

A2.3.1 General

Samples have been recovered and stored in accordance with the guidelines given in ISO 22475-1:2006, ref. 6.5 and BS 5930, ref. 6.4.

The undisturbed samples recovered from the percussive sampler were of varying diameters depending upon the depth taken and the ground conditions encountered.

In accordance with EN ISO 22475, ref. 6.5, and BS 5930, ref. 6.4, the thick walled U100 sample is considered as a Class B sampling technique and will only produce Class 3 to 5 quality samples in accordance with EN 1997-2:2007, ref. 6.3. A similar assumption can be made from samples tested from the percussive window sample probing.

Laboratory strength and consolidation testing can only be carried out on Class 1 quality samples, which can be obtained from a Class A sampling technique, ref. 6.3. This is due to possible disturbance during sampling, giving a weaker strength in testing.

Therefore values for c_u and m_v derived for use in this report can only be used as guidance and not used to determine the shear strength properties of the clay and is not used to give a descriptive strength in the borehole records.

- ES represents sample recovered in an amber jar, generally for environmental analysis
- B represents large bulk disturbed samples
- D represents small disturbed sample
- W represents water sample
- ▽ represents water strike
- ▼ represents level to which water rose

A2.4 DESCRIPTION OF SOILS

A2.4.1 General

The procedures and principles given in ISO 14688 Parts 1 and 2, ref. 6.6, supplemented by section 6 of BS 5930, ref. 6.4 have been used in the soil descriptions contained within this report.

APPENDIX 3
LABORATORY TESTS

F.A.O.

Test Report - 70478 / 1

Site: Aberavon Coastal Defence

Job Number: 70478

Originating Client: Neath Port Talbot Council

Originating Reference: 70478

Date Sampled: Not Given

Date Scheduled: 27/06/2018

Date Testing Started: 10/07/2018

Date Testing Finished: 17/07/2018

Remarks:

Authorised By:

Tim Robinson
Quality Technician

Date: 17/07/2018



Site: Aberavon Coastal Defence

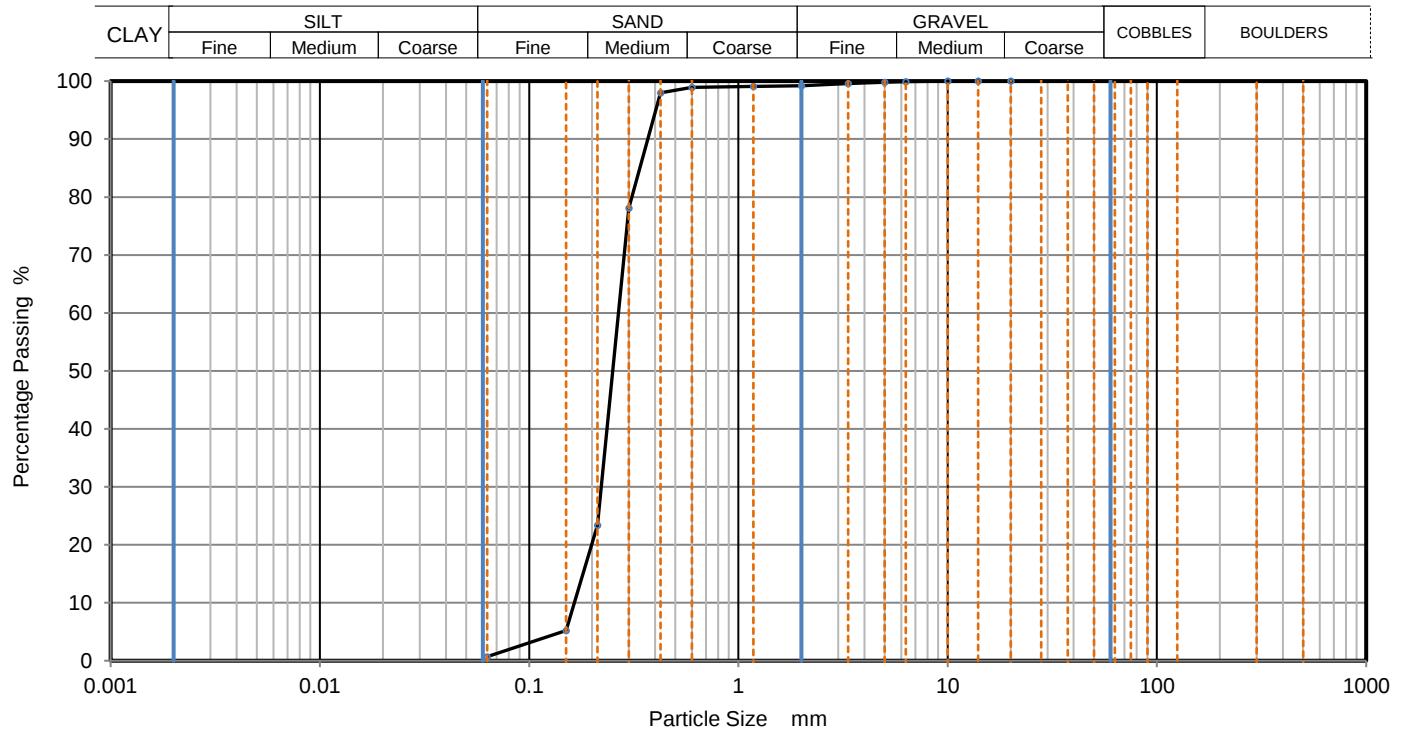
Job Number: 70478

Client: Neath Port Talbot Council

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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Testing Type	Description
BH1	7.50	B8	Wet Sieve	Grey/Brown SAND



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.6	99		
0.425	98		
0.3	78		
0.212	23		
0.15	5		
0.063	1		

Dry Mass of sample, g

956

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	99
Fines <0.063mm	1

Grading Analysis		
D100	mm	14
D60	mm	0.267
D30	mm	0.221
D10	mm	0.164
Uniformity Coefficient		1.6
Curvature Coefficient		1.1

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Method of Preparation: BS 1377:Part 1:1990, clause 7.3 Initial preparation
BS 1377:Part 1:1990, clause 7.4.5 Preparation of particle size tests

Method of Test: BS1377:Part 2:1990, clause 9.2 Determination of particle size distribution by wet sieving method





Site: Aberavon Coastal Defence

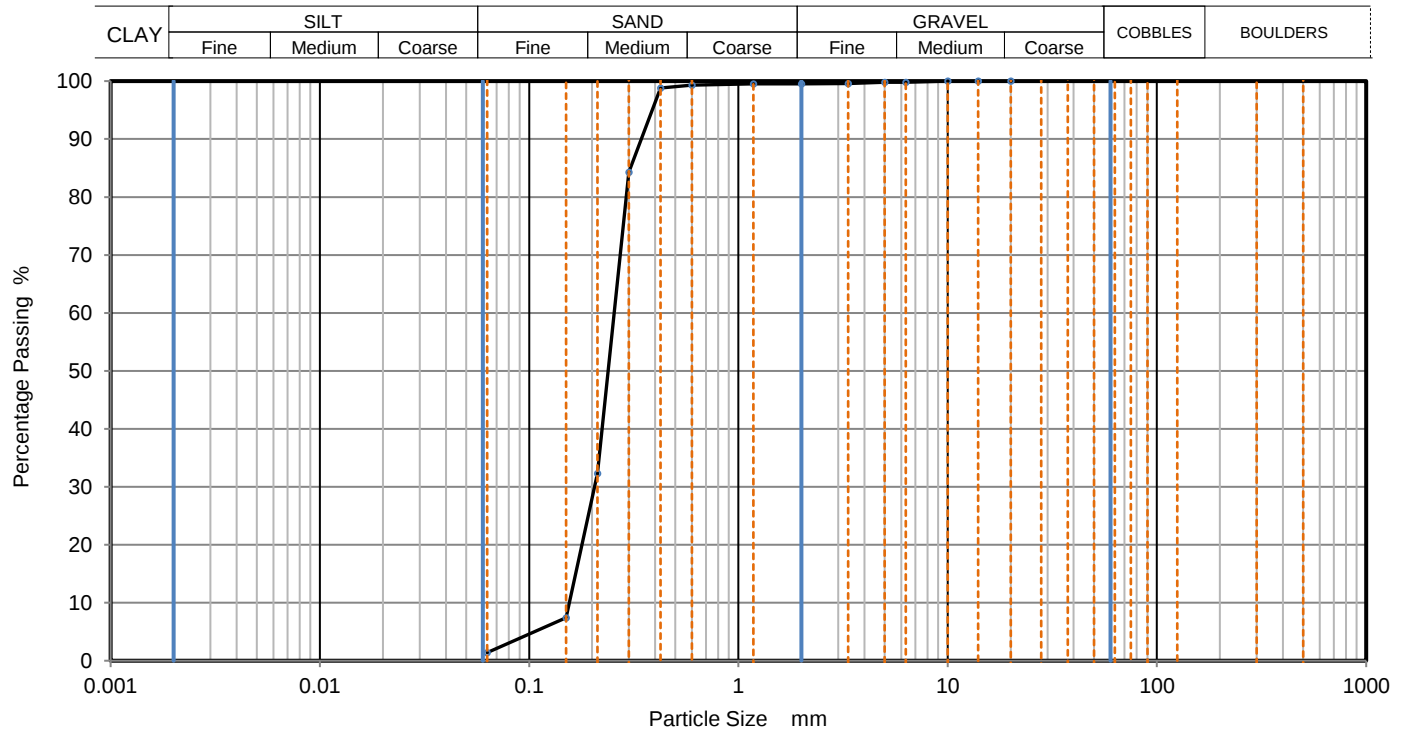
Job Number: 70478

Client: Neath Port Talbot Council

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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Testing Type	Description
BH2	4.00	B6	Wet Sieve	Grey/Brown SAND



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	84		
0.212	32		
0.15	7		
0.063	1		

Dry Mass of sample, g

1216

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	98
Fines <0.063mm	1

Grading Analysis		
D100	mm	10
D60	mm	0.255
D30	mm	0.205
D10	mm	0.155
Uniformity Coefficient		1.6
Curvature Coefficient		1.1

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Method of Preparation: BS 1377:Part 1:1990, clause 7.3 Initial preparation
BS 1377:Part 1:1990, clause 7.4.5 Preparation of particle size tests

Method of Test: BS1377:Part 2:1990, clause 9.2 Determination of particle size distribution by wet sieving method



Site: Aberavon Coastal Defence

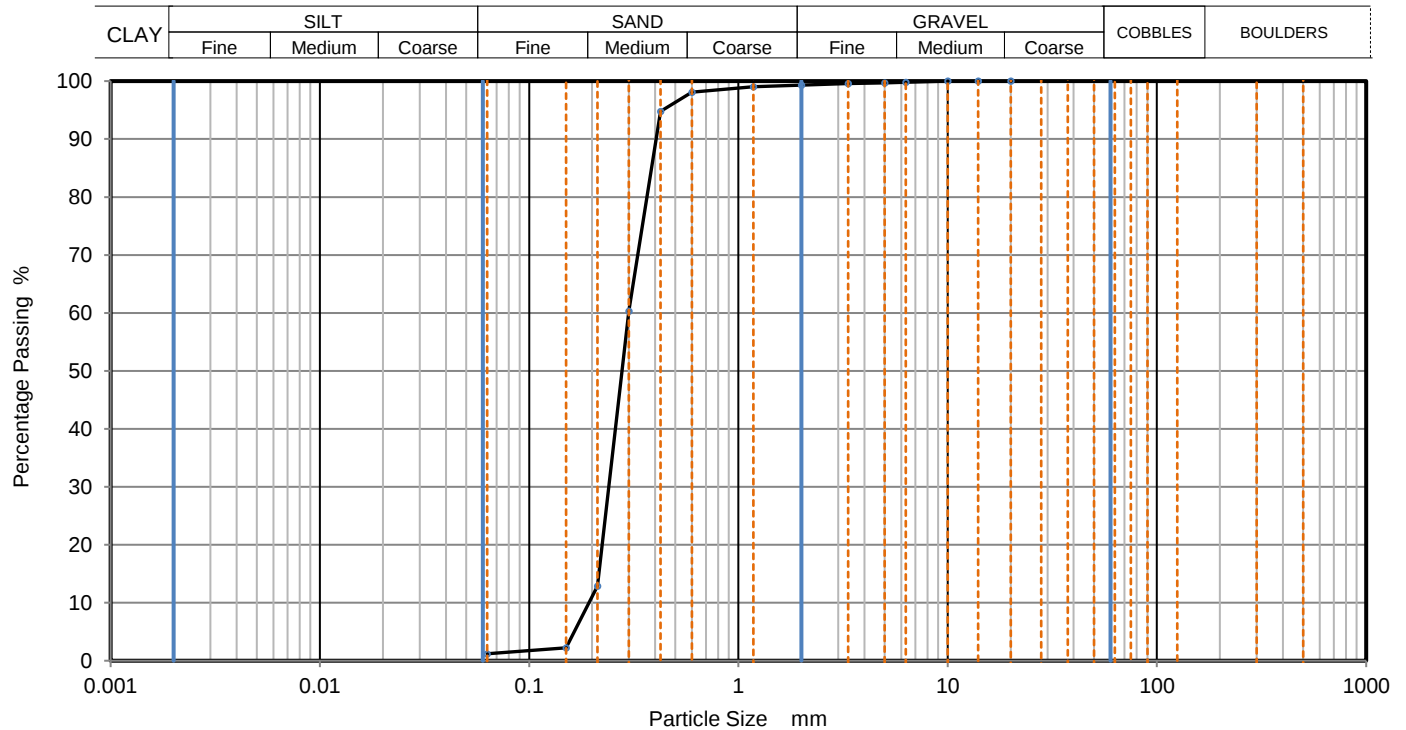
Job Number: 70478

Client: Neath Port Talbot Council

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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Testing Type	Description
BH2	13.50	B13	Wet Sieve	Grey/Brown SAND



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.6	98		
0.425	95		
0.3	60		
0.212	13		
0.15	2		
0.063	1		

Dry Mass of sample, g

1716

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	98
Fines <0.063mm	1

Grading Analysis		
D100	mm	10
D60	mm	0.299
D30	mm	0.24
D10	mm	0.193
Uniformity Coefficient		1.6
Curvature Coefficient		1

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Method of Preparation: BS 1377:Part 1:1990, clause 7.3 Initial preparation
BS 1377:Part 1:1990, clause 7.4.5 Preparation of particle size tests

Method of Test: BS1377:Part 2:1990, clause 9.2 Determination of particle size distribution by wet sieving method





Site: Aberavon Coastal Defence

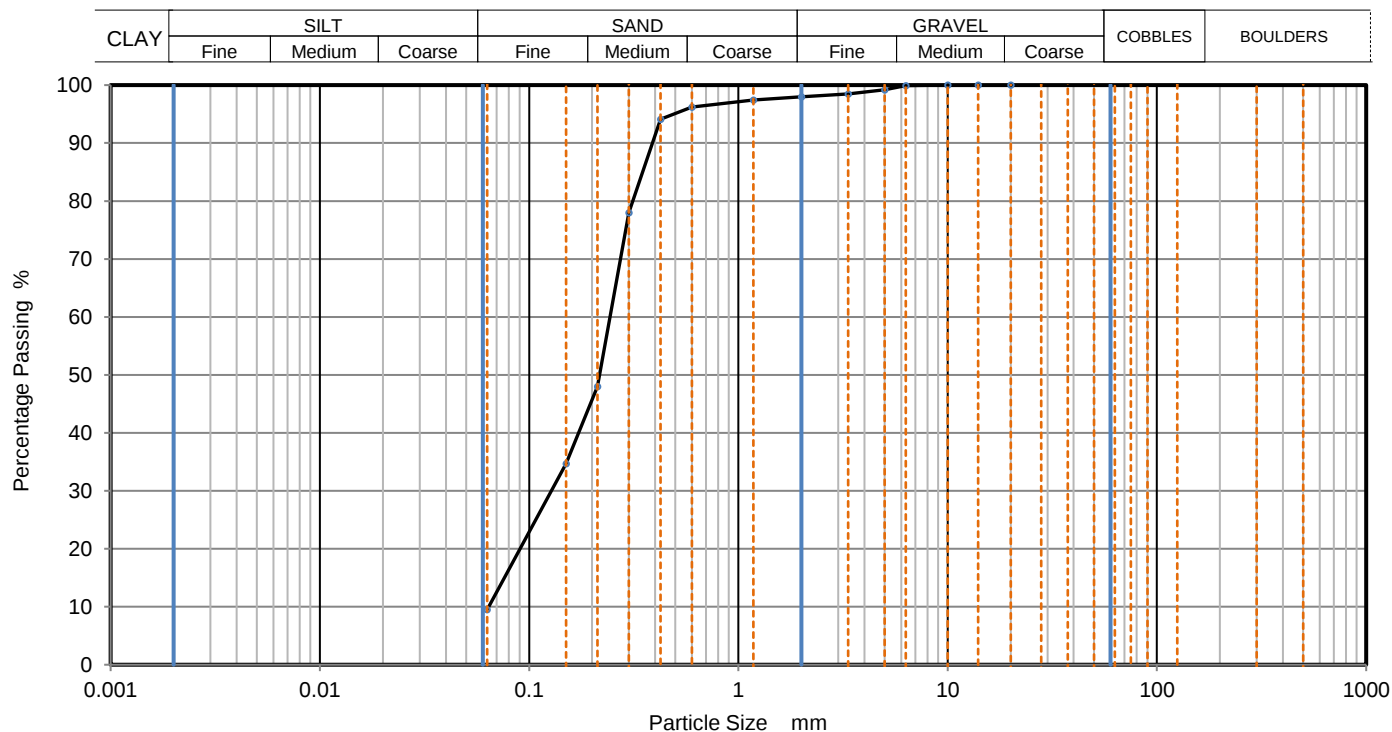
Job Number: 70478

Client: Neath Port Talbot Council

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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Testing Type	Description
BH2	15.00	B14	Wet Sieve	Grey slightly silty SAND



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	98		
1.18	97		
0.6	96		
0.425	94		
0.3	78		
0.212	48		
0.15	35		
0.063	10		

Dry Mass of sample, g

624

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	89
Fines <0.063mm	9

Grading Analysis		
D100	mm	10
D60	mm	0.244
D30	mm	0.128
D10	mm	0.0642
Uniformity Coefficient		3.8
Curvature Coefficient		1

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Method of Preparation: BS 1377:Part 1:1990, clause 7.3 Initial preparation
BS 1377:Part 1:1990, clause 7.4.5 Preparation of particle size tests

Method of Test: BS1377:Part 2:1990, clause 9.2 Determination of particle size distribution by wet sieving method





Site: Aberavon Coastal Defence

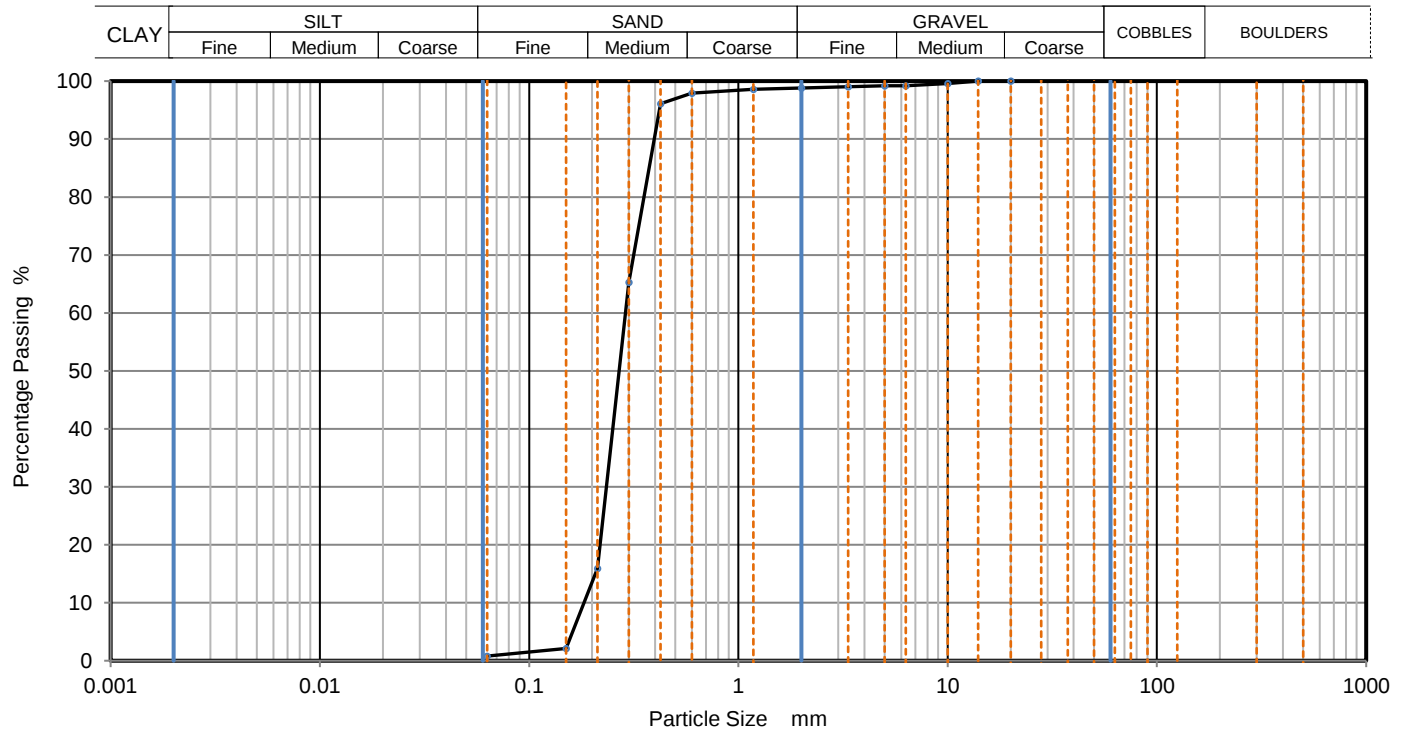
Job Number: 70478

Client: Neath Port Talbot Council

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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Testing Type	Description
TP1	0.00	B1	Wet Sieve	Grey/Brown SAND



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	99		
2	99		
1.18	99		
0.6	98		
0.425	96		
0.3	65		
0.212	16		
0.15	2		
0.063	1		

Dry Mass of sample, g

850

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	98
Fines <0.063mm	1

Grading Analysis		
D100	mm	14
D60	mm	0.289
D30	mm	0.234
D10	mm	0.183
Uniformity Coefficient		1.6
Curvature Coefficient		1

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Method of Preparation: BS 1377:Part 1:1990, clause 7.3 Initial preparation
BS 1377:Part 1:1990, clause 7.4.5 Preparation of particle size tests

Method of Test: BS1377:Part 2:1990, clause 9.2 Determination of particle size distribution by wet sieving method





Site: Aberavon Coastal Defence

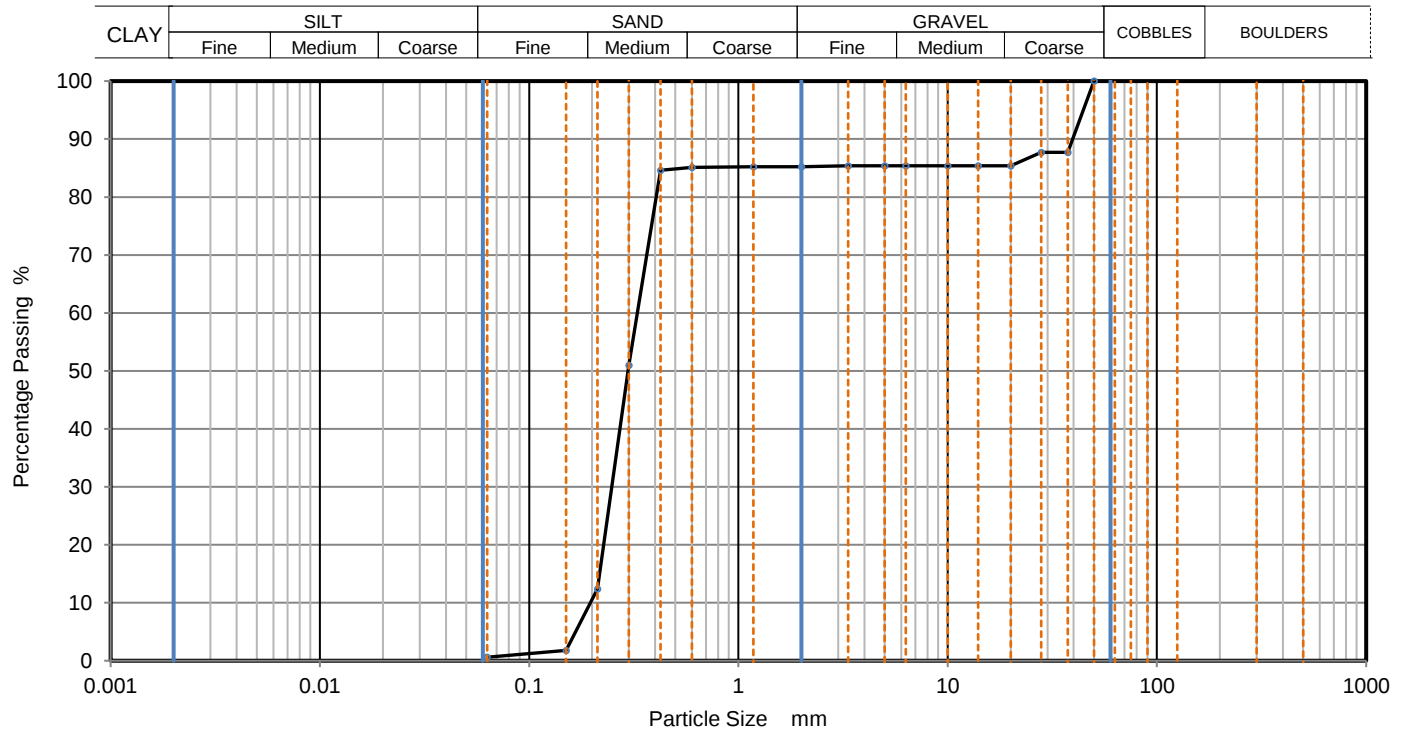
Job Number: 70478

Client: Neath Port Talbot Council

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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Testing Type	Description
TP2	2.00	B3	Wet Sieve	Grey/Brown gravelly SAND



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
50	100		
37.5	88		
28	88		
20	85		
14	85		
10	85		
6.3	85		
5	85		
3.35	85		
2	85		
1.18	85		
0.6	85		
0.425	85		
0.3	51		
0.212	12		
0.15	2		
0.063	1		

Dry Mass of sample, g

1559

Sample Proportions	% dry mass
Very coarse	0
Gravel	15
Sand	85
Fines <0.063mm	1

Grading Analysis		
D100	mm	50
D60	mm	0.329
D30	mm	0.248
D10	mm	0.196
Uniformity Coefficient		1.7
Curvature Coefficient		0.95

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Method of Preparation: BS 1377:Part 1:1990, clause 7.3 Initial preparation
BS 1377:Part 1:1990, clause 7.4.5 Preparation of particle size tests

Method of Test: BS1377:Part 2:1990, clause 9.2 Determination of particle size distribution by wet sieving method





Site: Aberavon Coastal Defence

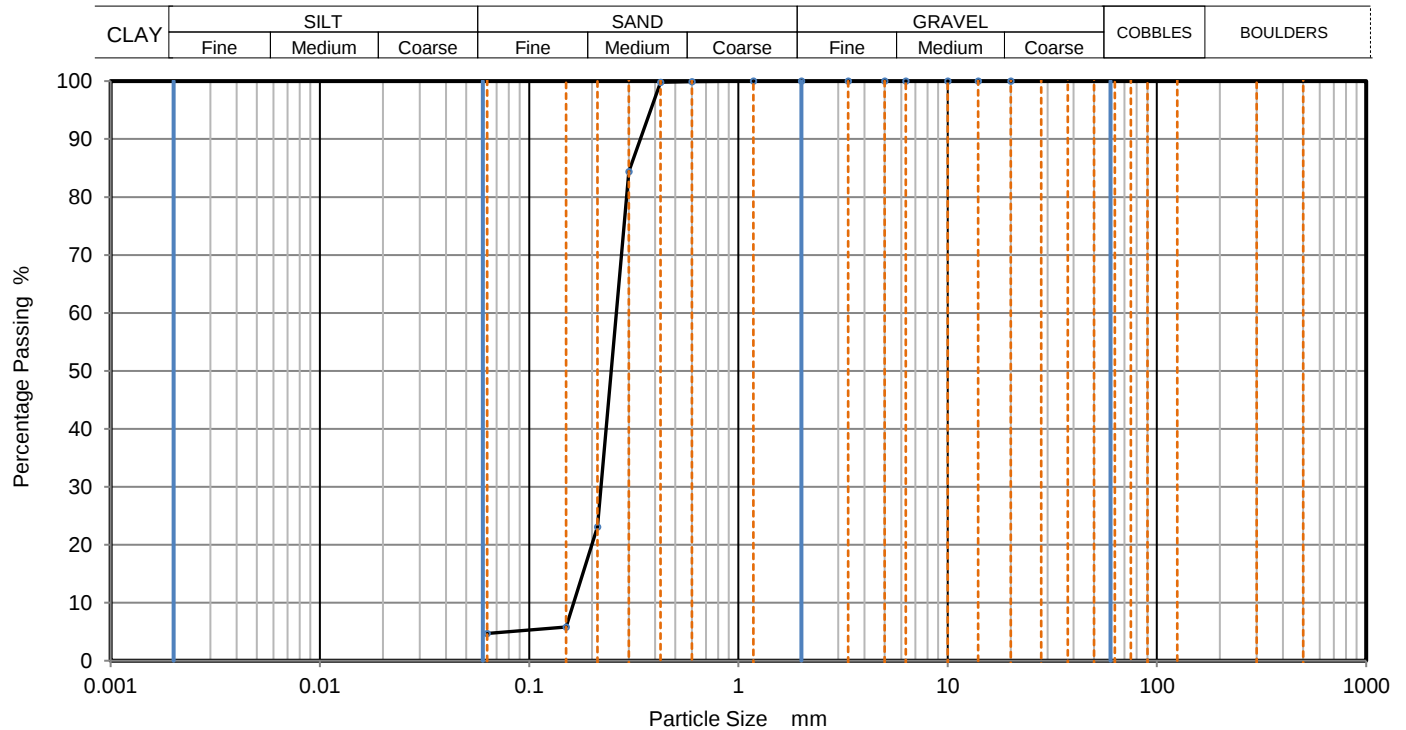
Job Number: 70478

Client: Neath Port Talbot Council

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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Testing Type	Description
TP3	1.00	B1	Wet Sieve	Grey/Brown slightly silty SAND



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	84		
0.212	23		
0.15	6		
0.063	5		

Dry Mass of sample, g

656

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	95
Fines <0.063mm	5

Grading Analysis		
D100	mm	10
D60	mm	0.261
D30	mm	0.22
D10	mm	0.163
Uniformity Coefficient		1.6
Curvature Coefficient		1.1

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Method of Preparation: BS 1377:Part 1:1990, clause 7.3 Initial preparation
BS 1377:Part 1:1990, clause 7.4.5 Preparation of particle size tests

Method of Test: BS1377:Part 2:1990, clause 9.2 Determination of particle size distribution by wet sieving method





Site: Aberavon Coastal Defence

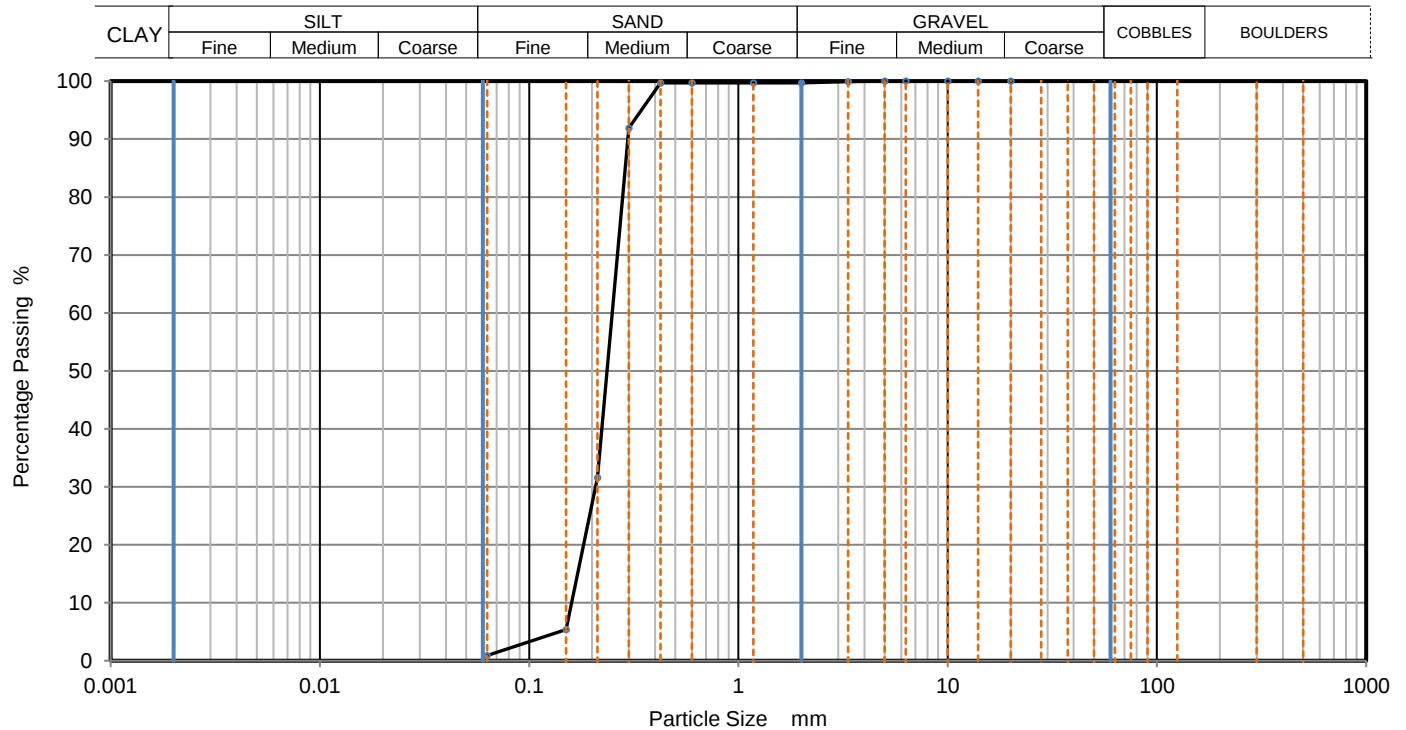
Job Number: 70478

Client: Neath Port Talbot Council

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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Testing Type	Description
TP4	1.20	B2	Wet Sieve	Brown SAND



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	92		
0.212	32		
0.15	5		
0.063	1		

Dry Mass of sample, g

901

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	99
Fines <0.063mm	1

Grading Analysis		
D100	mm	5
D60	mm	0.25
D30	mm	0.208
D10	mm	0.159
Uniformity Coefficient		1.6
Curvature Coefficient		1.1

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Method of Preparation: BS 1377:Part 1:1990, clause 7.3 Initial preparation
BS 1377:Part 1:1990, clause 7.4.5 Preparation of particle size tests

Method of Test: BS1377:Part 2:1990, clause 9.2 Determination of particle size distribution by wet sieving method





Site: Aberavon Coastal Defence

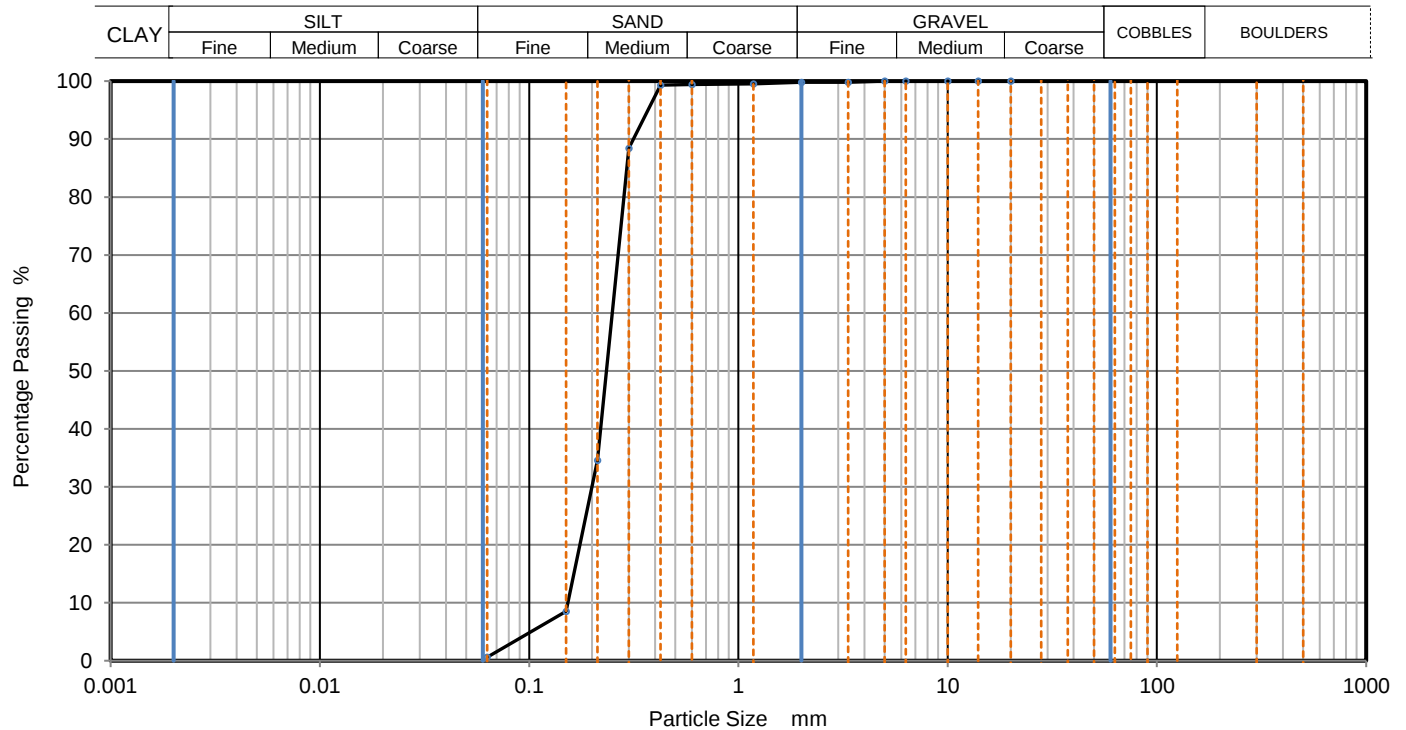
Job Number: 70478

Client: Neath Port Talbot Council

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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Testing Type	Description
TP5	0.25	B1	Wet Sieve	Grey/Brown SAND



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	88		
0.212	35		
0.15	9		
0.063	1		

Dry Mass of sample, g

1448

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	99
Fines <0.063mm	1

Grading Analysis		
D100	mm	5
D60	mm	0.25
D30	mm	0.199
D10	mm	0.153
Uniformity Coefficient		1.6
Curvature Coefficient		1

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Method of Preparation: BS 1377:Part 1:1990, clause 7.3 Initial preparation
BS 1377:Part 1:1990, clause 7.4.5 Preparation of particle size tests

Method of Test: BS1377:Part 2:1990, clause 9.2 Determination of particle size distribution by wet sieving method





Site: Aberavon Coastal Defence

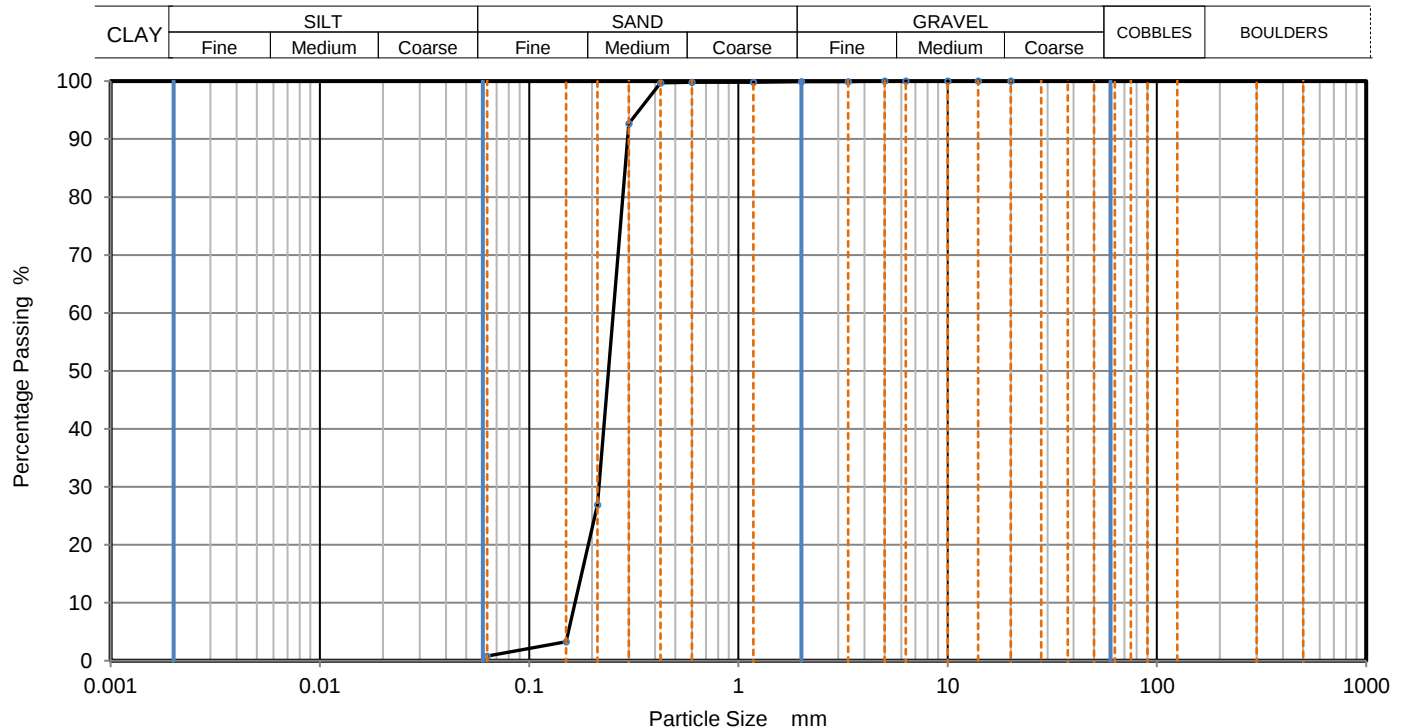
Job Number: 70478

Client: Neath Port Talbot Council

Page: 11

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Testing Type	Description
TP6	1.20	B2	Wet Sieve	Grey/Brown SAND



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	93		
0.212	27		
0.15	3		
0.063	1		

Dry Mass of sample, g

1167

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	99
Fines <0.063mm	1

Grading Analysis		
D100	mm	5
D60	mm	0.252
D30	mm	0.216
D10	mm	0.165
Uniformity Coefficient		1.5
Curvature Coefficient		1.1

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Method of Preparation: BS 1377:Part 1:1990, clause 7.3 Initial preparation
BS 1377:Part 1:1990, clause 7.4.5 Preparation of particle size tests

Method of Test: BS1377:Part 2:1990, clause 9.2 Determination of particle size distribution by wet sieving method





Test Report - 70478 / 1

Site: Aberavon Coastal Defence

Job Number: 70478

Originating Client: Neath Port Talbot Council

All opinions and interpretations contained within this report are outside of our Scope of Accreditation.

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Date: 17/07/2018

APPENDIX 3

GENERAL NOTES ON LABORATORY TESTS ON SOILS

A3.1 GENERAL

- A3.1.1 Where applicable all tests are carried out in accordance with the relevant British Standard. The laboratory test procedures are given in the laboratory test reports.
- A3.1.2 Any discussion in this report is based on the values and results obtained from the appropriate tests. Due allowance should be made, when considering any result in isolation, of the possible inaccuracy of any such individual result. Details of the accuracy of results are included in this section, where applicable.

A3.2 SOIL CLASSIFICATION

- A3.2.1 Classification of soils is usually undertaken by means of the Plasticity Classification Chart, sometimes called the A-Line Chart. This is graphical plot of PI against LL with the A-Line defined as $PI = 0.73(LL - 20)$.
- A3.2.2 This line is defined from experimental evidence and does not represent a well-defined boundary between soil types, but forms a useful reference datum. When the values of LL and PI for inorganic clays are plotted on the chart they generally lie just above the A-Line in a narrow band parallel to it, while silts and organic clays plot below this line.
- A3.2.3 Clays and silts are divided into five zones of plasticity:

Low Plasticity (L)	LL less than 35
Intermediate Plasticity (I)	LL between 35 and 50
High Plasticity (H)	LL between 50 and 70
Very High Plasticity (V)	LL between 70 and 90
Extremely High Plasticity (E)	LL greater than 90

- A3.2.4 In general, clays of high plasticity are likely to have a lower permeability, are more compressible and consolidate over a longer period of time under load than clays of low plasticity. Clays of high plasticity are more difficult to compact as fill material.

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 18/05538

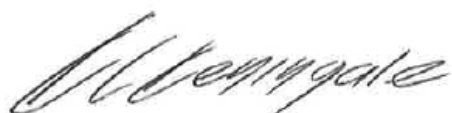
Issue Number: 1

Date: 19 July, 2018

Client: Ian Farmer Associates (Newcastle)
Unit 4, Faraday Close
Pattinson North Industrial Estate
Washington
Tyne and Wear
NE38 8QJ

Project Manager: Paul Cathcart/Washington
Project Name: Aberavon Coastal Defence
Project Ref: 70478
Order No: 60475
Date Samples Received: 11/07/18
Date Instructions Received: 11/07/18
Date Analysis Completed: 19/07/18

Prepared by:



Kate Keningale
Sales Executive

Approved by:



Georgia King
Admin & Client Services Supervisor

Envirolab Job Number: 18/05538

Client Project Name: Aberavon Coastal Defence

Client Project Ref: 70478

Lab Sample ID	18/05538/1	18/05538/2	18/05538/3	18/05538/4					Units	Method ref
Client Sample No	13	14	4	1						
Client Sample ID	BH2	BH2	TP1	TP4						
Depth to Top	13.50	15.00	0.75	0.50						
Depth To Bottom										
Date Sampled			13-Jun-18							
Sample Type	Soil - B	Soil - B	Soil - D	Soil - B						
Sample Matrix Code	1	4	1D	1						
% Stones >10mm _A	<0.1	<0.1	<0.1	<0.1					% w/w	A-T-044
pH BRE _D ^{M#}	-	-	8.16	8.34					pH	A-T-031s
Sulphate BRE (water sol 2:1) _D ^{M#}	-	-	75	60					mg/l	A-T-026s
Sulphate BRE (acid sol) _D ^{M#}	-	-	0.04	0.04					% w/w	A-T-028s
Sulphur BRE (total) _D	-	-	0.02	0.02					% w/w	A-T-024s
Loss on ignition (550degC) _D	-	9.5	-	-					% w/w	A-T-030s
Organic Matter _D ^{M#}	0.7	-	-	-					% w/w	A-T-032 OM

REPORT NOTES

General:

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All samples contained within this report, and any received with the same delivery, will be disposed of one month after the date of this report.

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

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

If results are in italic font they are associated with an AQC failure and there is insufficient sample to repeat the analysis. These are not accredited and are unreliable.

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

Soil chemical analysis:

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

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

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

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

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

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

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

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

Asbestos:

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

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

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

Predominant Matrix Codes:

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

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

Secondary Matrix Codes:

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

E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

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

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

Please contact us if you need any further information.

APPENDIX 4
CHEMICAL TESTS

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 18/04993
Issue Number: 1
Date: 20 July, 2018

Client: Ian Farmer Associates (Newcastle)
Unit 4, Faraday Close
Pattinson North Industrial Estate
Washington
Tyne and Wear
NE38 8QJ

Project Manager: Bill Sell/Paul Cathcart
Project Name: Aberavon Coastal Defence
Project Ref: 70478
Order No: 60478
Date Samples Received: 19/06/18
Date Instructions Received: 27/06/18
Date Analysis Completed: 19/07/18

Prepared by:



Melanie Marshall
Laboratory Coordinator

Approved by:



Danielle Brierley
Client Manager

Envirolab Job Number: 18/04993

Client Project Name: Aberavon Coastal Defence

Client Project Ref: 70478

Lab Sample ID	18/04993/15	18/04993/22							Units	Method ref
Client Sample No										
Client Sample ID	TP2	TP5								
Depth to Top	1.40	1.20								
Depth To Bottom										
Date Sampled	13-Jun-18	14-Jun-18								
Sample Type	Soil	Soil								
Sample Matrix Code	1	1								
% Stones >10mm _A	<0.1	<0.1							% w/w	A-T-044
pH _D ^{M#}	7.99	8.20							pH	A-T-031s
Sulphate (water sol 2:1) _D ^{M#}	0.07	0.17							g/l	A-T-026s
Cyanide (total) _A ^{M#}	<1	<1							mg/kg	A-T-042sTCN
Phenols - Total by HPLC _A	<0.2	<0.2							mg/kg	A-T-050s
Organic matter _D ^{M#}	0.2	0.8							% w/w	A-T-032 OM
Arsenic _D ^{M#}	6	57							mg/kg	A-T-024s
Boron (water soluble) _D ^{M#}	<1.0	1.9							mg/kg	A-T-027s
Cadmium _D ^{M#}	<0.5	1.4							mg/kg	A-T-024s
Copper _D ^{M#}	<1	<1							mg/kg	A-T-024s
Chromium _D ^{M#}	3	42							mg/kg	A-T-024s
Lead _D ^{M#}	4	38							mg/kg	A-T-024s
Mercury _D	<0.17	<0.17							mg/kg	A-T-024s
Nickel _D ^{M#}	4	28							mg/kg	A-T-024s
Zinc _D ^{M#}	19	112							mg/kg	A-T-024s
PCB 25 congeners _A	Appended	Appended								Subcon RPS MH
Clostridium perfringens _A	100	120							cfu/g	Subcon Mercian
Coliforms (total) _A	<10	<10							cfu/g	Subcon Mercian
TVC 22oC 3 day _A	12700	32500							cfu/g	Subcon Mercian
TVC 37oC 2 day _A	700	300							cfu/g	Subcon Mercian
Salmonella _A	Not Detected	Not Detected							cfu/25g	Subcon Mercian

Envirolab Job Number: 18/04993

Client Project Name: Aberavon Coastal Defence

Client Project Ref: 70478

Lab Sample ID	18/04993/15	18/04993/22							Units	Method ref
Client Sample No										
Client Sample ID	TP2	TP5								
Depth to Top	1.40	1.20								
Depth To Bottom										
Date Sampled	13-Jun-18	14-Jun-18								
Sample Type	Soil	Soil								
Sample Matrix Code	1	1								
Asbestos in Soil (inc. matrix)										
Asbestos in soil [#]	NAD	NAD								A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	N/A								

Envirolab Job Number: 18/04993

Client Project Name: Aberavon Coastal Defence

Client Project Ref: 70478

Lab Sample ID	18/04993/15	18/04993/22							Units	Method ref
Client Sample No										
Client Sample ID	TP2	TP5								
Depth to Top	1.40	1.20								
Depth To Bottom										
Date Sampled	13-Jun-18	14-Jun-18								
Sample Type	Soil	Soil								
Sample Matrix Code	1	1								
OCP (Organochlorine Pesticides)										
alpha-Hexachlorocyclohexane (HCH) _A	<0.2	<0.2							mg/kg	Subcon Chemtest
gamma-Hexachlorocyclohexane (HCH / Lindane) _A	<0.2	<0.2							mg/kg	Subcon Chemtest
beta-Hexachlorocyclohexane (HCH) _A	<0.2	<0.2							mg/kg	Subcon Chemtest
delta-Hexachlorocyclohexane (HCH) _A	<0.2	<0.2							mg/kg	Subcon Chemtest
Heptachlor _A	<0.2	<0.2							mg/kg	Subcon Chemtest
Aldrin _A	<0.2	<0.2							mg/kg	Subcon Chemtest
Heptachlor Epoxide _A	<0.2	<0.2							mg/kg	Subcon Chemtest
trans-Chlordane (Gamma) _A	<0.2	<0.2							mg/kg	Subcon Chemtest
cis-Chlordane (Alpha) _A	<0.2	<0.2							mg/kg	Subcon Chemtest
Endosulphan I (Alpha) _A	<0.2	<0.2							mg/kg	Subcon Chemtest
Endosulphan II (Beta) _A	<0.2	<0.2							mg/kg	Subcon Chemtest
Endosulphan Sulphate _A	<0.2	<0.2							mg/kg	Subcon Chemtest
p,p-DDD (TDE) (4,4) _A	<0.2	<0.2							mg/kg	Subcon Chemtest
p,p-DDE (4,4) _A	<0.2	<0.2							mg/kg	Subcon Chemtest
p,p-DDT (4,4) _A	<0.2	<0.2							mg/kg	Subcon Chemtest
Dieldrin _A	<0.2	<0.2							mg/kg	Subcon Chemtest
Endrin _A	<0.2	<0.2							mg/kg	Subcon Chemtest
Endrin Aldehyde _A	<0.2	<0.2							mg/kg	Subcon Chemtest
Endrin Ketone _A	<0.2	<0.2							mg/kg	Subcon Chemtest
Methoxychlor _A	<0.2	<0.2							mg/kg	Subcon Chemtest
Organotins										
Tetrabutyltin _A	<10	<10							µg/kg	Subcon Chemtest
Tributyltin _A	<10	<10							µg/kg	Subcon Chemtest
Triphenyltin _A	<10	<10							µg/kg	Subcon Chemtest
Dibutyltin _A	<10	<10							µg/kg	Subcon Chemtest
Monobutyltin _A	<10	<10							µg/kg	Subcon Chemtest

Envirolab Job Number: 18/04993

Client Project Name: Aberavon Coastal Defence

Client Project Ref: 70478

Lab Sample ID	18/04993/15	18/04993/22							Units	Method ref
Client Sample No										
Client Sample ID	TP2	TP5								
Depth to Top	1.40	1.20								
Depth To Bottom										
Date Sampled	13-Jun-18	14-Jun-18								
Sample Type	Soil	Soil								
Sample Matrix Code	1	1								
PAH-16MS										
Acenaphthene _A ^{M#}	<0.01	<0.01							mg/kg	A-T-019s
Acenaphthylene _A ^{M#}	<0.01	<0.01							mg/kg	A-T-019s
Anthracene _A ^{M#}	<0.02	<0.02							mg/kg	A-T-019s
Benzo(a)anthracene _A ^{M#}	<0.04	<0.04							mg/kg	A-T-019s
Benzo(a)pyrene _A ^{M#}	<0.04	<0.04							mg/kg	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	<0.05	<0.05							mg/kg	A-T-019s
Benzo(ghi)perylene _A ^{M#}	<0.05	<0.05							mg/kg	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	<0.07	<0.07							mg/kg	A-T-019s
Chrysene _A ^{M#}	<0.06	<0.06							mg/kg	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	<0.04	<0.04							mg/kg	A-T-019s
Fluoranthene _A ^{M#}	<0.08	<0.08							mg/kg	A-T-019s
Fluorene _A ^{M#}	<0.01	<0.01							mg/kg	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	<0.03	<0.03							mg/kg	A-T-019s
Naphthalene _A ^{M#}	<0.03	<0.03							mg/kg	A-T-019s
Phenanthrene _A ^{M#}	<0.03	<0.03							mg/kg	A-T-019s
Pyrene _A ^{M#}	<0.07	<0.07							mg/kg	A-T-019s
Total PAH-16MS _A ^{M#}	<0.08	<0.08							mg/kg	A-T-019s

Envirolab Job Number: 18/04993

Client Project Name: Aberavon Coastal Defence

Client Project Ref: 70478

Lab Sample ID	18/04993/15	18/04993/22							Units	Method ref
Client Sample No										
Client Sample ID	TP2	TP5								
Depth to Top	1.40	1.20								
Depth To Bottom										
Date Sampled	13-Jun-18	14-Jun-18								
Sample Type	Soil	Soil								
Sample Matrix Code	1	1								
TPH CWG										
Ali >C5-C6 _A [#]	<0.01	<0.01							mg/kg	A-T-022s
Ali >C6-C8 _A [#]	<0.01	<0.01							mg/kg	A-T-022s
Ali >C8-C10 _A [#]	<0.01	<0.01							mg/kg	A-T-022s
Ali >C10-C12 _A [#]	<0.1	<0.1							mg/kg	A-T-023s
Ali >C12-C16 _A [#]	<0.1	<0.1							mg/kg	A-T-023s
Ali >C16-C21 _A [#]	<0.1	<0.1							mg/kg	A-T-023s
Ali >C21-C35 _A [#]	<0.1	<0.1							mg/kg	A-T-023s
Total Aliphatics _A	<0.1	<0.1							mg/kg	A-T-023s
Aro >C5-C7 _A [#]	<0.01	<0.01							mg/kg	A-T-022s
Aro >C7-C8 _A [#]	<0.01	<0.01							mg/kg	A-T-022s
Aro >C8-C9 _A [#]	<0.01	<0.01							mg/kg	A-T-022s
Aro >C9-C10 _A [#]	<0.01	<0.01							mg/kg	A-T-022s
Aro >C10-C12 _A [#]	<0.1	<0.1							mg/kg	A-T-023s
Aro >C12-C16 _A [#]	<0.1	<0.1							mg/kg	A-T-023s
Aro >C16-C21 _A [#]	<0.1	<0.1							mg/kg	A-T-023s
Aro >C21-C35 _A [#]	8.7	<0.1							mg/kg	A-T-023s
Total Aromatics _A	8.7	<0.1							mg/kg	A-T-023s
TPH (Ali & Aro) _A	8.7	<0.1							mg/kg	A-T-023s
BTEX - Benzene _A [#]	<0.01	<0.01							mg/kg	A-T-022s
BTEX - Toluene _A [#]	<0.01	<0.01							mg/kg	A-T-022s
BTEX - Ethyl Benzene _A [#]	<0.01	<0.01							mg/kg	A-T-022s
BTEX - m & p Xylene _A [#]	<0.01	<0.01							mg/kg	A-T-022s
BTEX - o Xylene _A [#]	<0.01	<0.01							mg/kg	A-T-022s
MTBE _A [#]	<0.01	<0.01							mg/kg	A-T-022s

REPORT NOTES

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

Soil chemical analysis:

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

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

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

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

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

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

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

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

Asbestos:

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

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

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

Predominant Matrix Codes:

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

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

Secondary Matrix Codes:

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

E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

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

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

Please contact us if you need any further information.



2 Shaftesbury Industrial Centre, Icknield Way, Letchworth Garden City, Hertfordshire, SG6 1HE
T +44 (0)1462 480 400, F +44 (0)1462 480 403, E rpsmh@rpsgroup.com, W rpsgroup.com

Certificate of Analysis

Report No.: 18-73452-1

Issue No.: 1

Date of Issue 19/07/2018

Customer Details: Envirolab Limited, 7 & 8 Sandpits Business Park, Mottram Road, Hyde, Cheshire, SK14 3AR

Customer Contact: Iain Haslock

Customer Order No.: P0738387

Customer Reference: 18/04993

Quotation Reference: 180626/02

Description: 2 sediment samples

Date Received: 28/06/2018

Date Started: 09/07/2018

Date Completed: 19/07/2018

Test Methods: Details available on request (refer to SOP code against relevant result/s)

Notes: None

Approved By: **Sara Poggi, Quality Manager**

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service.

Observations and interpretations are outside of the scope of UKAS accreditation.

Results reported herein relate only to the items supplied to the laboratory for testing.



2 Shaftesbury Industrial Centre, Icknield Way, Letchworth Garden City, Hertfordshire, SG6 1HE
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Results Summary

Report No.: 18-73452-1

Customer Reference: 18/04993

Customer Order No: P0738387

Customer Sample No	18/04993/15	18/04993/22
Customer Sample ID	TP2 1.40m	TP5 1.20m
RPS Sample No	368806	368807
Sample Type	SEDIMENT	SEDIMENT
Sample Depth (m)	1.40	1.20
Sampling Date	13/06/2018	14/06/2018

Determinand	CAS No	Codes	SOP	Units	RL		
PCB congener 101	37680-73-2	N	in house	mg/kg	0.0002	< 0.0002	< 0.0002
PCB congener 105	32598-14-4	N	in house	mg/kg	0.0002	< 0.000	< 0.000
PCB congener 110	38380-03-9	N	in house	mg/kg	0.005	< 0.005	< 0.005
PCB congener 118	31508-00-6	N	in house	mg/kg	0.0002	< 0.0002	< 0.0002
PCB congener 128	38380-07-3	N	in house	mg/kg	0.0002	< 0.000	< 0.000
PCB congener 138	35065-28-2	N	in house	mg/kg	0.0002	< 0.0002	< 0.0002
PCB congener 141	52712-04-6	N	in house	mg/kg	0.0002	< 0.000	< 0.000
PCB congener 149	38380-04-0	N	in house	mg/kg	0.0002	< 0.000	< 0.000
PCB congener 151	52663-63-5	N	in house	mg/kg	0.0002	< 0.000	< 0.000
PCB congener 153	35065-27-1	N	in house	mg/kg	0.0002	< 0.0002	< 0.0002
PCB congener 156	38380-08-4	N	in house	mg/kg	0.0002	< 0.000	< 0.000
PCB congener 158	74472-42-7	N	in house	mg/kg	0.0002	< 0.000	< 0.000
PCB congener 170	35065-30-6	N	in house	mg/kg	0.0002	< 0.000	< 0.000
PCB congener 180	35065-29-3	N	in house	mg/kg	0.0002	< 0.0002	< 0.0002
PCB congener 183	52663-69-1	N	in house	mg/kg	0.0002	< 0.000	< 0.000
PCB congener 187	52663-68-0	N	in house	mg/kg	0.0002	< 0.000	< 0.000
PCB congener 18	37680-65-2	N	in house	mg/kg	0.0002	< 0.000	< 0.000
PCB congener 194	35694-08-7	N	in house	mg/kg	0.0002	< 0.000	< 0.000
PCB congener 28	7012-37-5	N	in house	mg/kg	0.0002	< 0.0002	< 0.0002
PCB congener 31	16606-02-3	N	in house	mg/kg	0.0002	< 0.000	< 0.000
PCB congener 44	41464-39-5	N	in house	mg/kg	0.0002	< 0.000	< 0.000
PCB congener 47	2437-79-8	N	in house	mg/kg	0.0002	< 0.000	< 0.000
PCB congener 49	41464-40-8	N	in house	mg/kg	0.0002	< 0.000	< 0.000
PCB congener 52	35693-99-3	N	in house	mg/kg	0.0002	< 0.0002	< 0.0002
PCB congener 66	32598-10-0	N	in house	mg/kg	0.0002	< 0.000	< 0.000
total PCB ICES 7		N	in house	mg/kg	0.02	< 0.020	< 0.020
total PCBs (25 congeners)		N	in house	mg/kg	0.125	< 0.13	< 0.13



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Deviating Samples

Report No.: 18-73452-1

Customer Reference: 18/04993

Customer Order No: P0738387

Our policy on Deviating Samples and reference list of Holding Times applied can be supplied on request. These have been implemented in accordance with UKAS Policy on Deviating Samples (TPS63).
RPS is not responsible for the integrity of samples as received, unless RPS personnel performed the sampling, and it is possible that samples submitted may be declared to be deviating.
Where applicable the analysis method remains UKAS accredited, however results reported for a deviating sample may be invalid. The reason for a sample being declared to be deviating is indicated below.
Where no sampling date was supplied, samples have been declared to be deviating. However, if a date of sampling can be supplied, the results may be reissued with the deviating sample status removed.
Where the sample container used was unsuitable, the appropriate Holding Time was exceeded, or the sample is flagged as deviating for some other reason, re-sampling/re-submission may be required.

RPS No.	Customer No.	Customer ID	Date Sampled	Containers Received	Deviating Sample	Reason for Sample Deviation
368806	18/04993/15		13/06/2018	60ml amber glass jar	No	
368807	18/04993/22		14/06/2018	60ml amber glass jar	No	



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Report Information

Key to Report Codes

U	UKAS Accredited
F	UKAS Flexible Scope
M	MCERTS Accredited
N	Not accredited
O	Marine Management Organisation (MMO) Validated
S	Subcontracted to approved laboratory
US	Subcontracted to approved laboratory UKAS Accredited for the test
MS	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SI	Subcontracted to internal RPS Group laboratory
USI	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
MSI	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
DW (in units)	Results are expressed on a dry weight basis

Where the dry solids value of a sample is low (<50%), reporting limits are automatically raised for all determinants analysed on an as-received basis.

Soil Typing

Type 1	Clay - Brown
Type 2	Clay - Grey/Black
Type 3	Sand
Type 4	Top Soil (Standard)
Type 5	Top Soil (High Peat)
Type 6	Made Ground (>50% Clay)
Type 7	Made Ground (>50% Sand)
Type 8	Made Ground (>50% Top Soil)
Type X	Other

Sample Retention and Disposal

Samples will generally* be retained for the following times prior to disposal:

Perishables, e.g. foodstuffs	1 month (if frozen) from the issue date of this report
Waters	2 weeks from the issue date of this report
Other Liquids	1 month from the issue date of this report
Solids (including Soils)	1 month from the issue date of this report

*Sample retention may be subject to agreement with the customer for particular projects

