

Analytical Report Number: 23-34973
Project / Site name: Margam Wharf Port Talbot

Lab Sample Number	2686383	2686384	2686385	2686386
Sample Reference	TP214	TP214	BH201B	BH201B
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.20-0.60	2.10-2.40	0.60-0.80	2.50-2.80
Date Sampled	18/05/2023	18/05/2023	18/05/2023	18/05/2023
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	

Petroleum Hydrocarbons

Diesel Range Organics (C10 - C28) EH_CU_1D_TOTAL	mg/kg	50	NONE	140	420	< 50	67
Mineral Oil (C10 - C40) EH_CU_1D_AL	mg/kg	10	NONE	97	78	< 10	63

TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	NONE	260	650	61	140
---	-------	----	------	-----	-----	----	-----

TPH2 (C6 - C10) HS_1D_TOTAL	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
--	-------	-----	------	-------	-------	-------	-------

TPH-CWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	NONE	2.7	< 2.0	< 2.0	2.2
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	NONE	8.8	11	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	NONE	67	54	< 8.0	43
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_1D_AL	mg/kg	10	NONE	78	65	< 10	51

TPH-CWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	NONE	< 1.0	2.5	< 1.0	1.5
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	NONE	5.9	22	< 2.0	7.3
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	NONE	41	170	< 10	13
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	NONE	96	330	36	43
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_1D_AR	mg/kg	10	NONE	140	520	44	65

TPH (C10 - C25) EH_CU_1D_TOTAL	mg/kg	10	NONE	97	320	15	48
---	-------	----	------	----	-----	----	----

VOCs# #

Chloromethane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Bromomethane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Chloride	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Trichlorofluoromethane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
1,1-Dichloroethene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Cis-1,2-dichloroethene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
1,1-Dichloroethane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
2,2-Dichloropropane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
1,1,1-Trichloroethane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
1,2-Dichloroethane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
1,1-Dichloropropene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Trans-1,2-dichloroethene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Tetrachloromethane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
1,2-Dichloropropane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Trichloroethene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Dibromomethane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Bromodichloromethane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0

Analytical Report Number: 23-34973
Project / Site name: Margam Wharf Port Talbot

Lab Sample Number				2686383	2686384	2686385	2686386
Sample Reference				TP214	TP214	BH201B	BH201B
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20-0.60	2.10-2.40	0.60-0.80	2.50-2.80
Date Sampled				18/05/2023	18/05/2023	18/05/2023	18/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Cis-1,3-dichloropropene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Trans-1,3-dichloropropene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
1,3-Dichloropropane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Dibromochloromethane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Tetrachloroethene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
1,2-Dibromoethane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
1,1,1,2-Tetrachloroethane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Styrene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Tribromomethane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
1,1,1,2,2-Tetrachloroethane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Isopropylbenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Bromobenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
n-Propylbenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
2-Chlorotoluene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
4-Chlorotoluene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
1,3,5-Trimethylbenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
tert-Butylbenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
1,2,4-Trimethylbenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
sec-Butylbenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
1,3-Dichlorobenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
p-Isopropyltoluene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
1,2-Dichlorobenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
1,4-Dichlorobenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Butylbenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
1,2-Dibromo-3-chloropropane	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
1,2,4-Trichlorobenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Hexachlorobutadiene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
1,2,3-Trichlorobenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0

Alcohols by headspace GC-MS

Ethanol	mg/kg	0.2	NONE	0.52	< 0.20	0.57	< 0.20
---------	-------	-----	------	------	--------	------	--------

SVOCs

Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Phenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2
2-Chlorophenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3
Hexachloroethane	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2
Isophorone	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2

Analytical Report Number: 23-34973
Project / Site name: Margam Wharf Port Talbot

Lab Sample Number				2686383	2686384	2686385	2686386
Sample Reference				TP214	TP214	BH201B	BH201B
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20-0.60	2.10-2.40	0.60-0.80	2.50-2.80
Date Sampled				18/05/2023	18/05/2023	18/05/2023	18/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
2-Nitrophenol	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene	mg/kg	0.05	NONE	0.47	1.2	0.14	0.3
2,4-Dichlorophenol	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorobutadiene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	0.3	1.3	0.2	0.3
2-Chloronaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Dimethylphthalate	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	0.05	NONE	0.09	< 0.05	0.11	0.12
Acenaphthene	mg/kg	0.05	NONE	0.66	5.5	0.19	0.24
2,4-Dinitrotoluene	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzofuran	mg/kg	0.2	NONE	0.5	3.4	< 0.2	0.3
4-Chlorophenyl phenyl ether	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3
Diethyl phthalate	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2
4-Nitroaniline	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene	mg/kg	0.05	NONE	0.63	5.7	0.27	0.24
Azobenzene	mg/kg	0.3	NONE	0.3	< 0.3	0.3	0.3
Bromophenyl phenyl ether	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2
Hexachlorobenzene	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3
Phenanthrene	mg/kg	0.05	NONE	7.2	63	1.6	2.3
Anthracene	mg/kg	0.05	NONE	1.7	17	0.31	0.57
Carbazole	mg/kg	0.3	NONE	0.9	7.7	< 0.3	0.3
Dibutyl phthalate	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2
Anthraquinone	mg/kg	0.3	NONE	0.5	3.8	< 0.3	< 0.3
Fluoranthene	mg/kg	0.05	NONE	9.9	70	2.5	3.5
Pyrene	mg/kg	0.05	NONE	8.7	61	1.9	3
Butyl benzyl phthalate	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3
Benzo(a)anthracene	mg/kg	0.05	NONE	5	30	1.2	2.3
Chrysene	mg/kg	0.05	NONE	4.7	29	1.1	2
Benzo(b)fluoranthene	mg/kg	0.05	NONE	5.9	30	1.6	3
Benzo(k)fluoranthene	mg/kg	0.05	NONE	1.7	11	0.46	0.82
Benzo(a)pyrene	mg/kg	0.05	NONE	4.1	25	0.93	1.8
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	2.2	13	0.62	1.2
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	0.58	3.3	0.21	0.35
Benzo(ghi)perylene	mg/kg	0.05	NONE	2.3	14	0.67	1.2

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number: 23-34973
Project / Site name: Margam Wharf Port Talbot

Lab Sample Number				2686387	2686388
Sample Reference				TP214	BH201B
Sample Number				None Supplied	None Supplied
Depth (m)				2.10-2.40	0.60-0.80
Date Sampled				18/05/2023	18/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status		

General Inorganics

pH (automated)	pH Units	N/A	ISO 17025	10.5	11.1
Total Cyanide	µg/l	10	ISO 17025	< 10	26
Sulphate as SO ₄	mg/l	0.1	ISO 17025	9.2	10.3
Sulphide	µg/l	5	NONE	< 5.0	< 5.0
Total Organic Carbon (TOC)	mg/l	0.1	NONE	6.26	19

Total Phenols

Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10
----------------------------	------	----	-----------	------	------

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2
-------------------	------	-----	------	-------	-------

Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	1	ISO 17025	2.9	2
Barium (dissolved)	µg/l	0.05	ISO 17025	9.9	21
Beryllium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2
Boron (dissolved)	µg/l	10	ISO 17025	59	30
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08
Chromium (dissolved)	µg/l	0.4	ISO 17025	2	2.3
Copper (dissolved)	µg/l	0.7	ISO 17025	13	33
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0	1.5
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	< 0.3	3.1
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0
Vanadium (dissolved)	µg/l	1.7	ISO 17025	28	55
Zinc (dissolved)	µg/l	0.4	ISO 17025	8.4	10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number : 23-34973

Project / Site name: Margam Wharf Port Talbot

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2686383	TP214	None Supplied	0.20-0.60	Brown sand with gravel and stones.
2686384	TP214	None Supplied	2.10-2.40	Brown sand with gravel and stones.
2686385	BH201B	None Supplied	0.60-0.80	Brown clay and sand with gravel and stones.
2686386	BH201B	None Supplied	2.50-2.80	Brown clay and sand with gravel and stones.

Analytical Report Number : 23-34973

Project / Site name: Margam Wharf Port Talbot

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
NRA Leachate Prep	10:1 extract with de-ionised water shaken for 24 hours then filtered.	In-house method based on National Rivers Authority	L020-PL	W	NONE
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Cations in soil by ICP-OES	Determination of cations in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
DRO C10-28 (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method with silica gel split/clean up.	L076-PL	D	NONE
Electrical conductivity of soil	Determination of electrical conductivity in soil by electrometric measurement.	In-house method	L031-PL	D	ISO 17025
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025

Analytical Report Number : 23-34973

Project / Site name: Margam Wharf Port Talbot

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Sulphide in leachate	Determination of sulphide in leachate by ion selective electrode.	In-house method	L010-PL	W	NONE
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	NONE
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	NONE
TPH2 (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	NONE
Total cyanide in leachate	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon in leachate	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS

Analytical Report Number : 23-34973

Project / Site name: Margam Wharf Port Talbot

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	NONE
Ammonium as NH ₄ in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
DRO (Soil)	Determination of extractable hydrocarbons in soil by GC-MS/FID.	In-house method with silica gel split/clean up.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	NONE
Alcohols in soil by HS-GC-MS	Determination of alcohols in soil by headspace GC-MS.	In house method	L054B-PL	W	NONE
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil"	L039-PL	W	ISO 17025
Fraction Organic Carbon FOC Automated	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method	L009	D	MCERTS

Analytical Report Number : 23-34973

Project / Site name: Margam Wharf Port Talbot

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

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

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

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

- Quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.



Mitchell Tucker
Tweedie Evans Consulting Ltd
The Old Chapel
35a Southover
Wells
Somerset
BA5 1UH

t: 01749 677 760
f: 01749 679 345
e: mitchell.tucker@tecon.co.uk

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

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 23-36241

Project / Site name:	Margam Wharf Port Talbot	Samples received on:	30/05/2023
Your job number:	2111006 006	Samples instructed on / Analysis started on:	30/05/2023
Your order number:		Analysis completed by:	12/06/2023
Report Issue Number:	1	Report issued on:	12/06/2023
Samples Analysed:	1 leachate sample - 2 soil samples		

Signed: _____

Dominika Warjan
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

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

Analytical Report Number: 23-36241
Project / Site name: Margam Wharf Port Talbot

Lab Sample Number				2693999	2694000
Sample Reference				BH201B	BH202A
Sample Number				None Supplied	None Supplied
Depth (m)				3.50-3.80	1.00-1.20
Date Sampled				25/05/2023	25/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	21	8.9
Total mass of sample received	kg	0.001	NONE	0.6	0.3

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MJN	MJN

General Inorganics

pH - Manual	pH Units	N/A	MCERTS	8.6	-
pH - Automated	pH Units	N/A	MCERTS	-	10.8
Electrical Conductivity	µS/cm	10	ISO 17025	340	340
Total Cyanide	mg/kg	1	MCERTS	8.4	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	8.4	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	1200	3600
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.26	0.24
Sulphide	mg/kg	1	NONE	52	170
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	110	68
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5	< 0.5
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.023	0.015
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	2.3	1.5

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0
----------------------------	-------	---	--------	-------	-------

Speciated PAHs

Naphthalene	mg/kg	0.05	NONE	0.83	0.62
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	0.1
Acenaphthene	mg/kg	0.05	NONE	1.5	0.34
Fluorene	mg/kg	0.05	NONE	1.3	0.49
Phenanthrene	mg/kg	0.05	NONE	2.5	3.1
Anthracene	mg/kg	0.05	NONE	0.96	1.8
Fluoranthene	mg/kg	0.05	NONE	4.7	4
Pyrene	mg/kg	0.05	NONE	3.9	3.5
Benzo(a)anthracene	mg/kg	0.05	NONE	2.6	2
Chrysene	mg/kg	0.05	NONE	2.7	1.9
Benzo(b)fluoranthene	mg/kg	0.05	NONE	3	2.2
Benzo(k)fluoranthene	mg/kg	0.05	NONE	1.2	0.88
Benzo(a)pyrene	mg/kg	0.05	NONE	2	1.6
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	1.2	0.9
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	0.49	0.29
Benzo(ghi)perylene	mg/kg	0.05	NONE	1.1	0.85

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	29.9	24.5
-----------------------------	-------	-----	------	------	------

Analytical Report Number: 23-36241
Project / Site name: Margam Wharf Port Talbot

Lab Sample Number				2693999	2694000
Sample Reference				BH201B	BH202A
Sample Number				None Supplied	None Supplied
Depth (m)				3.50-3.80	1.00-1.20
Date Sampled				25/05/2023	25/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	9.4	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	45	13
Barium (aqua regia extractable)	mg/kg	1	MCERTS	350	270
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.5	1.4
Boron (water soluble)	mg/kg	0.2	MCERTS	1.8	3.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	3.5	0.9
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	79	130
Cobalt (aqua regia extractable)	mg/kg	0.15	MCERTS	19	6.3
Copper (aqua regia extractable)	mg/kg	1	MCERTS	1200	50
Iron (aqua regia extractable)	mg/kg	40	MCERTS	110000	88000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	200	77
Manganese (aqua regia extractable)	mg/kg	1	MCERTS	2900	6000
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	5.7	2.1
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	58	18
Phosphorus (aqua regia extractable)	mg/kg	20	ISO 17025	1200	1100
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Tin (aqua regia extractable)	mg/kg	1	MCERTS	25	5.9
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	120	160
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	1000	300

Calcium (aqua regia extractable)	mg/kg	20	ISO 17025	36000	220000
Magnesium (aqua regia extractable)	mg/kg	20	ISO 17025	5100	19000
Potassium (aqua regia extractable)	mg/kg	20	ISO 17025	1700	1300
Sodium (aqua regia extractable)	mg/kg	20	ISO 17025	510	570

Monoaromatics & Oxygenates

Benzene	µg/kg	5	NONE	< 5.0	< 5.0
Toluene	µg/kg	5	NONE	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	NONE	< 5.0	< 5.0
p & m-xylene	µg/kg	5	NONE	< 5.0	< 5.0
o-xylene	µg/kg	5	NONE	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0

Analytical Report Number: 23-36241
Project / Site name: Margam Wharf Port Talbot

Lab Sample Number				2693999	2694000
Sample Reference				BH201B	BH202A
Sample Number				None Supplied	None Supplied
Depth (m)				3.50-3.80	1.00-1.20
Date Sampled				25/05/2023	25/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

Diesel Range Organics (C10 - C28) EH_CU_1D_TOTAL	mg/kg	50	NONE	1400	60
Mineral Oil (C10 - C40) EH_CU_1D_AL	mg/kg	10	NONE	1100	140

TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	NONE	1800	280
---	-------	----	------	------	-----

TPH2 (C6 - C10) HS_1D_TOTAL	mg/kg	0.1	NONE	< 0.1	< 0.1
--	-------	-----	------	-------	-------

TPH-CWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	NONE	30	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	NONE	480	3.4
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	NONE	190	9.8
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	NONE	290	82
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_1D_AL	mg/kg	10	NONE	990	96

TPH-CWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	NONE	15	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	NONE	240	6.6
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	NONE	150	12
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	NONE	270	68
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_1D_AR	mg/kg	10	NONE	680	86

TPH (C10 - C25) EH_CU_1D_TOTAL	mg/kg	10	NONE	1300	55
---	-------	----	------	------	----

Analytical Report Number: 23-36241
Project / Site name: Margam Wharf Port Talbot

Lab Sample Number				2693999	2694000
Sample Reference				BH201B	BH202A
Sample Number				None Supplied	None Supplied
Depth (m)				3.50-3.80	1.00-1.20
Date Sampled				25/05/2023	25/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

VOCS

Chloromethane	µg/kg	5	NONE	< 5.0	< 5.0
Chloroethane	µg/kg	5	NONE	< 5.0	< 5.0
Bromomethane	µg/kg	5	NONE	< 5.0	< 5.0
Vinyl Chloride	µg/kg	5	NONE	< 5.0	< 5.0
Trichlorofluoromethane	µg/kg	5	NONE	< 5.0	< 5.0
1,1-Dichloroethene	µg/kg	5	NONE	< 5.0	< 5.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	NONE	< 5.0	< 5.0
Cis-1,2-dichloroethene	µg/kg	5	NONE	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0
1,1-Dichloroethane	µg/kg	5	NONE	< 5.0	< 5.0
2,2-Dichloropropane	µg/kg	5	NONE	< 5.0###	< 5.0
Trichloromethane	µg/kg	5	NONE	< 5.0##	< 5.0
1,1,1-Trichloroethane	µg/kg	5	NONE	< 5.0	< 5.0
1,2-Dichloroethane	µg/kg	5	NONE	< 5.0##	< 5.0
1,1-Dichloropropene	µg/kg	5	NONE	< 5.0	< 5.0
Trans-1,2-dichloroethene	µg/kg	5	NONE	< 5.0	< 5.0
Benzene	µg/kg	5	NONE	< 5.0	< 5.0
Tetrachloromethane	µg/kg	5	NONE	< 5.0	< 5.0
1,2-Dichloropropane	µg/kg	5	NONE	< 5.0	< 5.0
Trichloroethene	µg/kg	5	NONE	< 5.0	< 5.0
Dibromomethane	µg/kg	5	NONE	< 5.0	< 5.0
Bromodichloromethane	µg/kg	5	NONE	< 5.0	< 5.0
Cis-1,3-dichloropropene	µg/kg	5	NONE	< 5.0	< 5.0
Trans-1,3-dichloropropene	µg/kg	5	NONE	< 5.0	< 5.0
Toluene	µg/kg	5	NONE	< 5.0	< 5.0
1,1,2-Trichloroethane	µg/kg	5	NONE	< 5.0	< 5.0
1,3-Dichloropropane	µg/kg	5	NONE	< 5.0	< 5.0
Dibromochloromethane	µg/kg	5	NONE	< 5.0	< 5.0
Tetrachloroethene	µg/kg	5	NONE	< 5.0	< 5.0
1,2-Dibromoethane	µg/kg	5	NONE	< 5.0	< 5.0
Chlorobenzene	µg/kg	5	NONE	< 5.0	< 5.0
1,1,1,2-Tetrachloroethane	µg/kg	5	NONE	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	NONE	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	NONE	< 5.0	< 5.0
Styrene	µg/kg	5	NONE	< 5.0###	< 5.0###
Tribromomethane	µg/kg	5	NONE	< 5.0	< 5.0
o-Xylene	µg/kg	5	NONE	< 5.0	< 5.0
1,1,2,2-Tetrachloroethane	µg/kg	5	NONE	< 5.0	< 5.0
Isopropylbenzene	µg/kg	5	NONE	< 5.0	< 5.0
Bromobenzene	µg/kg	5	NONE	< 5.0	< 5.0
n-Propylbenzene	µg/kg	5	NONE	< 5.0	< 5.0
2-Chlorotoluene	µg/kg	5	NONE	< 5.0##	< 5.0
4-Chlorotoluene	µg/kg	5	NONE	< 5.0	< 5.0
1,3,5-Trimethylbenzene	µg/kg	5	NONE	< 5.0	< 5.0
tert-Butylbenzene	µg/kg	5	NONE	< 5.0	< 5.0
1,2,4-Trimethylbenzene	µg/kg	5	NONE	< 5.0	< 5.0
sec-Butylbenzene	µg/kg	5	NONE	< 5.0	< 5.0
1,3-Dichlorobenzene	µg/kg	5	NONE	< 5.0	< 5.0
p-Isopropyltoluene	µg/kg	5	NONE	< 5.0	< 5.0
1,2-Dichlorobenzene	µg/kg	5	NONE	< 5.0	< 5.0
1,4-Dichlorobenzene	µg/kg	5	NONE	< 5.0	< 5.0

Analytical Report Number: 23-36241
Project / Site name: Margam Wharf Port Talbot

Lab Sample Number				2693999	2694000
Sample Reference				BH201B	BH202A
Sample Number				None Supplied	None Supplied
Depth (m)				3.50-3.80	1.00-1.20
Date Sampled				25/05/2023	25/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Butylbenzene	µg/kg	5	NONE	< 5.0	< 5.0
1,2-Dibromo-3-chloropropane	µg/kg	5	NONE	< 5.0	< 5.0
1,2,4-Trichlorobenzene	µg/kg	5	NONE	< 5.0	< 5.0
Hexachlorobutadiene	µg/kg	5	NONE	< 5.0	< 5.0
1,2,3-Trichlorobenzene	µg/kg	5	NONE	< 5.0	< 5.0

Alcohols by headspace GC-MS

Ethanol	mg/kg	0.2	NONE	< 0.20	< 0.20
---------	-------	-----	------	--------	--------

Analytical Report Number: 23-36241
Project / Site name: Margam Wharf Port Talbot

Lab Sample Number				2693999	2694000
Sample Reference				BH201B	BH202A
Sample Number				None Supplied	None Supplied
Depth (m)				3.50-3.80	1.00-1.20
Date Sampled				25/05/2023	25/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

SVOCs

Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1
Phenol	mg/kg	0.2	NONE	< 0.2	< 0.2
2-Chlorophenol	mg/kg	0.1	NONE	< 0.1	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	NONE	< 0.2	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	NONE	< 0.2	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	NONE	< 0.1	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	NONE	< 0.2	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	NONE	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	NONE	< 0.3	< 0.3
Hexachloroethane	mg/kg	0.05	NONE	< 0.05	< 0.05
Nitrobenzene	mg/kg	0.3	NONE	< 0.3	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2
Isophorone	mg/kg	0.2	NONE	< 0.2	< 0.2
2-Nitrophenol	mg/kg	0.3	NONE	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	NONE	< 0.3	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	NONE	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	NONE	< 0.3	< 0.3
Naphthalene	mg/kg	0.05	NONE	0.83	0.62
2,4-Dichlorophenol	mg/kg	0.3	NONE	< 0.3	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1
Hexachlorobutadiene	mg/kg	0.1	NONE	< 0.1	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	< 0.1	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	< 0.2	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	0.6
2-Chloronaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1
Dimethylphthalate	mg/kg	0.1	NONE	< 0.1	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	NONE	< 0.1	< 0.1
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	0.1
Acenaphthene	mg/kg	0.05	NONE	1.5	0.34
2,4-Dinitrotoluene	mg/kg	0.2	NONE	< 0.2	< 0.2
Dibenzofuran	mg/kg	0.2	NONE	0.6	0.5
4-Chlorophenyl phenyl ether	mg/kg	0.3	NONE	< 0.3	< 0.3
Diethyl phthalate	mg/kg	0.2	NONE	< 0.2	< 0.2
4-Nitroaniline	mg/kg	0.2	NONE	< 0.2	< 0.2
Fluorene	mg/kg	0.05	NONE	1.3	0.49
Azobenzene	mg/kg	0.3	NONE	< 0.3	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	NONE	< 0.2	< 0.2
Hexachlorobenzene	mg/kg	0.3	NONE	< 0.3	< 0.3
Phenanthrene	mg/kg	0.05	NONE	2.5	3.1
Anthracene	mg/kg	0.05	NONE	0.96	1.8
Carbazole	mg/kg	0.3	NONE	0.3	0.4
Dibutyl phthalate	mg/kg	0.2	NONE	< 0.2	< 0.2
Anthraquinone	mg/kg	0.3	NONE	< 0.3	< 0.3
Fluoranthene	mg/kg	0.05	NONE	4.7	4
Pyrene	mg/kg	0.05	NONE	3.9	3.5
Butyl benzyl phthalate	mg/kg	0.3	NONE	< 0.3	< 0.3
Benzo(a)anthracene	mg/kg	0.05	NONE	2.6	2
Chrysene	mg/kg	0.05	NONE	2.7	1.9
Benzo(b)fluoranthene	mg/kg	0.05	NONE	3	2.2
Benzo(k)fluoranthene	mg/kg	0.05	NONE	1.2	0.88

Analytical Report Number: 23-36241
Project / Site name: Margam Wharf Port Talbot

Lab Sample Number				2693999	2694000
Sample Reference				BH201B	BH202A
Sample Number				None Supplied	None Supplied
Depth (m)				3.50-3.80	1.00-1.20
Date Sampled				25/05/2023	25/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Benzo(a)pyrene	mg/kg	0.05	NONE	2	1.6
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	1.2	0.9
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	0.49	0.29
Benzo(ghi)perylene	mg/kg	0.05	NONE	1.1	0.85

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number: 23-36241
Project / Site name: Margam Wharf Port Talbot

Lab Sample Number				2695570
Sample Reference				BH201B
Sample Number				None Supplied
Depth (m)				3.50-3.80
Date Sampled				25/05/2023
Time Taken				None Supplied
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status	

General Inorganics

pH (automated)	pH Units	N/A	ISO 17025	9
Total Cyanide	µg/l	10	ISO 17025	44
Sulphate as SO ₄	mg/l	0.1	ISO 17025	10.2
Sulphide	µg/l	5	NONE	< 5.0
Total Organic Carbon (TOC)	mg/l	0.1	NONE	4.77

Total Phenols

Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10
----------------------------	------	----	-----------	------

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	2.9
Fluorene	µg/l	0.01	ISO 17025	0.9
Phenanthrene	µg/l	0.01	ISO 17025	0.37
Anthracene	µg/l	0.01	ISO 17025	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.2	NONE	4.2
-------------------	------	-----	------	-----

Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	1	ISO 17025	14
Barium (dissolved)	µg/l	0.05	ISO 17025	9.6
Beryllium (dissolved)	µg/l	0.2	ISO 17025	< 0.2
Boron (dissolved)	µg/l	10	ISO 17025	42
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08
Chromium (dissolved)	µg/l	0.4	ISO 17025	< 0.4
Copper (dissolved)	µg/l	0.7	ISO 17025	6.7
Lead (dissolved)	µg/l	1	ISO 17025	3.1
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	< 0.3
Selenium (dissolved)	µg/l	4	ISO 17025	23
Vanadium (dissolved)	µg/l	1.7	ISO 17025	70
Zinc (dissolved)	µg/l	0.4	ISO 17025	4.2

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 23-36241

Project / Site name: Margam Wharf Port Talbot

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2693999	BH201B	None Supplied	3.50-3.80	Brown sand with gravel.
2694000	BH202A	None Supplied	1.00-1.20	Brown loam and sand with gravel.

Analytical Report Number : 23-36241

Project / Site name: Margam Wharf Port Talbot

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
NRA Leachate Prep	10:1 extract with de-ionised water shaken for 24 hours then filtered.	In-house method based on National Rivers Authority	L020-PL	W	NONE
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Cations in soil by ICP-OES	Determination of cations in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
DRO C10-28 (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method with silica gel split/clean up.	L076-PL	D	NONE
Electrical conductivity of soil	Determination of electrical conductivity in soil by electrometric measurement.	In-house method	L031-PL	D	ISO 17025
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025

Analytical Report Number : 23-36241

Project / Site name: Margam Wharf Port Talbot

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
pH at 20oC in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In house method.	L005-PL	W	MCERTS
Sulphide in leachate	Determination of sulphide in leachate by ion selective electrode.	In-house method	L010-PL	W	NONE
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	NONE
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	NONE
TPH ₂ (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	NONE
Total cyanide in leachate	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon in leachate	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS

Analytical Report Number : 23-36241

Project / Site name: Margam Wharf Port Talbot

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	NONE
Ammonium as NH ₄ in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
DRO (Soil)	Determination of extractable hydrocarbons in soil by GC-MS/FID.	In-house method with silica gel split/clean up.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	NONE
Alcohols in soil by HS-GC-MS	Determination of alcohols in soil by headspace GC-MS.	In house method	L054B-PL	W	NONE
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Fraction Organic Carbon FOC Automated	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method	L009	D	MCERTS

Analytical Report Number : 23-36241

Project / Site name: Margam Wharf Port Talbot

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

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

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

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

###Quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

##Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.



Mitchell Tucker
Tweedie Evans Consulting Ltd
The Old Chapel
35a Southover
Wells
Somerset
BA5 1UH

t: 01749 677 760
f: 01749 679 345
e: mitchell.tucker@tecon.co.uk

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

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 23-41979-2

Replaces Analytical Report Number: 23-41979, issue no. 1
Additional analysis undertaken.
Asbestos Quantifications added for positive samples as per client's request

Project / Site name:	Margam Wharf, Port Talbot	Samples received on:	28/06/2023
Your job number:	2111006.006	Samples instructed on/ Analysis started on:	29/06/2023
Your order number:		Analysis completed by:	21/07/2023
Report Issue Number:	2	Report issued on:	25/07/2023
Samples Analysed:	5 leachate samples - 11 soil samples		

Signed: _____

Karolina Marek
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

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

Analytical Report Number: 23-41979
Project / Site name: Margam Wharf, Port Talbot

Lab Sample Number	2730142				2730143	2730144	2730145	2730146
Sample Reference	TP204				TP204	TP206	TP208	TP208A
Sample Number	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.50				1.30	0.60	0.30	0.70
Date Sampled	27/06/2023				27/06/2023	27/06/2023	27/06/2023	27/06/2023
Time Taken	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	8.2	9.6	7.3	8.2	8.1
Total mass of sample received	kg	0.001	NONE	0.4	0.8	0.8	0.4	0.3

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	Amosite	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	< 0.001	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	< 0.001	-
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	KSZ	KSZ	KSZ	KSZ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	10.7	10.4	10.8	11.7	11.1
Total Cyanide	mg/kg	1	MCERTS	1.7	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	3200	-	-	3300	3400
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.16	0.15	-	-
Sulphide	mg/kg	1	MCERTS	27	68	100	34	120
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.9	1.3	1.9	0.9	1.5

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
----------------------------	-------	---	--------	-------	-------	-------	-------	-------

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.18	0.23	0.53	0.15	0.75
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.12	< 0.05	0.16
Acenaphthene	mg/kg	0.05	MCERTS	0.32	0.33	0.3	0.1	3.8
Fluorene	mg/kg	0.05	MCERTS	0.16	0.32	0.25	0.06	3.3
Phenanthrene	mg/kg	0.05	MCERTS	1.8	2.9	2.3	1.6	22
Anthracene	mg/kg	0.05	MCERTS	0.3	1.3	0.53	0.3	9
Fluoranthene	mg/kg	0.05	MCERTS	3.6	3.7	3.9	3.4	23
Pyrene	mg/kg	0.05	MCERTS	4.5	3.5	3.4	3.1	19
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.6	2.2	1.9	2	8.2
Chrysene	mg/kg	0.05	MCERTS	3.5	2.1	2	2.2	6.8
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	4.7	2.4	2.4	3.1	6.9
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	2	1	1	1.3	3.4
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.8	1.4	1.3	1.8	4.9
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.6	0.73	0.74	1.1	2.2
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.35	0.22	0.21	0.25	0.64
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.8	0.83	0.85	1.3	2.5
Coronene	mg/kg	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-	23.1	21.7	-	-
Total WAC-17 PAHs	mg/kg	0.85	NONE	30.2	-	-	21.9	115

Analytical Report Number: 23-41979
Project / Site name: Margam Wharf, Port Talbot

Lab Sample Number	2730142	2730143	2730144	2730145	2730146
Sample Reference	TP204	TP204	TP206	TP208	TP208A
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.50	1.30	0.60	0.30	0.70
Date Sampled	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.6	20	21	4.7	14
Barium (aqua regia extractable)	mg/kg	1	MCERTS	140	230	300	150	320
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.71	1.8	1.5	0.58	1.5
Boron (water soluble)	mg/kg	0.2	MCERTS	7	4.2	6	2.1	4.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	2.1	0.6	1.9
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	500	130	240	390	260
Copper (aqua regia extractable)	mg/kg	1	MCERTS	47	99	140	46	57
Lead (aqua regia extractable)	mg/kg	1	MCERTS	65	110	250	55	170
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	45	45	14	27
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	430	270	210	410	210
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	160	320	850	200	720

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0^	-	-	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0^	-	-	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0^	-	-	< 5.0#	< 5.0#
p & m-xylene	µg/kg	5	MCERTS	< 5.0^	-	-	< 5.0#	< 5.0#
o-xylene	µg/kg	5	MCERTS	< 5.0^	-	-	< 5.0#	< 5.0#
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0^	-	-	< 5.0	< 5.0

Petroleum Hydrocarbons

TPH C10 - C40 _{EH_CU_1D_TOTAL}	mg/kg	10	MCERTS	210	-	-	130	340
---	-------	----	--------	-----	---	---	-----	-----

TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.001	NONE	< 0.001	-	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.001	NONE	< 0.001	-	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.001	NONE	< 0.001	-	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	-	-	3.1	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	11	-	-	13	12
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	85	-	-	66	100
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	96	-	-	82	120

TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.001	NONE	< 0.001	-	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.001	NONE	< 0.001	-	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.001	NONE	< 0.001	-	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0	1.2
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	-	-	< 2.0	9.6
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	12	-	-	< 10	37
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	61	-	-	23	100
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	74	-	-	29	150

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 23-41979
Project / Site name: Margam Wharf, Port Talbot

Lab Sample Number				2730147	2730148	2730149	2730150	2730151
Sample Reference				TP209	TP209	TP209	TP211	TP211
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.70	2.00	0.40	1.30
Date Sampled				27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	37	50	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	2	7.4	26	8.2	7.5
Total mass of sample received	kg	0.001	NONE	0.3	0.6	0.3	0.6	0.3

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	Amosite	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	< 0.001	0.003
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	< 0.001	0.003
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	KSZ	KSZ	KSZ	KSZ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	10.1	11.4	7.4	10.8	11.1
Total Cyanide	mg/kg	1	MCERTS	< 1.0	3	< 1.0	1	1.8
Total Sulphate as SO4	mg/kg	50	MCERTS	2600	-	570	-	4100
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.17	-	0.21	-
Sulphide	mg/kg	1	MCERTS	250	160	4.2	83	160
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	2.1	1.7	2.5	1.5	1.1

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
----------------------------	-------	---	--------	-------	-------	-------	-------	-------

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.39	0.56	< 0.05	0.54	0.32
Acenaphthylene	mg/kg	0.05	MCERTS	0.16	0.06	< 0.05	0.1	0.12
Acenaphthene	mg/kg	0.05	MCERTS	0.17	0.19	0.07	1.5	0.22
Fluorene	mg/kg	0.05	MCERTS	0.18	0.37	0.07	3.1	0.21
Phenanthrene	mg/kg	0.05	MCERTS	1.3	1.5	0.39	16	3
Anthracene	mg/kg	0.05	MCERTS	0.38	0.76	< 0.05	5.8	0.97
Fluoranthene	mg/kg	0.05	MCERTS	2.2	1.5	0.44	12	4.1
Pyrene	mg/kg	0.05	MCERTS	2	1.4	0.64	8.6	3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.6	0.74	0.14	5.6	2.3
Chrysene	mg/kg	0.05	MCERTS	1.6	0.91	0.17	5.1	2.6
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	2.8	1	0.07	5.3	2.4
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.99	0.42	0.1	2.2	1.1
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.1	0.49	0.07	3.8	1.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.2	0.32	0.14	1.9	0.84
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.29	< 0.05	< 0.05	0.59	0.27
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.4	0.37	0.1	2.2	0.98
Coronene	mg/kg	0.05	NONE	< 0.05	-	< 0.05	-	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-	10.6	-	75.1	-
Total WAC-17 PAHs	mg/kg	0.85	NONE	18.8	-	2.4	-	23.9

Analytical Report Number: 23-41979
Project / Site name: Margam Wharf, Port Talbot

Lab Sample Number				2730147	2730148	2730149	2730150	2730151
Sample Reference				TP209	TP209	TP209	TP211	TP211
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.70	2.00	0.40	1.30
Date Sampled				27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.2	9.5	79	15	13
Barium (aqua regia extractable)	mg/kg	1	MCERTS	230	290	42	320	340
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.6	1.7	1.3	1.6	1.6
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7	3.8	3.2	8.8	4.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7	1.8	< 0.2	1.7	1.1
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	56	530	23	220	220
Copper (aqua regia extractable)	mg/kg	1	MCERTS	38	48	160	65	64
Lead (aqua regia extractable)	mg/kg	1	MCERTS	45	110	36	130	100
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	13	51	30	29	28
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	89	320	34	240	240
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	130	820	180	660	580

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0^	-	< 5.0	-	< 5.0^
Toluene	µg/kg	5	MCERTS	< 5.0^	-	< 5.0	-	< 5.0^
Ethylbenzene	µg/kg	5	MCERTS	< 5.0^	-	< 5.0#	-	< 5.0^
p & m-xylene	µg/kg	5	MCERTS	< 5.0^	-	< 5.0#	-	< 5.0^
o-xylene	µg/kg	5	MCERTS	< 5.0^	-	< 5.0#	-	< 5.0^
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0^	-	< 5.0	-	< 5.0^

Petroleum Hydrocarbons

TPH C10 - C40 _{EH_CU_1D_TOTAL}	mg/kg	10	MCERTS	270	-	< 10	-	160
---	-------	----	--------	-----	---	------	---	-----

TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.001	NONE	< 0.001	-	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.001	NONE	< 0.001	-	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.001	NONE	< 0.001	-	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	-	< 1.0	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	-	< 2.0	-	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	-	< 8.0	-	10
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	56	-	< 8.0	-	77
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	56	-	< 10	-	88

TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.001	NONE	< 0.001	-	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.001	NONE	< 0.001	-	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.001	NONE	< 0.001	-	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	-	< 1.0	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	3.5	-	< 2.0	-	2.8
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	11	-	< 10	-	< 10
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	100	-	< 10	-	29
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	110	-	< 10	-	40

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number: 23-41979
Project / Site name: Margam Wharf, Port Talbot

Lab Sample Number				2730152
Sample Reference				TP213A
Sample Number				None Supplied
Depth (m)				0.20
Date Sampled				27/06/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	45
Moisture Content	%	0.01	NONE	5.5
Total mass of sample received	kg	0.001	NONE	0.6

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-
Asbestos Quantification Total	%	0.001	ISO 17025	-
Asbestos Analyst ID	N/A	N/A	N/A	KSZ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	11.1
Total Cyanide	mg/kg	1	MCERTS	1.2
Total Sulphate as SO4	mg/kg	50	MCERTS	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.3
Sulphide	mg/kg	1	MCERTS	100
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.5

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0
----------------------------	-------	---	--------	-------

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.08
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.54
Anthracene	mg/kg	0.05	MCERTS	0.11
Fluoranthene	mg/kg	0.05	MCERTS	0.87
Pyrene	mg/kg	0.05	MCERTS	0.89
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.5
Chrysene	mg/kg	0.05	MCERTS	0.66
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.69
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.25
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.41
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.33
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.37
Coronene	mg/kg	0.05	NONE	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	5.7
Total WAC-17 PAHs	mg/kg	0.85	NONE	-



Analytical Report Number: 23-41979
Project / Site name: Margam Wharf, Port Talbot

Lab Sample Number				2730152
Sample Reference				TP213A
Sample Number				None Supplied
Depth (m)				0.20
Date Sampled				27/06/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Heavy Metals / Metalloids				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8
Barium (aqua regia extractable)	mg/kg	1	MCERTS	210
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.3
Boron (water soluble)	mg/kg	0.2	MCERTS	3.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	210
Copper (aqua regia extractable)	mg/kg	1	MCERTS	40
Lead (aqua regia extractable)	mg/kg	1	MCERTS	50
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	220
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	-
Toluene	µg/kg	5	MCERTS	-
Ethylbenzene	µg/kg	5	MCERTS	-
p & m-xylene	µg/kg	5	MCERTS	-
o-xylene	µg/kg	5	MCERTS	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-

Petroleum Hydrocarbons

TPH C10 - C40 _{EH_CU_1D_TOTAL}	mg/kg	10	MCERTS	-
---	-------	----	--------	---

TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.001	NONE	-
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.001	NONE	-
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.001	NONE	-
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	-
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	-
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	-
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	-
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	-

TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.001	NONE	-
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.001	NONE	-
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.001	NONE	-
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	-
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	-
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	-
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	-
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number: 23-41979
Project / Site name: Margam Wharf, Port Talbot
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006-PL based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
2730145	TP208	0.30	146	Loose Fibrous Debris	Amosite	< 0.001	< 0.001
2730150	TP211	0.40	144	Loose Fibres	Amosite	< 0.001	< 0.001
2730151	TP211	1.30	122	Loose Fibres	Chrysotile	0.003	0.003

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



Analytical Report Number: 23-41979
Project / Site name: Margam Wharf, Port Talbot

Lab Sample Number				2730153	2730154	2730155	2730156	2730157
Sample Reference				TP204	TP206	TP209	TP211	TP213A
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.30	0.60	0.70	0.40	0.20
Date Sampled				27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH (automated)	pH Units	N/A	ISO 17025	10.5	11.1	11.3	11	11.2
Total Cyanide	µg/l	10	ISO 17025	26	< 10	< 10	< 10	< 10
Sulphate as SO ₄	mg/l	0.1	ISO 17025	11.6	12.8	23.1	22.6	43
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Organic Carbon (TOC)	mg/l	0.1	NONE	6.51	6.04	4.52	3.61	4.43

Total Phenols

Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
----------------------------	------	----	-----------	------	------	------	------	------

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
-------------------	------	-----	------	-------	-------	-------	-------	-------

Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	1	ISO 17025	8.6	3.5	2.8	2.6	2.4
Barium (dissolved)	µg/l	0.05	ISO 17025	12	31	42	35	28
Beryllium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Boron (dissolved)	µg/l	10	ISO 17025	67	54	76	160	72
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (dissolved)	µg/l	0.4	ISO 17025	1.9	10	7	4.3	4
Copper (dissolved)	µg/l	0.7	ISO 17025	10	21	8.7	9	11
Lead (dissolved)	µg/l	1	ISO 17025	1.8	7.3	< 1.0	1.4	1.2
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	< 0.3	1.2	8.2	< 0.3	< 0.3
Selenium (dissolved)	µg/l	4	ISO 17025	7	7.2	< 4.0	5.9	< 4.0
Vanadium (dissolved)	µg/l	1.7	ISO 17025	66	86	50	70	60
Zinc (dissolved)	µg/l	0.4	ISO 17025	4.9	18	4.5	10	4.2

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number : 23-41979
Project / Site name: Margam Wharf, Port Talbot

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2730142	TP204	None Supplied	0.5	Brown sand with gravel.
2730143	TP204	None Supplied	1.3	Brown sand with gravel.
2730144	TP206	None Supplied	0.6	Brown sand with gravel.
2730145	TP208	None Supplied	0.3	Brown sand with gravel.
2730146	TP208A	None Supplied	0.7	Brown sand with gravel.
2730147	TP209	None Supplied	0.2	Brown sand with gravel and stones.
2730148	TP209	None Supplied	0.7	Brown sand with gravel and stones.
2730149	TP209	None Supplied	2	Brown clay with gravel.
2730150	TP211	None Supplied	0.4	Brown sand with gravel.
2730151	TP211	None Supplied	1.3	Brown sand with gravel.
2730152	TP213A	None Supplied	0.2	Brown sand with gravel and stones.

Analytical Report Number : 23-41979
Project / Site name: Margam Wharf, Port Talbot

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
NRA Leachate Prep	10:1 extract with de-ionised water shaken for 24 hours then filtered.	In-house method based on National Rivers Authority	L020-PL	W	NONE
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270.	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Sulphide in leachate	Determination of sulphide in leachate by ion selective electrode.	In-house method	L010-PL	W	NONE
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS

Analytical Report Number : 23-41979
Project / Site name: Margam Wharf, Port Talbot

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in leachate	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon in leachate	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	NONE

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography



Analytical Report Number : 23-41979
Project / Site name: Margam Wharf, Port Talbot

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))				
CU	Clean-up - e.g. by Florisil®, silica gel				
1D	GC - Single coil/column gas chromatography				
2D	GC-GC - Double coil/column gas chromatography				
Total	Aliphatics & Aromatics				
AL	Aliphatics				
AR	Aromatics				
#1	EH_2D_Total but with humics mathematically subtracted				
#2	EH_2D_Total but with fatty acids mathematically subtracted				
-	Operator - understore to separate acronyms (exception for +)				
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total				

- Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised
^ - Data reported unaccredited due to quality control parameter failure associated with this result; The result should be considered as being deviating and may be compromised.



Mitchell Tucker
Tweedie Evans Consulting Ltd
The Old Chapel
35a Southover
Wells
Somerset
BA5 1UH

t: 01749 677 760
f: 01749 679 345
e: mitchell.tucker@tecon.co.uk

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

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 23-42831

Project / Site name:	Margam Wharf, Port Talbot	Samples received on:	04/07/2023
Your job number:	2111006.006	Samples instructed on/ Analysis started on:	04/07/2023
Your order number:		Analysis completed by:	17/07/2023
Report Issue Number:	1	Report issued on:	16/08/2023
Samples Analysed:	5 soil samples		

Signed:

Joanna Szwagrak
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

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

Analytical Report Number: 23-42831
Project / Site name: Margam Wharf, Port Talbot

Lab Sample Number	2734948			2734949	2734950	2734951
Sample Reference	TP215			TP216	TP217	TP218
Sample Number	None Supplied			None Supplied	None Supplied	None Supplied
Depth (m)	0.60			0.30	0.80	0.60
Date Sampled	30/06/2023			30/06/2023	30/06/2023	30/06/2023
Time Taken	None Supplied			None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	6.7	5	7.6
Total mass of sample received	kg	0.001	NONE	0.3	0.4	0.3

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	ASE	N/A	ASE	N/A

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	11.7	-	11.8	-
Total Cyanide	mg/kg	1	MCERTS	< 1.0	-	2.4	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	3800	-	3600	-
Sulphide	mg/kg	1	MCERTS	15	-	35	-
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	2	-	1.5	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	-
----------------------------	-------	---	--------	-------	---	-------	---

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.22	-	0.82	-
Acenaphthylene	mg/kg	0.05	MCERTS	0.06	-	0.22	-
Acenaphthene	mg/kg	0.05	MCERTS	0.27	-	0.33	-
Fluorene	mg/kg	0.05	MCERTS	0.24	-	0.25	-
Phenanthrene	mg/kg	0.05	MCERTS	1.8	-	5.1	-
Anthracene	mg/kg	0.05	MCERTS	0.32	-	0.5	-
Fluoranthene	mg/kg	0.05	MCERTS	2.3	-	7.3	-
Pyrene	mg/kg	0.05	MCERTS	2.4	-	5.4	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.3	-	3.5	-
Chrysene	mg/kg	0.05	MCERTS	1.8	-	4.9	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	2.2	-	5.3	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.84	-	2.1	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.3	-	2.5	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.1	-	2.4	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.32	-	0.75	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.4	-	2.7	-
Coronene	mg/kg	0.05	NONE	< 0.05	-	< 0.05	-

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	17.8	-	43.9	-
-------------------	-------	------	------	------	---	------	---

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	-	9.6	-
Barium (aqua regia extractable)	mg/kg	1	MCERTS	160	-	170	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.57	-	0.76	-
Boron (water soluble)	mg/kg	0.2	MCERTS	3.9	-	2.3	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.8	-	1	-
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	-	< 1.2	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	290	-	320	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	45	-	75	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	140	-	170	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	18	-	22	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	270	-	360	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	250	-	220	-

Analytical Report Number: 23-42831
Project / Site name: Margam Wharf, Port Talbot

Lab Sample Number				2734948	2734949	2734950	2734951
Sample Reference				TP215	TP216	TP217	TP218
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	0.30	0.80	0.60
Date Sampled				30/06/2023	30/06/2023	30/06/2023	30/06/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				

Analytical Report Number: 23-42831
Project / Site name: Margam Wharf, Port Talbot

Lab Sample Number	2734948	2734949	2734950	2734951
Sample Reference	TP215	TP216	TP217	TP218
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.60	0.30	0.80	0.60
Date Sampled	30/06/2023	30/06/2023	30/06/2023	30/06/2023
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	-	< 5.0	-
Toluene	µg/kg	5	MCERTS	< 5.0	-	< 5.0	-
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	-	< 5.0	-
p & m-xylene	µg/kg	5	MCERTS	< 5.0	-	< 5.0	-
o-xylene	µg/kg	5	MCERTS	< 5.0	-	< 5.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	-	< 5.0	-

Petroleum Hydrocarbons

TPH C10 - C40 _{EH, CU, 1D, TOTAL}	mg/kg	10	MCERTS	380	-	450	-
--	-------	----	--------	-----	---	-----	---

TPH-CWG - Aliphatic >EC5 - EC6 _{HS, 1D, AL}	mg/kg	0.1	NONE	< 0.10	-	< 0.10	-
TPH-CWG - Aliphatic >EC6 - EC8 _{HS, 1D, AL}	mg/kg	0.1	NONE	< 0.10	-	< 0.10	-
TPH-CWG - Aliphatic >EC8 - EC10 _{HS, 1D, AL}	mg/kg	0.1	NONE	< 0.10	-	< 0.10	-
TPH-CWG - Aliphatic >EC10 - EC12 _{EH, CU, 1D, AL}	mg/kg	1	MCERTS	< 1.0	-	< 1.0	-
TPH-CWG - Aliphatic >EC12 - EC16 _{EH, CU, 1D, AL}	mg/kg	2	MCERTS	7.5	-	11	-
TPH-CWG - Aliphatic >EC16 - EC21 _{EH, CU, 1D, AL}	mg/kg	8	MCERTS	100	-	48	-
TPH-CWG - Aliphatic >EC21 - EC35 _{EH, CU, 1D, AL}	mg/kg	8	MCERTS	150	-	230	-
TPH-CWG - Aliphatic (EC5 - EC35) _{EH, CU+HS, 1D, AL}	mg/kg	10	NONE	260	-	290	-

TPH-CWG - Aromatic >EC5 - EC7 _{HS, 1D, AR}	mg/kg	0.1	NONE	< 0.10	-	< 0.10	-
TPH-CWG - Aromatic >EC7 - EC8 _{HS, 1D, AR}	mg/kg	0.1	NONE	< 0.10	-	< 0.10	-
TPH-CWG - Aromatic >EC8 - EC10 _{HS, 1D, AR}	mg/kg	0.1	NONE	< 0.10	-	< 0.10	-
TPH-CWG - Aromatic >EC10 - EC12 _{EH, CU, 1D, AR}	mg/kg	1	MCERTS	< 1.0	-	2	-
TPH-CWG - Aromatic >EC12 - EC16 _{EH, CU, 1D, AR}	mg/kg	2	MCERTS	6.1	-	8	-
TPH-CWG - Aromatic >EC16 - EC21 _{EH, CU, 1D, AR}	mg/kg	10	MCERTS	26	-	25	-
TPH-CWG - Aromatic >EC21 - EC35 _{EH, CU, 1D, AR}	mg/kg	10	MCERTS	49	-	66	-
TPH-CWG - Aromatic (EC5 - EC35) _{EH, CU+HS, 1D, AR}	mg/kg	10	NONE	81	-	100	-

PFAS Suite 3

PFBS C4 Sulphonate	µg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
PHPS C5 Sulphonate	µg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
PFHxS C6 Sulphonate	µg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
PFHpS C7 Sulphonate	µg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
PFOS C8 Sulphonate	µg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
PFNS C9 Sulphonate	µg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
PFDS C10 Sulphonate	µg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
PFUDS C11 Sulphonate	µg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
PFDoS C12 Sulphonate	µg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
PFBA C4 Carboxylic acid	µg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
PFPeA C5 Carboxylic acid	µg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
PFHxA C6 Carboxylic acid	µg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
PFHpA C7 Carboxylic acid	µg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
PFoA C8 Carboxylic acid	µg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
PFNA C9 Carboxylic acid	µg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
PFDA C10 Carboxylic acid	µg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
PFUDA C11 Carboxylic acid	µg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
PFDoA C12 Carboxylic acid	µg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 23-42831
Project / Site name: Margam Wharf, Port Talbot

Lab Sample Number				2734952
Sample Reference				TP219
Sample Number				None Supplied
Depth (m)				0.90
Date Sampled				30/06/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	7.4
Total mass of sample received	kg	0.001	NONE	0.3

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	ASE

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	11.3
Total Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	3200
Sulphide	mg/kg	1	MCERTS	8.3
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.5

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0
----------------------------	-------	---	--------	-------

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.1
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.14
Fluorene	mg/kg	0.05	MCERTS	0.13
Phenanthrene	mg/kg	0.05	MCERTS	1.1
Anthracene	mg/kg	0.05	MCERTS	0.19
Fluoranthene	mg/kg	0.05	MCERTS	1.6
Pyrene	mg/kg	0.05	MCERTS	1.9
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.1
Chrysene	mg/kg	0.05	MCERTS	1.4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.6
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.72
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.81
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.78
Dibenzo(a,h)anthracene	mg/kg	0.05	MCERTS	0.21
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.95
Coronene	mg/kg	0.05	NONE	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	12.7
-------------------	-------	------	------	------

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	23
Barium (aqua regia extractable)	mg/kg	1	MCERTS	96
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.5
Boron (water soluble)	mg/kg	0.2	MCERTS	2.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	280
Copper (aqua regia extractable)	mg/kg	1	MCERTS	50
Lead (aqua regia extractable)	mg/kg	1	MCERTS	62
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	19
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	290
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	140



Analytical Report Number: 23-42831
 Project / Site name: Margam Wharf, Port Talbot

Lab Sample Number				2734952
Sample Reference				TP219
Sample Number				None Supplied
Depth (m)				0.90
Date Sampled				30/06/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	

Analytical Report Number: 23-42831
Project / Site name: Margam Wharf, Port Talbot

Lab Sample Number	2734952			
Sample Reference	TP219			
Sample Number	None Supplied			
Depth (m)	0.90			
Date Sampled	30/06/2023			
Time Taken	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Monoaromatics & Oxygenates				
Benzene	µg/kg	5	MCERTS	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0

Petroleum Hydrocarbons

TPH C10 - C40 _{EH, CU, 1D, TOTAL}	mg/kg	10	MCERTS	120
--	-------	----	--------	-----

TPH-CWG - Aliphatic >EC5 - EC6 _{HS, 1D, AL}	mg/kg	0.1	NONE	< 0.10
TPH-CWG - Aliphatic >EC6 - EC8 _{HS, 1D, AL}	mg/kg	0.1	NONE	< 0.10
TPH-CWG - Aliphatic >EC8 - EC10 _{HS, 1D, AL}	mg/kg	0.1	NONE	< 0.10
TPH-CWG - Aliphatic >EC10 - EC12 _{EH, CU, 1D, AL}	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH, CU, 1D, AL}	mg/kg	2	MCERTS	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH, CU, 1D, AL}	mg/kg	8	MCERTS	9.5
TPH-CWG - Aliphatic >EC21 - EC35 _{EH, CU, 1D, AL}	mg/kg	8	MCERTS	64
TPH-CWG - Aliphatic (EC5 - EC35) _{EH, CU+HS, 1D, AL}	mg/kg	10	NONE	75

TPH-CWG - Aromatic >EC5 - EC7 _{HS, 1D, AR}	mg/kg	0.1	NONE	< 0.10
TPH-CWG - Aromatic >EC7 - EC8 _{HS, 1D, AR}	mg/kg	0.1	NONE	< 0.10
TPH-CWG - Aromatic >EC8 - EC10 _{HS, 1D, AR}	mg/kg	0.1	NONE	< 0.10
TPH-CWG - Aromatic >EC10 - EC12 _{EH, CU, 1D, AR}	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH, CU, 1D, AR}	mg/kg	2	MCERTS	2.8
TPH-CWG - Aromatic >EC16 - EC21 _{EH, CU, 1D, AR}	mg/kg	10	MCERTS	< 10
TPH-CWG - Aromatic >EC21 - EC35 _{EH, CU, 1D, AR}	mg/kg	10	MCERTS	20
TPH-CWG - Aromatic (EC5 - EC35) _{EH, CU+HS, 1D, AR}	mg/kg	10	NONE	30

PFAS Suite 3

PFBS C4 Sulphonate	µg/kg	0.1	NONE	< 0.1
PHPS C5 Sulphonate	µg/kg	0.1	NONE	< 0.1
PFHxS C6 Sulphonate	µg/kg	0.1	NONE	< 0.1
PFHpS C7 Sulphonate	µg/kg	0.1	NONE	< 0.1
PFOS C8 Sulphonate	µg/kg	0.1	NONE	< 0.1
PFNS C9 Sulphonate	µg/kg	0.1	NONE	< 0.1
PFDS C10 Sulphonate	µg/kg	0.1	NONE	< 0.1
PFUdS C11 Sulphonate	µg/kg	0.1	NONE	< 0.1
PFDoS C12 Sulphonate	µg/kg	0.1	NONE	< 0.1
PFBA C4 Carboxylic acid	µg/kg	0.1	NONE	< 0.1
PFPeA C5 Carboxylic acid	µg/kg	0.1	NONE	< 0.1
PFHxA C6 Carboxylic acid	µg/kg	0.1	NONE	< 0.1
PFHpA C7 Carboxylic acid	µg/kg	0.1	NONE	< 0.1
PFOA C8 Carboxylic acid	µg/kg	0.1	NONE	< 0.1
PFNA C9 Carboxylic acid	µg/kg	0.1	NONE	< 0.1
PFDA C10 Carboxylic acid	µg/kg	0.1	NONE	< 0.1
PFUdA C11 Carboxylic acid	µg/kg	0.1	NONE	< 0.1
PFDoA C12 Carboxylic acid	µg/kg	0.1	NONE	< 0.1

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 23-42831

Project / Site name: Margam Wharf, Port Talbot

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2734948	TP215	None Supplied	0.6	Brown sand with gravel and vegetation.
2734949	TP216	None Supplied	0.3	Brown sand with gravel and vegetation.
2734950	TP217	None Supplied	0.8	Brown sand with gravel and vegetation.
2734951	TP218	None Supplied	0.6	Brown sand with gravel.
2734952	TP219	None Supplied	0.9	Brown sand with gravel.

Analytical Report Number : 23-42831
Project / Site name: Margam Wharf, Port Talbot

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270.	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS

Analytical Report Number : 23-42831
Project / Site name: Margam Wharf, Port Talbot

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
EF - PFAS in soil by LC-MS/MS	PFAS suite 3 by LC-MS/MS	In-house method	UK	W	NONE
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	NONE

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

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

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

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

Appendix F

Geotechnical Laboratory Report

[illegible]



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No. 33700

Borehole/Pit No. TP209

Site Name Margam Wharf, Port Talbot

Sample No. -

Project No. 2111006.006

Client

TEC

Depth Top 2.20 m

Depth Base 2.40 m

Sample Type B

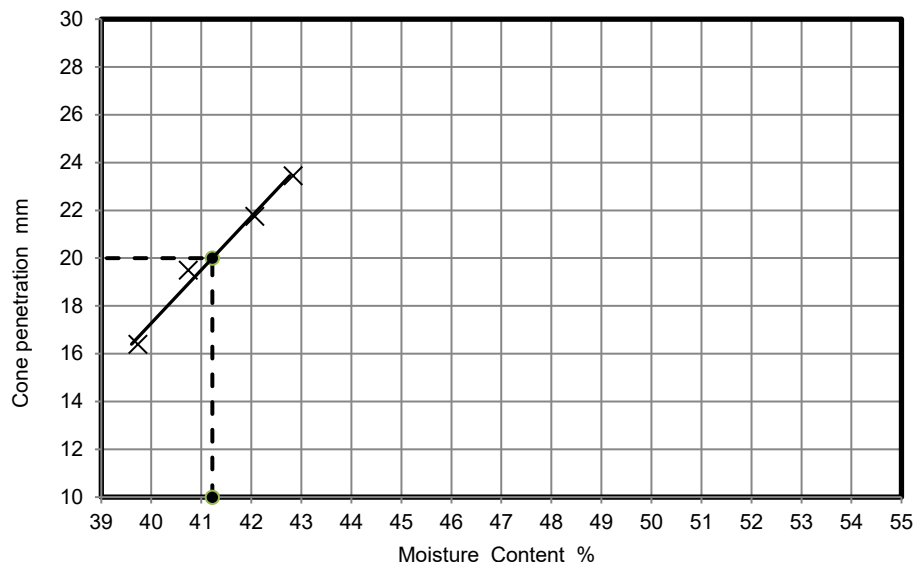
Soil Description Dark grey sandy silty CLAY with rare medium gravel

Samples received 03/07/2023

Schedules received 03/07/2023

Project Started 03/07/2023

Date Tested 14/07/2023



NATURAL MOISTURE CONTENT

26

%

% PASSING 425µm SIEVE

95

%

LIQUID LIMIT

41

%

PLASTIC LIMIT

27

%

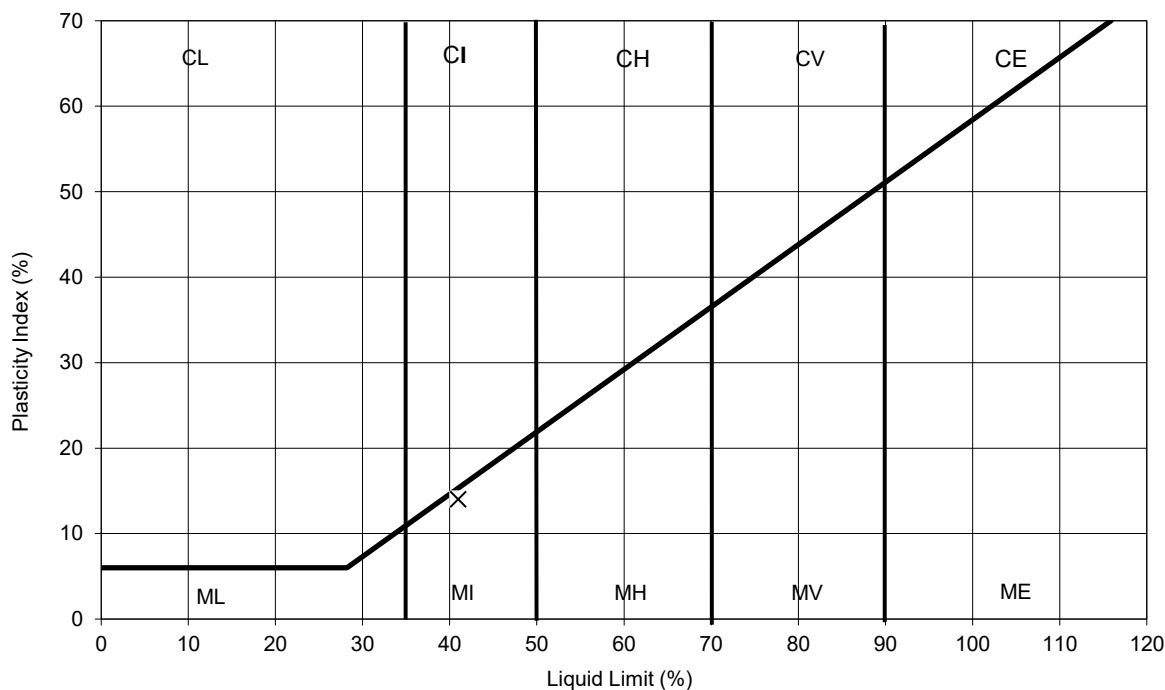
PLASTICITY INDEX

14

%

Remarks

PLASTICITY INDEX



These results only apply to the items tested. The report shall not be reproduced except in full without authority of the laboratory

TEST METHOD

BS1377: Part 2 :Clause 4.3 : 1990 Determination of the liquid limit by the cone penetrometer method

BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU

Tel: 01923 711 288 Email: James@k4soils.com

Checked and Approved

Initials: J.P

Date: 28/07/2023

2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

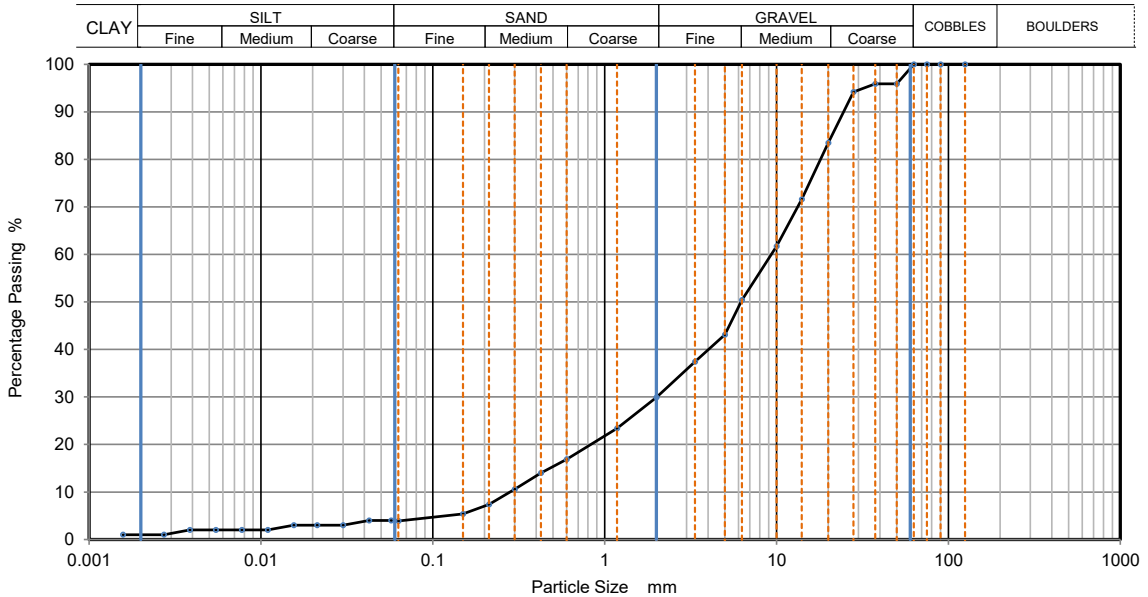
MSF-5 R2



PARTICLE SIZE DISTRIBUTION

	PARTICLE SIZE DISTRIBUTION			Job Ref	33700	
				Borehole/Pit No.	TP204	
Site Name	Margam Wharf, Port Talbot			Sample No.	-	
Project No.	2111006.006	Client	TEC	Depth Top	0.20	m
Soil Description	Dark grey slightly clayey slightly silty very sandy GRAVEL (gravel is fmc and sub-angular to sub-rounded)			Depth Base	0.40	m
				Sample Type	B	
				Samples received	03/07/2023	
				Schedules received	03/07/2023	
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	03/07/2023	
These results only apply to the items tested				Date tested	26/07/2023	

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0573	4
90	100	0.0425	4
75	100	0.0301	3
63	100	0.0212	3
50	96	0.0155	3
37.5	96	0.0109	2
28	94	0.0077	2
20	84	0.0055	2
14	72	0.0039	2
10	62	0.0027	1
6.3	50	0.0016	1
5	43		
3.35	37		
2	30		
1.18	23		
0.6	17	Particle density (assumed) 2.70 Mg/m ³	
0.425	14		
0.3	11		
0.212	7		
0.15	5		
0.063	4		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	70.08
Sand	26.01
Silt	2.90
Clay	1.00

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	33
Curvature Coefficient	1.5

Remarks

Preparation and testing in accordance with BS1377 unless noted below

NOTE: The report shall not be reproduced except in full without approval of the laboratory



K4 Soils Laboratory

Unit 8, Olds Close, Watford, Herts, WD18 9RU

Email: james@k4soils.com

Tel: 01923 711288

Checked and Approved

Initials: J.P

Date: 28/07/2023

2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

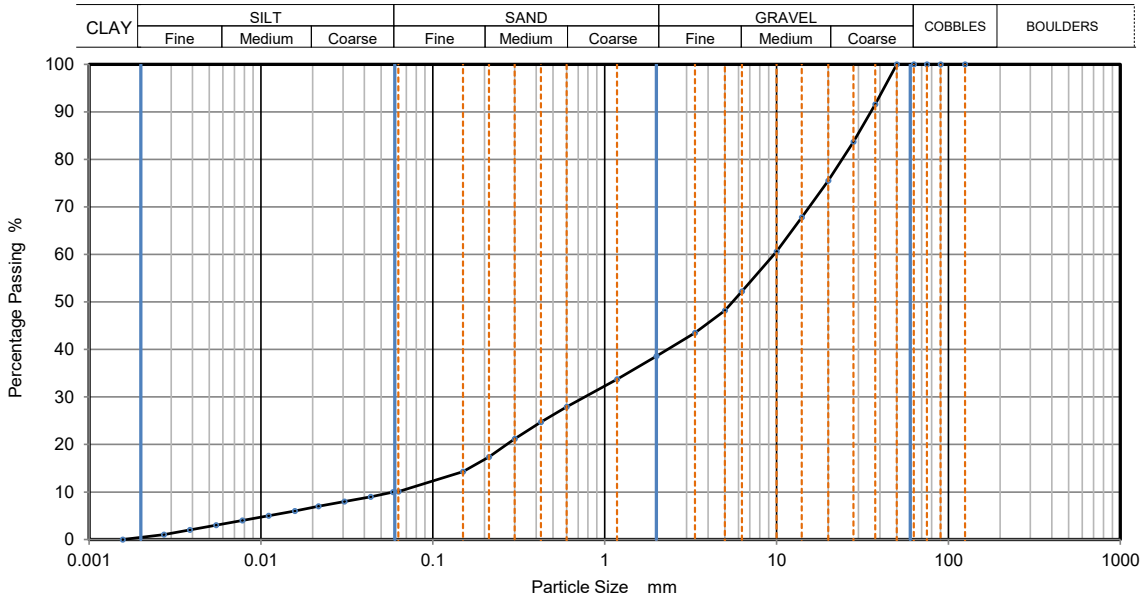
MSF-5-R3



PARTICLE SIZE DISTRIBUTION

	PARTICLE SIZE DISTRIBUTION			Job Ref	33700
				Borehole/Pit No.	TP204
Site Name	Margam Wharf, Port Talbot			Sample No.	-
Project No.	2111006.006	Client	TEC	Depth Top	1.50 m
Soil Description	Dark grey silty very sandy GRAVEL (gravel is fmc and sub-rounded)			Depth Base	1.80 m
				Sample Type	B
				Samples received	03/07/2023
				Schedules received	03/07/2023
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	03/07/2023
These results only apply to the items tested				Date tested	14/07/2023

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0587	10
90	100	0.0435	9
75	100	0.0306	8
63	100	0.0216	7
50	100	0.0157	6
37.5	92	0.0111	5
28	84	0.0078	4
20	76	0.0055	3
14	68	0.0039	2
10	61	0.0027	1
6.3	52	0.0016	0
5	48		
3.35	44		
2	39		
1.18	34		
0.6	28	Particle density (assumed) 2.70 Mg/m3	
0.425	25		
0.3	21		
0.212	17		
0.15	14		
0.063	10		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	61.39
Sand	28.53
Silt	9.40
Clay	0.70

Grading Analysis		
D100	mm	
D60	mm	9.66
D30	mm	0.768
D10	mm	0.0572
Uniformity Coefficient		170
Curvature Coefficient		1.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below

NOTE: The report shall not be reproduced except in full without approval of the laboratory



K4 Soils Laboratory

Unit 8, Olds Close, Watford, Herts, WD18 9RU
Email: james@k4soils.com
Tel: 01923 711288

Checked and Approved

Initials: J.P
Date: 28/07/2023

2519

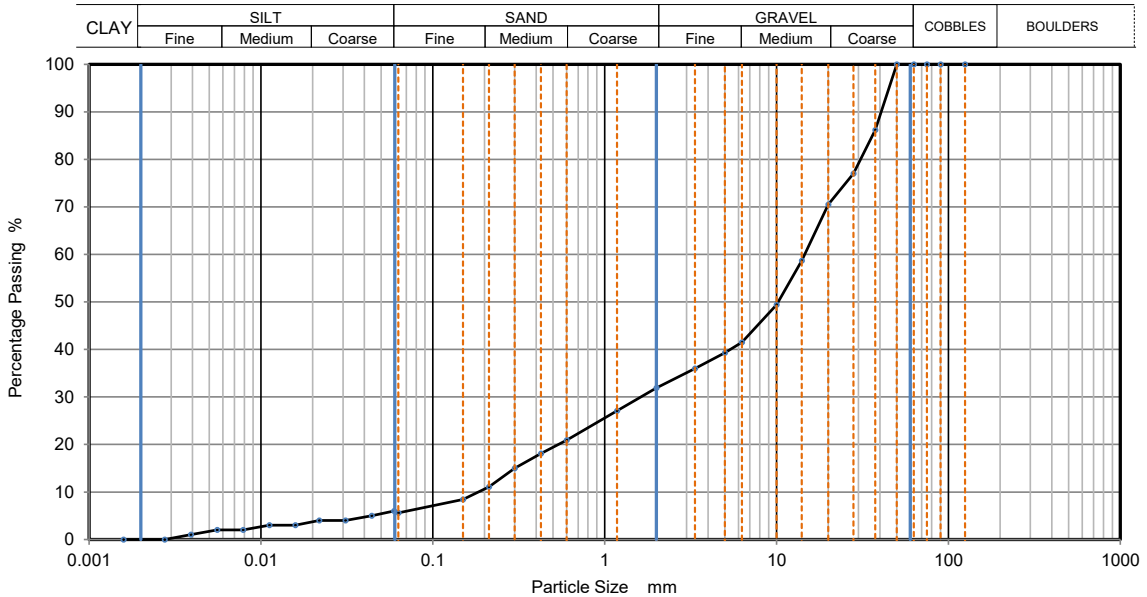
Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5-R3



PARTICLE SIZE DISTRIBUTION

	PARTICLE SIZE DISTRIBUTION			Job Ref	33700
				Borehole/Pit No.	TP206
Site Name	Margam Wharf, Port Talbot			Sample No.	-
Project No.	2111006.006	Client	TEC	Depth Top	0.70 m
Soil Description	Dark grey silty very sandy GRAVEL (gravel is fmc and sub-angular to sub-rounded)			Depth Base	0.90 m
				Sample Type	B
				Samples received	03/07/2023
				Schedules received	03/07/2023
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	03/07/2023
These results only apply to the items tested				Date tested	26/07/2023



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0595	6
90	100	0.0440	5
75	100	0.0310	4
63	100	0.0218	4
50	100	0.0159	3
37.5	86	0.0112	3
28	77	0.0079	2
20	71	0.0056	2
14	59	0.0039	1
10	49	0.0027	0
6.3	42	0.0016	0
5	39		
3.35	36		
2	32		
1.18	27		
0.6	21	Particle density (assumed) 2.70 Mg/m ³	
0.425	18		
0.3	15		
0.212	11		
0.15	8		
0.063	6		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	68.13
Sand	26.25
Silt	5.40
Clay	0.20

Grading Analysis		
D100	mm	
D60	mm	14.6
D30	mm	1.63
D10	mm	0.184
Uniformity Coefficient		79
Curvature Coefficient		0.99

Remarks
Preparation and testing in accordance with BS1377 unless noted below

NOTE: The report shall not be reproduced except in full without approval of the laboratory



K4 Soils Laboratory

Unit 8, Olds Close, Watford, Herts, WD18 9RU

Email: james@k4soils.com

Tel: 01923 711288

Checked and Approved

Initials: J.P

Date: 28/07/2023

2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5-R3

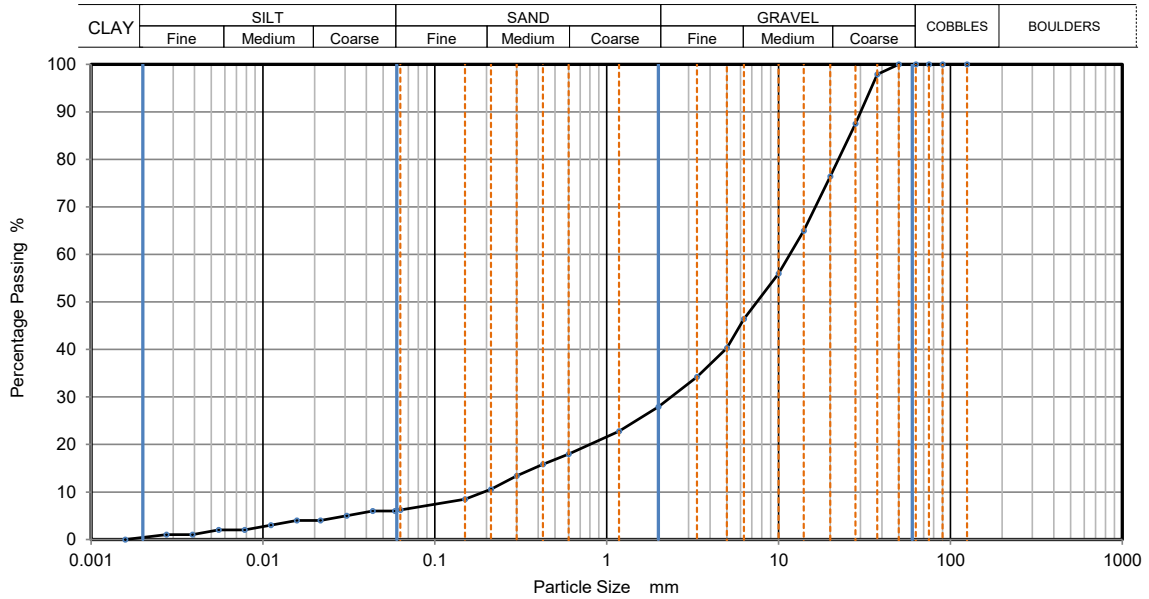


PARTICLE SIZE DISTRIBUTION

Job Ref	33700
Borehole/Pit No.	TP208A
Sample No.	-
Depth Top	0.80 m
Depth Base	1.00 m
Sample Type	B
Samples received	03/07/2023
Schedules received	03/07/2023
Project started	03/07/2023
Date tested	14/07/2023

Site Name	Margam Wharf, Port Talbot		
Project No.	2111006.006	Client	TEC
Soil Description	Dark grey silty very sandy GRAVEL (gravel is fmc and sub-angular to sub-rounded)		
Test Method	BS1377:Part 2: 1990, clause 9.0		

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0586	6
90	100	0.0434	6
75	100	0.0307	5
63	100	0.0216	4
50	100	0.0157	4
37.5	98	0.0111	3
28	88	0.0078	2
20	76	0.0055	2
14	65	0.0039	1
10	56	0.0027	1
6.3	46	0.0016	0
5	40		
3.35	34		
2	28		
1.18	23		
0.6	18	Particle density (assumed) 2.70 Mg/m3	
0.425	16		
0.3	13		
0.212	11		
0.15	9		
0.063	6		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	72.06
Sand	21.69
Silt	5.90
Clay	0.30

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	60
Curvature Coefficient	2.5

Remarks
Preparation and testing in accordance with BS1377 unless noted below

NOTE: The report shall not be reproduced except in full without approval of the laboratory



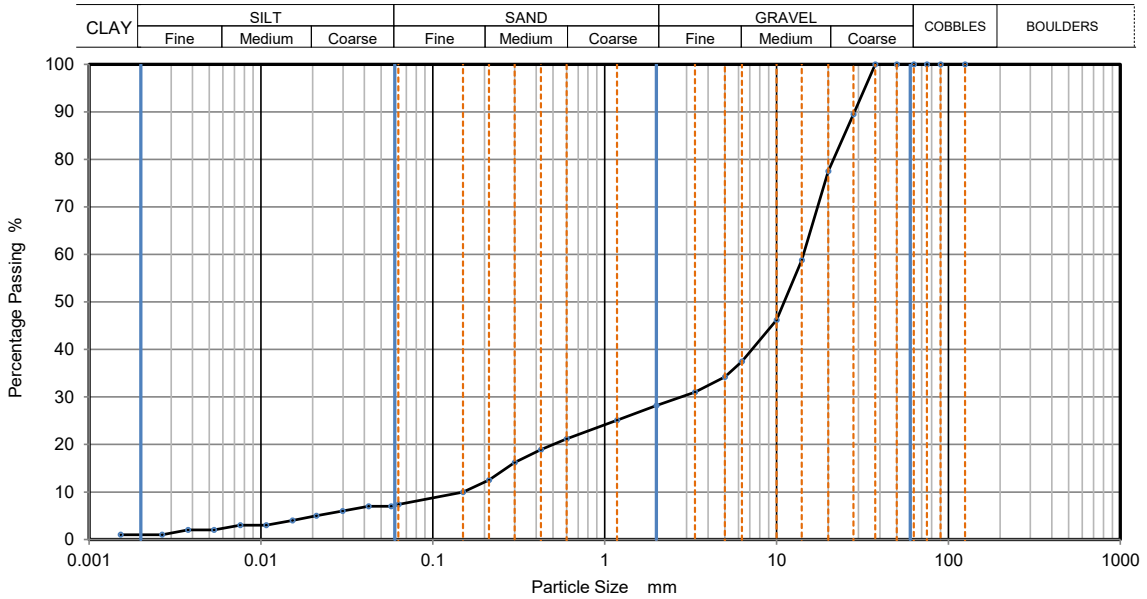
K4 Soils Laboratory Unit 8, Olds Close, Watford, Herts, WD18 9RU Email: james@k4soils.com Tel: 01923 711288		Checked and Approved Initials: J.P Date: 28/07/2023
2519	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)	MSF-5-R3



PARTICLE SIZE DISTRIBUTION

Job Ref			33700	
			TP209	
Site Name			Margam Wharf, Port Talbot	
Project No.			2111006.006	
Client			TEC	
Depth Top			0.80 m	
Depth Base			1.00 m	
Sample Type			B	
Samples received			03/07/2023	
Schedules received			03/07/2023	
Project started			03/07/2023	
Date tested			14/07/2023	
Test Method			BS1377:Part 2: 1990, clause 9.0	

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0571	7
90	100	0.0423	7
75	100	0.0298	6
63	100	0.0210	5
50	100	0.0153	4
37.5	100	0.0107	3
28	90	0.0076	3
20	78	0.0053	2
14	59	0.0038	2
10	46	0.0027	1
6.3	38	0.0015	1
5	34		
3.35	31		
2	28		
1.18	25		
0.6	21	Particle density (assumed) 2.70 Mg/m ³	
0.425	19		
0.3	16		
0.212	13		
0.15	10		
0.063	7		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	71.83
Sand	20.79
Silt	6.60
Clay	0.80

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	95
Curvature Coefficient	3.6

Remarks
Preparation and testing in accordance with BS1377 unless noted below

NOTE: The report shall not be reproduced except in full without approval of the laboratory



K4 Soils Laboratory

Unit 8, Olds Close, Watford, Herts, WD18 9RU

Email: james@k4soils.com

Tel: 01923 711288

Checked and Approved

Initials: J.P

Date: 28/07/2023

2519

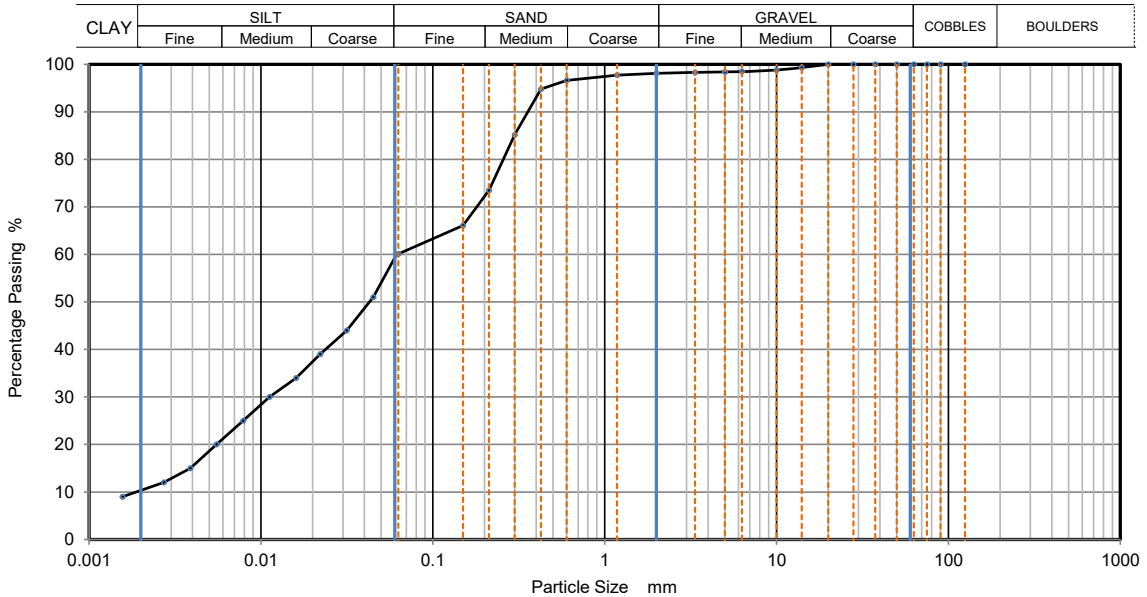
Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5-R3



PARTICLE SIZE DISTRIBUTION

	PARTICLE SIZE DISTRIBUTION			Job Ref	33700	
				Borehole/Pit No.	TP209	
Site Name	Margam Wharf, Port Talbot			Sample No.	-	
Project No.	2111006.006	Client	TEC	Depth Top	2.20	m
Soil Description	Dark grey sandy silty CLAY with rare medium gravel			Depth Base	2.40	m
				Sample Type	B	
				Samples received	03/07/2023	
				Schedules received	03/07/2023	
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	03/07/2023	
These results only apply to the items tested				Date tested	14/07/2023	

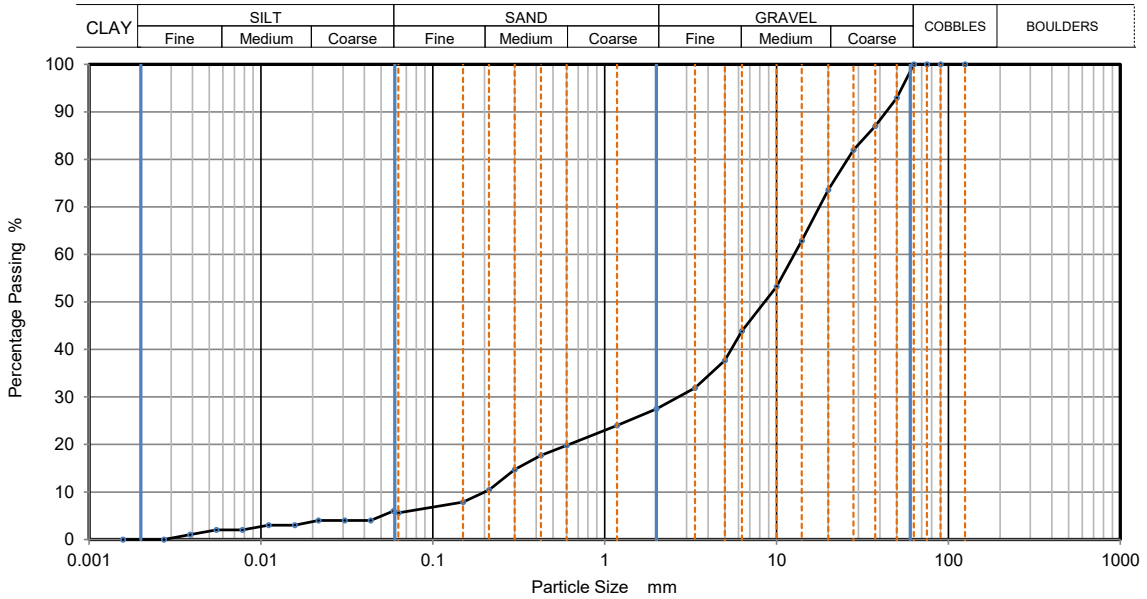




PARTICLE SIZE DISTRIBUTION

	PARTICLE SIZE DISTRIBUTION			Job Ref	33700	
				Borehole/Pit No.	TP211	
Site Name	Margam Wharf, Port Talbot			Sample No.	-	
Project No.	2111006.006	Client	TEC	Depth Top	0.60	m
Soil Description	Dark grey silty very sandy GRAVEL (gravel is fmc and sub-angular)			Depth Base	0.80	m
				Sample Type	B	
				Samples received	03/07/2023	
				Schedules received	03/07/2023	
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	03/07/2023	
These results only apply to the items tested				Date tested	26/07/2023	

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0590	6
90	100	0.0435	4
75	100	0.0306	4
63	100	0.0216	4
50	93	0.0158	3
37.5	87	0.0111	3
28	82	0.0078	2
20	74	0.0055	2
14	63	0.0039	1
10	53	0.0027	0
6.3	44	0.0016	0
5	38		
3.35	32		
2	28		
1.18	24		
0.6	20	Particle density (assumed) 2.70 Mg/m ³	
0.425	18		
0.3	15		
0.212	10		
0.15	8		
0.063	6		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	72.51
Sand	21.87
Silt	5.20
Clay	0.40

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	63
Curvature Coefficient	2.8

Remarks
Preparation and testing in accordance with BS1377 unless noted below

NOTE: The report shall not be reproduced except in full without approval of the laboratory



K4 Soils Laboratory

Unit 8, Olds Close, Watford, Herts, WD18 9RU
Email: james@k4soils.com
Tel: 01923 711288

Checked and Approved

Initials: J.P
Date: 28/07/2023

2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

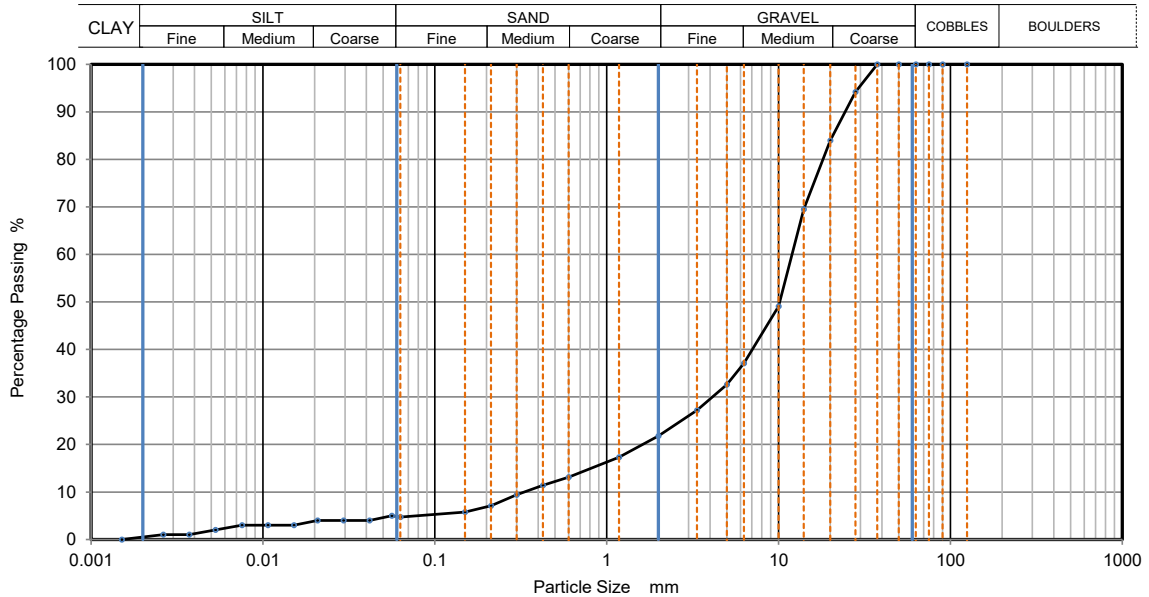
MSF-5-R3



PARTICLE SIZE DISTRIBUTION

	PARTICLE SIZE DISTRIBUTION			Job Ref	33700	
				Borehole/Pit No.	TP211	
Site Name	Margam Wharf, Port Talbot			Sample No.	-	
Project No.	2111006.006	Client	TEC	Depth Top	1.40	m
Soil Description	Grey slightly silty sandy GRAVEL (gravel is fmc and sub-angular to sub-rounded)			Depth Base	1.50	m
				Sample Type	B	
				Samples received	03/07/2023	
				Schedules received	03/07/2023	
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	03/07/2023	
These results only apply to the items tested				Date tested	26/07/2023	

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0563	5
90	100	0.0417	4
75	100	0.0294	4
63	100	0.0208	4
50	100	0.0151	3
37.5	100	0.0107	3
28	94	0.0075	3
20	84	0.0053	2
14	70	0.0037	1
10	49	0.0026	1
6.3	37	0.0015	0
5	33		
3.35	27		
2	22		
1.18	17		
0.6	13	Particle density (assumed) 2.70 Mg/m3	
0.425	11		
0.3	9		
0.212	7		
0.15	6		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	78.16
Sand	17.09
Silt	4.20
Clay	0.60

Grading Analysis		
D100	mm	
D60	mm	12
D30	mm	4.13
D10	mm	0.333
Uniformity Coefficient		36
Curvature Coefficient		4.3

Remarks

Preparation and testing in accordance with BS1377 unless noted below

NOTE: The report shall not be reproduced except in full without approval of the laboratory



K4 Soils Laboratory

Unit 8, Olds Close, Watford, Herts, WD18 9RU

Email: james@k4soils.com

Tel: 01923 711288

Checked and Approved

Initials: J.P

Date: 28/07/2023

2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5-R3

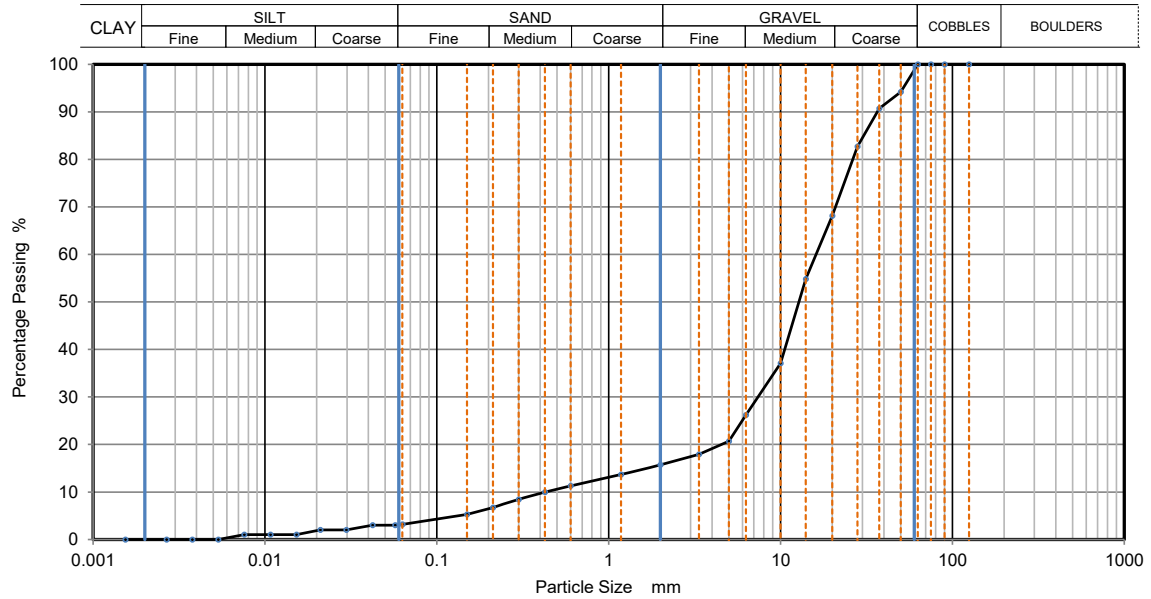


PARTICLE SIZE DISTRIBUTION

Job Ref	33700
Borehole/Pit No.	TP213A
Sample No.	-
Depth Top	0.30 m
Depth Base	0.40 m
Sample Type	B
Samples received	03/07/2023
Schedules received	03/07/2023
Project started	03/07/2023
Date tested	26/07/2023

Site Name	Margam Wharf, Port Talbot		
Project No.	2111006.006	Client	TEC
Soil Description	Grey slightly silty sandy GRAVEL (gravel is fmc and sub-angular to sub-rounded)		
Test Method	BS1377:Part 2: 1990, clause 9.0		

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0571	3
90	100	0.0423	3
75	100	0.0298	2
63	100	0.0210	2
50	94	0.0152	1
37.5	91	0.0107	1
28	83	0.0076	1
20	68	0.0054	0
14	55	0.0038	0
10	37	0.0027	0
6.3	26	0.0015	0
5	21		
3.35	18		
2	16		
1.18	14		
0.6	11	Particle density (assumed) 2.70 Mg/m3	
0.425	10		
0.3	8		
0.212	7		
0.15	5		
0.063	3		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	84.32
Sand	12.53
Silt	2.90
Clay	0.20

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	38
Curvature Coefficient	8

Remarks
Preparation and testing in accordance with BS1377 unless noted below

NOTE: The report shall not be reproduced except in full without approval of the laboratory



K4 Soils Laboratory

Unit 8, Olds Close, Watford, Herts, WD18 9RU
Email: james@k4soils.com
Tel: 01923 711288

Checked and Approved

Initials: J.P
Date: 28/07/2023

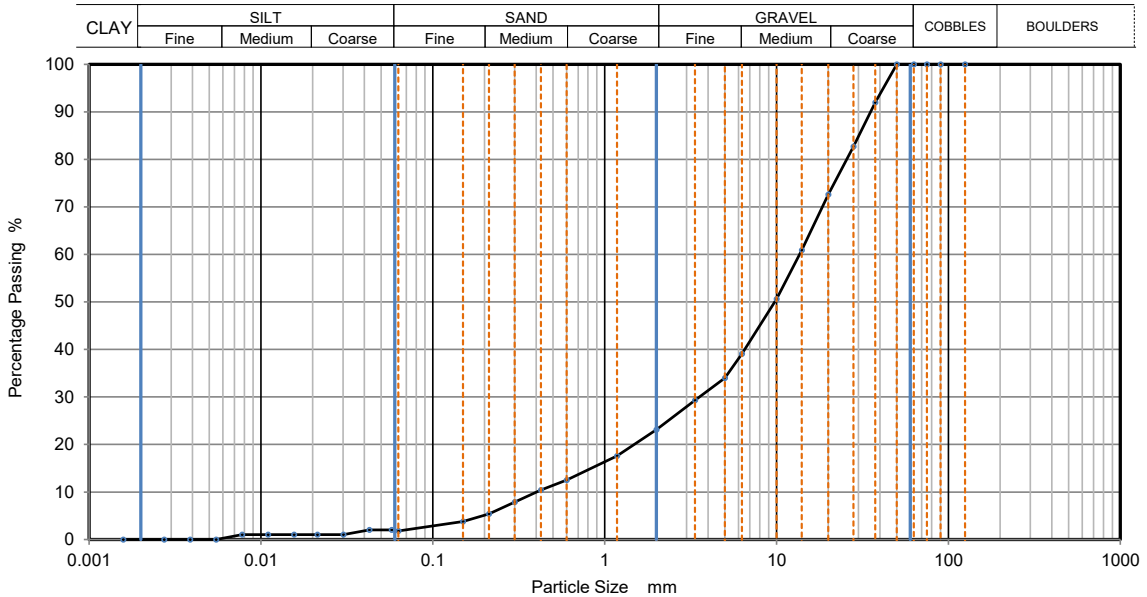
2519 Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5-R3



PARTICLE SIZE DISTRIBUTION

	PARTICLE SIZE DISTRIBUTION			Job Ref	33700	
				Borehole/Pit No.	TP215	
Site Name	Margam Wharf, Port Talbot			Sample No.	-	
Project No.	2111006.006	Client	TEC	Depth Top	1.00	m
Soil Description	Dark reddish brown slightly silty very sandy GRAVEL (gravel is fmc and sub-angular to sub-rounded)			Depth Base	1.20	m
				Sample Type	B	
				Samples received	03/07/2023	
				Schedules received	03/07/2023	
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	03/07/2023	
These results only apply to the items tested				Date tested	19/07/2023	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0575	2
90	100	0.0428	2
75	100	0.0302	1
63	100	0.0213	1
50	100	0.0155	1
37.5	92	0.0110	1
28	83	0.0078	1
20	73	0.0055	0
14	61	0.0039	0
10	51	0.0027	0
6.3	39	0.0016	0
5	34		
3.35	29		
2	23		
1.18	18		
0.6	13	Particle density (assumed) 2.70 Mg/m ³	
0.425	10		
0.3	8		
0.212	5		
0.15	4		
0.063	2		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	76.89
Sand	21.34
Silt	1.70
Clay	0.10

Grading Analysis		
D100	mm	
D60	mm	13.6
D30	mm	3.56
D10	mm	0.403
Uniformity Coefficient		34
Curvature Coefficient		2.3

Remarks
Preparation and testing in accordance with BS1377 unless noted below

NOTE: The report shall not be reproduced except in full without approval of the laboratory



K4 Soils Laboratory

Unit 8, Olds Close, Watford, Herts, WD18 9RU

Email: james@k4soils.com

Tel: 01923 711288

Checked and Approved

Initials: J.P

Date: 28/07/2023

2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

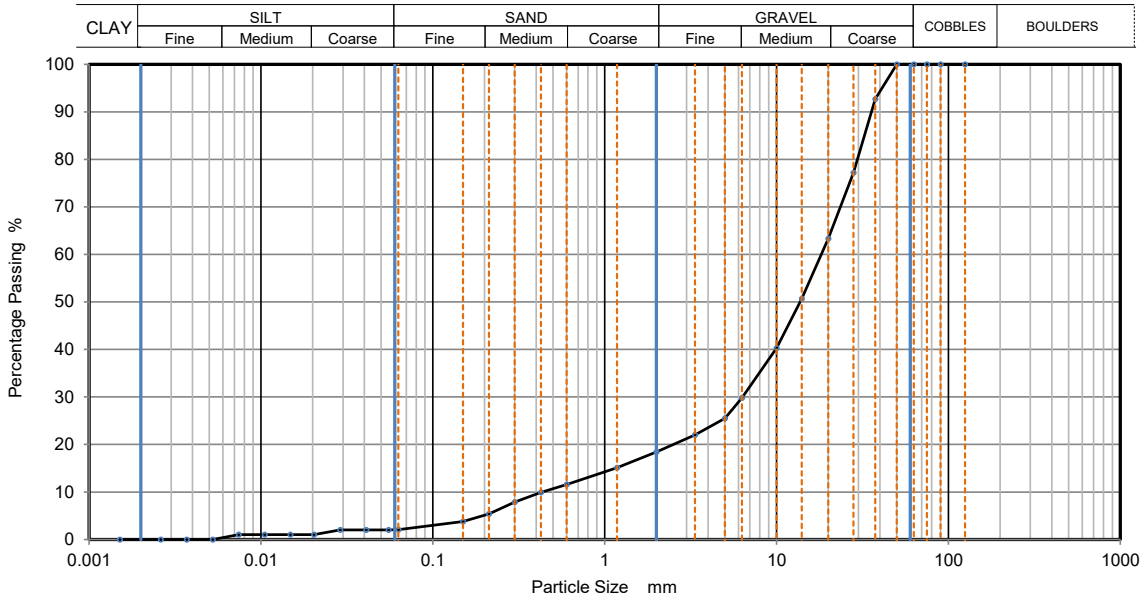
MSF-5-R3



PARTICLE SIZE DISTRIBUTION

	PARTICLE SIZE DISTRIBUTION			Job Ref	33700	
				Borehole/Pit No.	TP216	
Site Name	Margam Wharf, Port Talbot			Sample No.	-	
Project No.	2111006.006	Client	TEC	Depth Top	0.10	m
Soil Description	Dark grey slightly silty sandy GRAVEL (gravel is fmc and sub-angular to sub-rounded)			Depth Base	0.30	m
				Sample Type	B	
				Samples received	03/07/2023	
				Schedules received	03/07/2023	
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	03/07/2023	
These results only apply to the items tested				Date tested	19/07/2023	

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0552	2
90	100	0.0409	2
75	100	0.0289	2
63	100	0.0203	1
50	100	0.0148	1
37.5	93	0.0105	1
28	77	0.0074	1
20	63	0.0052	0
14	51	0.0037	0
10	40	0.0026	0
6.3	30	0.0015	0
5	26		
3.35	22		
2	18		
1.18	15		
0.6	12	Particle density (assumed) 2.70 Mg/m3	
0.425	10		
0.3	8		
0.212	5		
0.15	4		
0.063	2		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	81.60
Sand	16.35
Silt	1.90
Clay	0.20

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	42
Curvature Coefficient	5.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below

NOTE: The report shall not be reproduced except in full without approval of the laboratory



K4 Soils Laboratory

Unit 8, Olds Close, Watford, Herts, WD18 9RU
Email: james@k4soils.com
Tel: 01923 711288

Checked and Approved

Initials: J.P
Date: 28/07/2023

2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

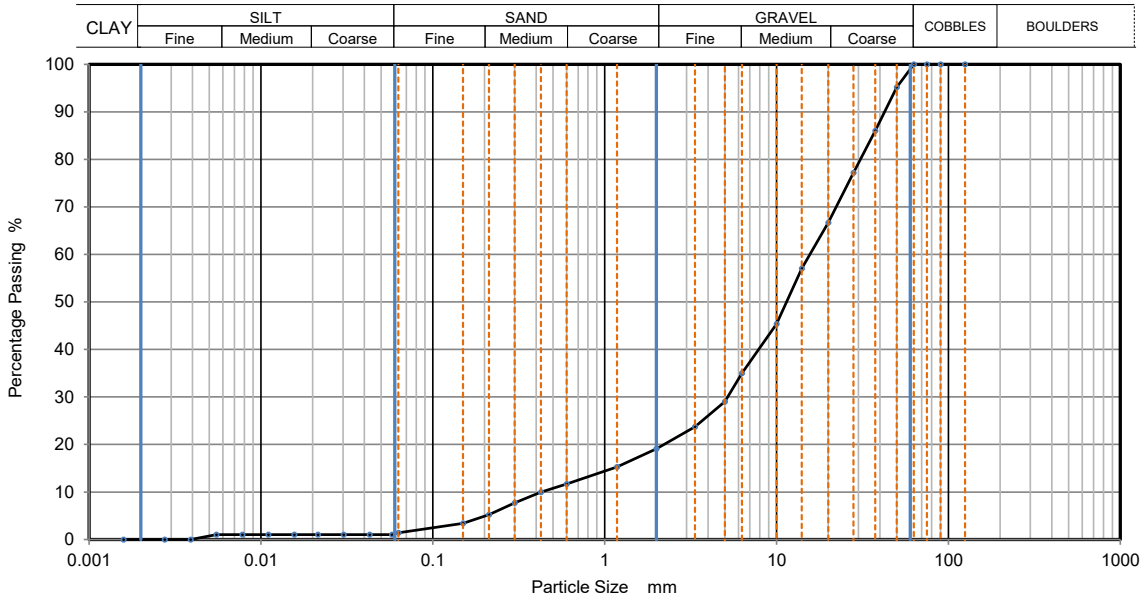
MSF-5-R3



PARTICLE SIZE DISTRIBUTION

	PARTICLE SIZE DISTRIBUTION			Job Ref	33700	
				Borehole/Pit No.	TP217	
Site Name	Margam Wharf, Port Talbot			Sample No.	-	
Project No.	2111006.006	Client	TEC	Depth Top	1.20	m
Soil Description	Dark grey slightly silty sandy GRAVEL (gravel is fmc and sub-angular to sub-rounded)			Depth Base	1.40	m
				Sample Type	B	
				Samples received	03/07/2023	
				Schedules received	03/07/2023	
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	03/07/2023	
These results only apply to the items tested				Date tested	19/07/2023	

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0578	1
90	100	0.0429	1
75	100	0.0303	1
63	100	0.0214	1
50	95	0.0156	1
37.5	86	0.0110	1
28	77	0.0078	1
20	67	0.0055	1
14	57	0.0039	0
10	45	0.0027	0
6.3	35	0.0016	0
5	29		
3.35	24		
2	19		
1.18	15		
0.6	12	Particle density (assumed) 2.70 Mg/m3	
0.425	10		
0.3	8		
0.212	5		
0.15	3		
0.063	1		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	80.94
Sand	17.67
Silt	1.20
Clay	0.20

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	37
Curvature Coefficient	4.1

Remarks
Preparation and testing in accordance with BS1377 unless noted below

NOTE: The report shall not be reproduced except in full without approval of the laboratory



K4 Soils Laboratory

Unit 8, Olds Close, Watford, Herts, WD18 9RU

Email: james@k4soils.com

Tel: 01923 711288

Checked and Approved

Initials: J.P

Date: 28/07/2023

2519

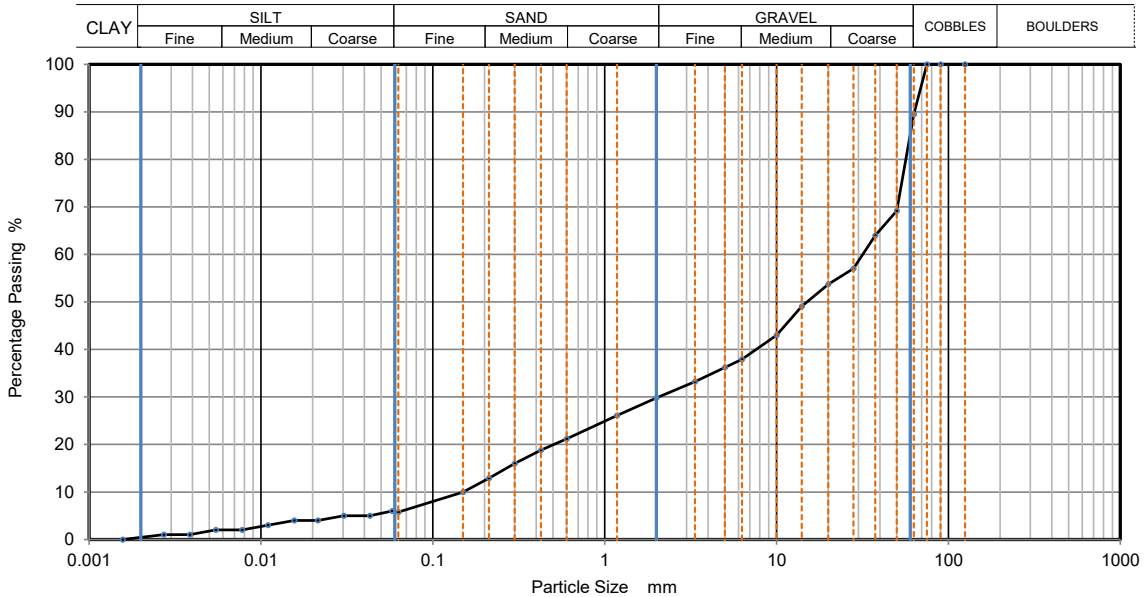
Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5-R3



PARTICLE SIZE DISTRIBUTION

	PARTICLE SIZE DISTRIBUTION			Job Ref	33700	
				Borehole/Pit No.	TP218	
Site Name	Margam Wharf, Port Talbot			Sample No.	-	
Project No.	2111006.006	Client	TEC	Depth Top	0.40	m
Soil Description	Reddish brown silty very sandy GRAVEL with occasional cobbles (gravel is fmc and sub-angular to sub-rounded)			Depth Base	0.60	m
				Sample Type	B	
				Samples received	03/07/2023	
				Schedules received	03/07/2023	
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	03/07/2023	
These results only apply to the items tested				Date tested	19/07/2023	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0580	6
90	100	0.0431	5
75	100	0.0304	5
63	90	0.0214	4
50	69	0.0156	4
37.5	64	0.0110	3
28	57	0.0078	2
20	54	0.0055	2
14	49	0.0039	1
10	43	0.0027	1
6.3	38	0.0016	0
5	36		
3.35	33		
2	30		
1.18	26		
0.6	21	Particle density (assumed) 2.70 Mg/m ³	
0.425	19		
0.3	16		
0.212	13		
0.15	10		
0.063	6		

Sample Proportions	% dry mass
Very coarse	10.50
Gravel	59.71
Sand	24.06
Silt	5.30
Clay	0.40

Grading Analysis		
D100	mm	
D60	mm	31.7
D30	mm	2.05
D10	mm	0.149
Uniformity Coefficient		210
Curvature Coefficient		0.89

Remarks
Preparation and testing in accordance with BS1377 unless noted below

NOTE: The report shall not be reproduced except in full without approval of the laboratory



K4 Soils Laboratory

Unit 8, Olds Close, Watford, Herts, WD18 9RU

Email: james@k4soils.com

Tel: 01923 711288

Checked and Approved

Initials: J.P

Date: 28/07/2023

2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

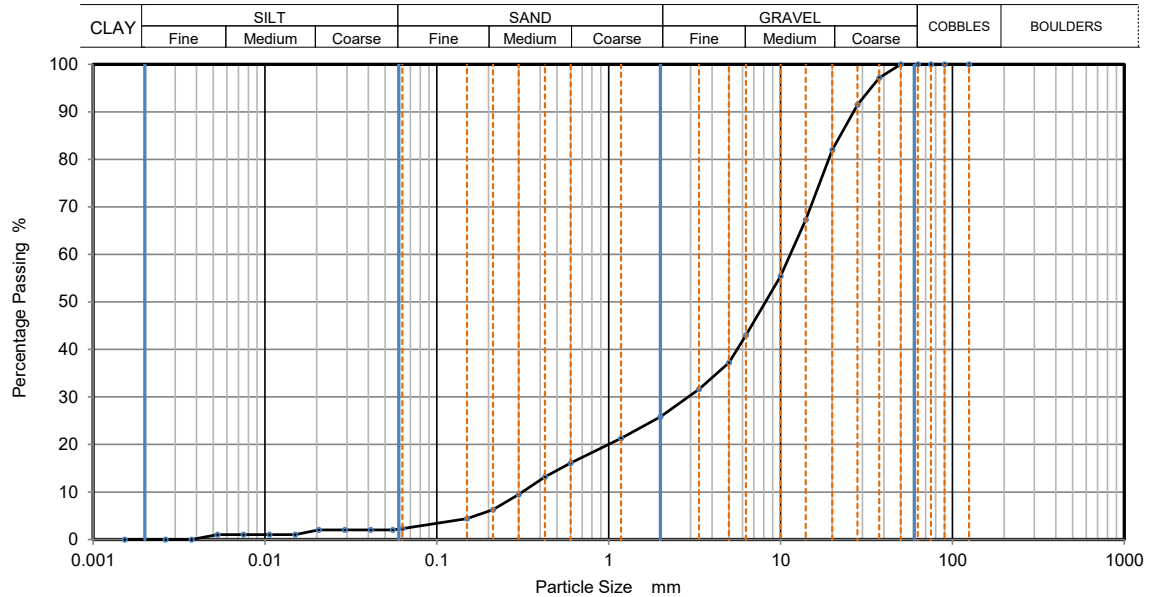
MSF-5-R3



PARTICLE SIZE DISTRIBUTION

	PARTICLE SIZE DISTRIBUTION			Job Ref	33700	
				Borehole/Pit No.	TP219	
Site Name	Margam Wharf, Port Talbot			Sample No.	-	
Project No.	2111006.006	Client	TEC	Depth Top	0.40	m
Soil Description	Reddish brown slightly silty very sandy GRAVEL (gravel is fmc and sub-angular to sub-rounded)			Depth Base	0.60	m
				Sample Type	B	
				Samples received	03/07/2023	
				Schedules received	03/07/2023	
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	03/07/2023	
These results only apply to the items tested				Date tested	19/07/2023	

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0555	2
90	100	0.0412	2
75	100	0.0291	2
63	100	0.0206	2
50	100	0.0150	1
37.5	97	0.0106	1
28	92	0.0075	1
20	82	0.0053	1
14	67	0.0037	0
10	55	0.0026	0
6.3	43	0.0015	0
5	37		
3.35	32		
2	26		
1.18	21		
0.6	16	Particle density (assumed) 2.70 Mg/m ³	
0.425	13		
0.3	10		
0.212	6		
0.15	4		
0.063	2		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	74.20
Sand	23.48
Silt	2.20
Clay	0.10

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	36
Curvature Coefficient	2.4

Remarks
Preparation and testing in accordance with BS1377 unless noted below

NOTE: The report shall not be reproduced except in full without approval of the laboratory



K4 Soils Laboratory

Unit 8, Olds Close, Watford, Herts, WD18 9RU

Email: james@k4soils.com

Tel: 01923 711288

Checked and Approved

Initials: J.P

Date: 28/07/2023

2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5-R3



PARTICLE SIZE DISTRIBUTION

Job Ref 33700

Borehole/Pit No. TP219

Site Name Margam Wharf, Port Talbot

Sample No. -

Project No. 2111006.006

Client

TEC

Depth Top 1.00 m

Soil Description

Reddish brown slightly silty very sandy GRAVEL (gravel is fmc and sub-angular to sub-rounded)

Depth Base 1.20 m

Sample Type B

Samples received 03/07/2023

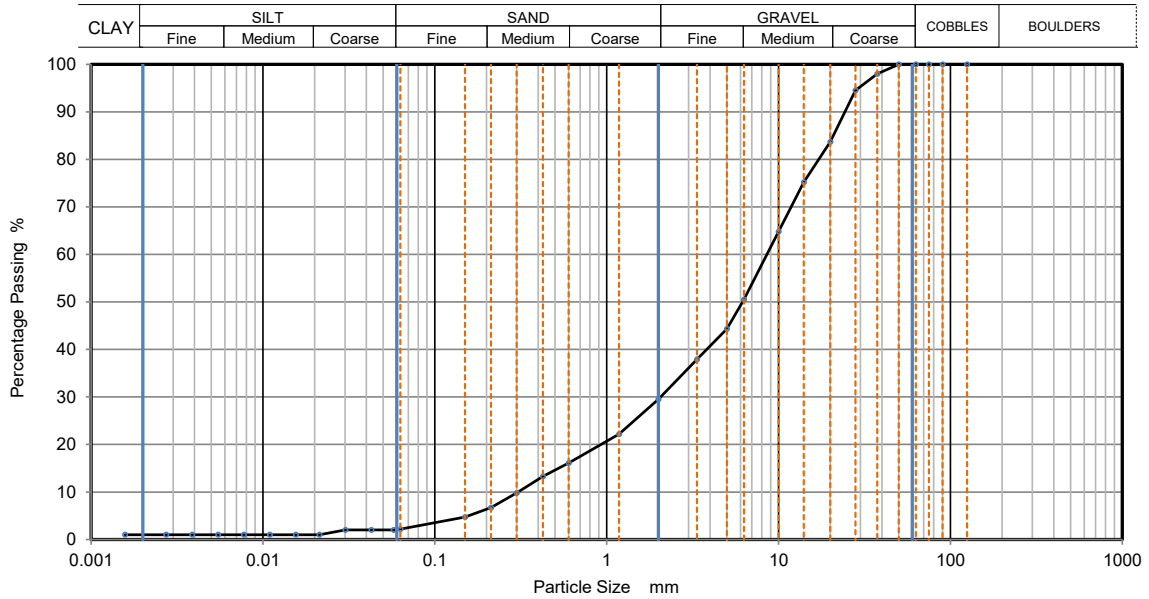
Schedules received 03/07/2023

Test Method BS1377:Part 2: 1990, clause 9.0

Project started 03/07/2023

Date tested 19/07/2023

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0575	2
90	100	0.0427	2
75	100	0.0301	2
63	100	0.0213	1
50	100	0.0155	1
37.5	98	0.0110	1
28	95	0.0077	1
20	84	0.0055	1
14	75	0.0039	1
10	65	0.0027	1
6.3	51	0.0016	1
5	44		
3.35	38		
2	30		
1.18	22		
0.6	16	Particle density (assumed) 2.70 Mg/m3	
0.425	13		
0.3	10		
0.212	7		
0.15	5		
0.063	2		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	70.55
Sand	27.29
Silt	1.50
Clay	0.70

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	28
Curvature Coefficient	1.6

Remarks

Preparation and testing in accordance with BS1377 unless noted below

NOTE: The report shall not be reproduced except in full without approval of the laboratory



K4 Soils Laboratory

Unit 8, Olds Close, Watford, Herts, WD18 9RU

Email: james@k4soils.com

Tel: 01923 711288

Checked and Approved

Initials: J.P

Date: 28/07/2023

2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5-R3



2683



Unit A2
Windmill Road
Ponswood Industrial Estate
St Leonards on Sea
East Sussex
TN38 9BY
Telephone: (01424) 718618

cs@elab-uk.co.uk
info@elab-uk.co.uk

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 23-48416

Issue: 1

Date of Issue: 22/06/2023

Contact: Reinier van der Kuip

Customer Details: TEC
The Old Chapel
35A Southover
Wells
SomersetBA5 1UH

Quotation No: Q22-03427

Order No: 2111006.006

Customer Reference: 2111006.006

Date Received: 06/06/2023

Date Approved: 22/06/2023

Details: Margam Wharf, Port Talbot

Approved by:

Tim Reeve, Quality Officer

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

This report may only be reproduced in full



Sample Summary

Report No.: 23-48416, issue number 1

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
325221	BH201C 2.00	19/05/2023	06/06/2023	Sandy loam	
325222	BH201D 1.00	22/05/2023	06/06/2023	Sandy loam	
325223	BH202 1.00	23/05/2023	06/06/2023	Sandy loam	



2683



Results Summary

Report No.: 23-48416, issue number 1

ELAB Reference				325221	325222	325223
Customer Reference						
Sample ID						
Sample Type				SOIL	SOIL	SOIL
Sample Location				BH201C	BH201D	BH202
Sample Depth (m)				2.00	1.00	1.00
Sampling Date				19/05/2023	22/05/2023	23/05/2023
Determinand	Codes	Units	LOD			
Soil sample preparation parameters						
Moisture Content	N	%	0.1	9.2	9.1	11.8
Material removed	N	%	0.1	44.3	45.5	48.7
Description of Inert material removed	N		0	Stones	Stones	Stones, Metal & Plastic
Metals						
Water Soluble Magnesium	N	mg/l	0.1	< 0.1	19.0	< 0.1
Anions						
Water Soluble Chloride	M	mg/l	20	289	269	270
Water Soluble Nitrate	M	mg/l	20	82	80	72
Water Soluble Sulphate	M	mg/l	20	169	146	264
Inorganics						
Total Sulphur	N	%	0.01	0.12	0.24	0.27
Acid Soluble Sulphate (SO4)	U	%	0.02	0.15	0.20	0.37
Miscellaneous						
pH	M	pH units	0.1	10.7	10.8	10.7



2683

Method Summary

Report No.: 23-48416, issue number 1

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
pH	M	Air dried sample	12/06/2023	113	Electromeric
Acid Soluble Sulphate	U	Air dried sample	13/06/2023	115	Ion Chromatography
W. Sol Metals	N	Air dried sample	21/06/2023	300	ICPMS
Water soluble anions	M	Air dried sample	09/06/2023	172	Ion Chromatography
Total organic carbon/Total sulphur	N	Air dried sample	08/06/2023	216	IR

Tests marked N are not UKAS accredited

Report Information

Report No.: 23-48416, issue number 1

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"
LOD	LOD refers to limit of detection, except in the case of pH soils and pH waters where it means limit of discrimination. Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed. ELAB are unable to provide an interpretation or opinion on the content of this report. The results relate only to the sample received. PCB congener results may include any coeluting PCBs Uncertainty of measurement for the determinands tested are available upon request Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Deviation Codes

a	No date of sampling supplied
b	No time of sampling supplied (Waters Only)
c	Sample not received in appropriate containers
d	Sample not received in cooled condition
e	The container has been incorrectly filled
f	Sample age exceeds stability time (sampling to receipt)
g	Sample age exceeds stability time (sampling to analysis)

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month
 All water samples will be retained for 7 days following the date of the test report
 Charges may apply to extended sample storage

TPH Classification - HWOL Acronym System

HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
2D	GC-GC - Double coil gas chromatography
#1	EH_Total but with humics mathematically subtracted
#2	EH_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry

Appendix G

Generic Quantitative Risk Assessment: Human Health



Project Number: 2111006.006		Lab Sample Number	2686385	2686386	2693999	2694000	2686383	2686384	2730142	2730143	2730144	2730145	2730146	2730147	2730148	2730149	2730150	2730151	2730152	2734948	2734948	2734950
Project Name: Project Dragon – (SAF) Production Facility: Temporary Construction Area at Margam Wharf		Sample Reference	BH201B	BH201B	BH201B	BH202A	TP214	TP214	TP204	TP204	TP206	TP208	TP208A	TP209	TP209	TP209	TP211	TP211	TP213A	TP215	TP215	TP217
Site End Use:	GAC (mg/kg)	Stratum	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG
Commercial		Depth (m)	0.60-0.80	2.50-2.80	3.50-3.80	1.00-1.20	0.20-0.60	2.10-2.40	0.50	1.30	0.60	0.30	0.70	0.20	0.70	2.00	0.40	1.30	0.20	0.60	0.60	0.80
		Date Sampled	18/05/2023	18/05/2023	25/05/2023	25/05/2023	18/05/2023	18/05/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	30/06/2023	30/06/2023	30/06/2023
Determinand			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Arsenic	640 ⁽¹⁾	mg/kg	8.00	31.00	45.00	13.00	10.00	30.00	8.60	20.00	21.00	4.70	14.00	9.20	9.50	79.00	15.00	13.00	8.00	10.00	9.60	23.00
Boron	240000 ⁽¹⁾	mg/kg	3.40	1.50	1.80	3.60	5.40	6.50	7.00	4.20	6.00	2.10	4.10	0.70	3.80	3.20	8.80	4.90	3.80	3.90	2.30	2.80
Cadmium	410 ⁽¹⁾	mg/kg	0.40	3.10	3.50	0.90	0.50	< 0.2	< 0.2	< 0.2	2.10	0.60	1.90	0.70	1.80	< 0.2	1.70	1.10	< 0.2	0.80	1.00	< 0.2
Chromium (total)	8600 ⁽³⁾	mg/kg	290.00	70.00	79.00	130.00	300.00	89.00	500.00	130.00	240.00	390.00	260.00	56.00	530.00	23.00	220.00	220.00	210.00	290.00	320.00	280.00
Chromium (VI)	49 ⁽¹⁾	mg/kg	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Copper	68000 ⁽³⁾	mg/kg	28.00	210.00	1200.00	50.00	120.00	760.00	47.00	99.00	140.00	46.00	57.00	38.00	48.00	160.00	65.00	64.00	40.00	45.00	75.00	50.00
Lead	2300 ⁽¹⁾	mg/kg	87.00	1300.00	200.00	77.00	85.00	190.00	65.00	110.00	250.00	55.00	170.00	45.00	110.00	36.00	130.00	100.00	50.00	140.00	170.00	62.00
Mercury	3600 ⁽¹⁾	mg/kg	< 0.3	3.40	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel	1800 ⁽¹⁾	mg/kg	14.00	32.00	58.00	18.00	30.00	33.00	15.00	45.00	45.00	14.00	27.00	13.00	51.00	30.00	29.00	28.00	15.00	18.00	22.00	19.00
Selenium	13000 ⁽¹⁾	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc	730000 ⁽¹⁾	mg/kg	200.00	3800.00	1000.00	300.00	270.00	530.00	160.00	320.00	850.00	200.00	720.00	130.00	820.00	180.00	660.00	580.00	250.00	220.00	140.00	140.00
Beryllium	12 ⁽¹⁾	mg/kg	0.83	1.50	1.50	1.40	0.80	1.30	0.71	1.80	1.50	0.58	1.50	1.60	1.70	1.30	1.60	1.60	1.30	0.57	0.76	0.50
Vanadium	9000 ⁽¹⁾	mg/kg	230.00	150.00	120.00	160.00	350.00	100.00	430.00	270.00	210.00	410.00	210.00	89.00	320.00	34.00	240.00	240.00	220.00	270.00	360.00	290.00
Barium	22000 ⁽⁴⁾	mg/kg	170.00	330.00	350.00	270.00	160.00	230.00	140.00	230.00	300.00	150.00	320.00	230.00	290.00	42.00	320.00	340.00	210.00	160.00	170.00	96.00
Cyanide (Total)	20 ⁽⁵⁾	mg/kg	2.40	150.00	8.40	< 1.0	< 1.0	< 1.0	1.70	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.00	< 1.0	1.00	1.80	1.20	< 1.0	2.40	< 1.0
Phenol (Monohydric)	440 ⁽¹⁾	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sulphide	-	mg/kg	81.00	3.20	52.00	170.00	41.00	13.00	27.00	68.00	100.00	34.00	120.00	250.00	160.00	4.20	83.00	160.00	100.00	15.00	35.00	8.30
Naphthalene	190 ⁽¹⁾	mg/kg	0.14	0.30	0.83	0.62	0.47	1.20	0.18	0.23	0.53	0.15	0.75	0.39	0.56	< 0.05	0.54	0.32	< 0.05	0.22	0.82	0.10
Acenaphthylene	83000 ⁽¹⁾	mg/kg	0.11	0.12	< 0.05	0.10	0.09	< 0.05	< 0.05	< 0.05	0.12	< 0.05	0.16	0.16	0.06	< 0.05	0.10	0.12	< 0.05	0.06	0.22	< 0.05
Acenaphthene	84000 ⁽¹⁾	mg/kg	0.19	0.24	1.50	0.34	0.66	5.50	0.32	0.33	0.30	0.10	3.80	0.17	0.19	0.07	1.50	0.22	0.08	0.27	0.33	0.14
Fluorene	63000 ⁽¹⁾	mg/kg	0.27	0.24	1.30	0.49	0.63	5.70	0.16	0.32	0.25	0.06	3.30	0.18	0.37	0.07	3.10	0.21	< 0.05	0.24	0.25	0.13
Phenanthrene	22000 ⁽¹⁾	mg/kg	1.60	2.30	2.50	3.10	7.20	63.00	1.80	2.90	2.30	1.60	22.00	1.30	1.50	0.39	16.00	3.00	0.54	1.80	5.10	1.10
Anthracene	520000 ⁽¹⁾	mg/kg	0.31	0.57	0.96	1.80	1.70	17.00	0.30	1.30	0.53	0.30	9.00	0.38	0.76	< 0.05	5.80	0.97	0.11	0.32	0.50	0.19
Fluoranthene	23000 ⁽¹⁾	mg/kg	2.50	3.50	4.70	4.00	9.90	70.00	3.60	3.70	3.90	3.40	23.00	2.20	1.50	0.44	12.00	4.10	0.87	2.30	7.30	1.60
Pyrene	54000 ⁽¹⁾	mg/kg	1.90	3.00	3.90	3.50	8.70	61.00	4.50	3.50	3.40	3.10	19.00	2.00	1.40	0.64	8.60	3.00	0.89	2.40	5.40	1.90
Benzo(a)anthracene	170 ⁽¹⁾	mg/kg	1.20	2.30	2.60	2.00	5.00	30.00	2.60	2.20	1.90	2.00	8.20	1.60	0.74	0.14	5.60	2.30	0.50	1.30	3.50	1.10
Chrysene	350 ⁽¹⁾	mg/kg	1.10	2.00	2.70	1.90	4.70	29.00	3.50	2.10	2.00	2.20	6.80	1.60	0.91	0.17	5.10	2.60	0.66	1.80	4.90	1.40
Benzo(b)fluoranthene	44 ⁽¹⁾	mg/kg	1.60	3.00	3.00	2.20	5.90	30.00	4.70	2.40	2.40	3.10	6.90	2.80	1.00	0.07	5.30	2.40	0.69	2.20	5.30	1.60
Benzo(k)fluoranthene	1200 ⁽¹⁾	mg/kg	0.46	0.82	1.20	0.88	1.70	11.00	2.00	1.00	1.00	1.30	3.40	0.99	0.42	0.10	2.20	1.10	0.25	0.84	2.10	0.72
Benzo(a)pyrene	35 ⁽¹⁾	mg/kg	0.93	1.80	2.00	1.60	4.10	25.00	2.80	1.40	1.30	1.80	4.90	2.10	0.49	0.07	3.80	1.50	0.41	1.30	2.50	0.81
Indeno(1,2,3-cd)pyrene	500 ⁽¹⁾	mg/kg	0.62	1.20	1.20	0.90	2.20	13.00	1.60	0.73	0.74	1.10	2.20	1.20	0.32	0.14	1.90	0.84	0.33	1.10	2.40	0.78
Dibenz(a,h)anthracene	3.5 ⁽¹⁾	mg/kg	0.21	0.35	0.49	0.29	0.58	3.30	0.35	0.22	0.21	0.25	0.64	0.29	< 0.05	< 0.05	0.59	0.27	< 0.05	0.32	0.75	0.21
Benzo(ghi)perylene	3900 ⁽¹⁾	mg/kg	0.67	1.20	1.10	0.85	2.30	14.00	1.80	0.83	0.85	1.30	2.50	1.40	0.37	0.10	2.20	0.98	0.37	1.40	2.70	0.95
Speciated Total EPA-16 PAHs	-	mg/kg	13.70	22.80	29.90	24.50	56.00	379.00	30.20	23.10	21.70	21.90										
Benzene	27 ⁽¹⁾	µg/kg	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0^	-	-	< 5.0	< 5.0	< 5.0^	-	< 5.0	-	< 5.0^	-	< 5.0	< 5.0	< 5.0
Toluene	56000 ⁽¹⁾	µg/kg	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0^	-	-	< 5.0	< 5.0	< 5.0^	-	< 5.0	-	< 5.0^	-	< 5.0	< 5.0	< 5.0
Ethylbenzene	5700 ⁽¹⁾	µg/kg	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0^	-	-	< 5.0#	< 5.0#	< 5.0^	-	< 5.0#	-	< 5.0^	-	< 5.0	< 5.0	< 5.0
p & m-xylene	5900 ⁽¹⁾	µg/kg	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0^	-	-	< 5.0#	< 5.0#	< 5.0^	-	< 5.0#	-	< 5.0^	-	< 5.0	< 5.0	< 5.0
o-xylene	6600 ⁽¹⁾	µg/kg	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0^	-	-	< 5.0#	< 5.0#	< 5.0^	-	< 5.0#	-	< 5.0^	-	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	7900 ⁽⁴⁾	µg/kg	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0^	-	-	< 5.0	< 5.0	< 5.0^	-	< 5.0	-	< 5.0^	-	< 5.0	< 5.0	< 5.0
TPH Aliphatic C5-C6	3200 ⁽¹⁾	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	-	-	< 0.001	< 0.001	< 0.001	-	< 0.001	-	< 0.001	-	< 0.10	< 0.10	< 0.10
TPH Aliphatic C6-C8	7800 ⁽¹⁾	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	-	-	< 0.001	< 0.001	< 0.001	-	< 0.001	-	< 0.001	-	< 0.10	< 0.10	< 0.10
TPH Aliphatic C8-C10	2000 ⁽¹⁾	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	-	-	< 0.001	< 0.001	< 0.001	-	< 0.001	-	< 0.001	-	< 0.10	< 0.10	< 0.10
TPH Aliphatic C10-C12	9700 ⁽¹⁾	mg/kg	< 1.0	< 1.0	30.00	< 1.0	< 1.0	< 1.0	< 1.0	-	-	< 1.0	< 1.0	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	< 1.0	< 1.0
TPH Aliphatic C12-C16	59000 ⁽¹⁾	mg/kg	< 2.0	2.20	480.00	3.40	2.70	< 2.0	< 2.0	-	-	3.10	< 2.0	< 2.0	-	< 2.0	-	< 2.0	-	7.50	11.00	< 2.0
TPH Aliphatic C16-C21	1600000 ⁽¹⁾	mg/kg	< 8.0	< 8.0	190.00	9.80	8.80	11.00	11.00	-	-	13.00	12.00	< 8.0	-	< 8.0	-	10.00	-	100.00	48.00	9.50
TPH Aliphatic C21-C35	16000000 ⁽¹⁾	mg/kg	< 8.0	43.00	290.00	82.00	67.00	54.00	85.00	-	-	66.00	100.00	56.00	-	< 8.0	-	77.00	-	150.00	230.00	64.00
TPH Aromatic C5-C7	26000 ⁽¹⁾	mg/kg	< 0.																			

Appendix H

Generic Quantitative Risk Assessment: Controlled Waters

Leachability Analysis:

Contaminant	Maximum Recorded Concentration (µg/l)	Minimum Recorded Concentration (µg/l)	SSV (µg/l)	No. of Exceedances
Arsenic	14	2	25 ⁽¹⁾	1
Barium	42	9.6	700 ⁽³⁾	0
Beryllium	<0.2 ⁽⁶⁾	<0.2 ⁽⁶⁾	12 ⁽³⁾	0
Boron	160	30	7000 ⁽¹⁾	0
Cadmium	<0.08 ⁽⁶⁾	<0.08 ⁽⁶⁾	0.2 ⁽¹⁾	0
Chromium	10	1.9	4.7 ⁽¹⁾	2
Copper	33	6.7	3.76 ⁽¹⁾	0
Lead	7.3	1.2	1.3 ⁽¹⁾	5
Mercury	<0.5 ^(6,7)	<0.5 ^(6,7)	0.07 ⁽²⁾	0
Nickel	8.2	0.9	8.6 ⁽¹⁾	0
Selenium	23	5.9	10 ⁽⁴⁾	1
Vanadium	86	28	100 ⁽¹⁾	0
Zinc	18	4.2	6.8 ⁽¹⁾	4
Cyanide (Total)	44	26	1 ^(1,7)	8
Total Phenol (Monohydric)	<10 ^(6,7)	<10 ^(6,7)	7.7 ^(1,7)	8
Sulphate	43000	9200	400000 ⁽¹⁾	0
Sulphide	<5.0 ⁽⁶⁾	< 5.0 ⁽⁶⁾	-	-
pH	11.3	9	-	-
Naphthalene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	4.0 ⁽⁴⁾	0
Acenaphthylene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-
Acenaphthene	2.9	< 0.01 ⁽⁶⁾	-	-
Fluorene	0.9	< 0.01 ⁽⁶⁾	-	-
Phenanthrene	0.37	< 0.01 ⁽⁶⁾	-	-
Anthracene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	0.1 ⁽¹⁾	3
Fluoranthene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-
Pyrene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-
Benzo(a)anthracene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-
Chrysene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-
Benzo(b)fluoranthene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-
Benzo(k)fluoranthene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-
Benzo(a)pyrene	< 0.01 ^(6,7)	< 0.01 ^(6,7)	0.00017 ^(1,7)	8
Indeno(1,2,3-cd)pyrene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-
Benzo(g,h,i)perylene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-
Dibenz(a,h)anthracene	< 0.01 ⁽⁶⁾	< 0.01 ⁽⁶⁾	-	-
Total PAH	68	< 0.2 ⁽⁶⁾	-	-

Notes:

- 1 EQS, Annual Average (AA) – Coastal Waters
- 2 EQS, Maximum Allowable Concentrations (MAC) – Coastal Waters
- 3 WHO Guidelines for Drinking Water Quality (2008)
- 4 Water Supply (Water Quality) Regulations 2018 – Drinking Water Standards (DWS)
- 5 EQS, Annual Average (AA) – Freshwater
- 6 Laboratory Limit of Detection
- 7 Laboratory Limit of Detection greater than SSV

Appendix I

Plate Bearing Test Results

**Apex Testing Solutions**

Sturmi Way
Village Farm Industrial Estate
Pyle
Bridgend
CF33 6BZ
Telephone :01656 746762
Facsimile :01656 749096
Email andrew.grogan@apex-drilling.com

REPORT No. : D23234

CLIENT : T.E.C.

SITE : Phoenix Wharf

MATERIAL DESCRIPTION : See Individual Tests Results

DATE TESTED : 19 May 2023

TESTING REQUIRED : 8 No. Plate Load Bearing Tests

RELEVANT SPECIFICATION : BS 1377 : Part 9 : 1990
In House Method / Clients Specification
CD 225 Rev 1 (Supersedes IAN 73/06 rev 1)

TEST METHOD : Clause 4.1.6.4.2

TEST RESULTS : See Pages 3 – 10

**Apex Testing Solutions**

Sturmi Way
Village Farm Industrial Estate
Pyle
Bridgend
CF33 6BZ
Telephone :01656 746762
Facsimile :01656 749096
Email : andrew.grogan@apex-drilling.com

REPORT No. : D23234

CLIENT : T.E.C.

SITE : Phoenix Wharf

TEST LOCATION : 8 No. Locations as instructed by Client

DEPTH (m) : See Individual Test Results

Reaction Load : 8T JCB

Plate Diameter : 300 mm

TEST RESULTS

Test No.	1	2	3	4	5	6	7	8		
CBR%	44	51	12	4.7	2.1	2.8	14	U		

Test No.										
CBR%										

COMMENTS U = Undetermined
Unable to apply preload pressure on CBR 8: TP106@0.3m. Too soft to test.

Weather - Overcast

CHECKED BY: G Llewellyn

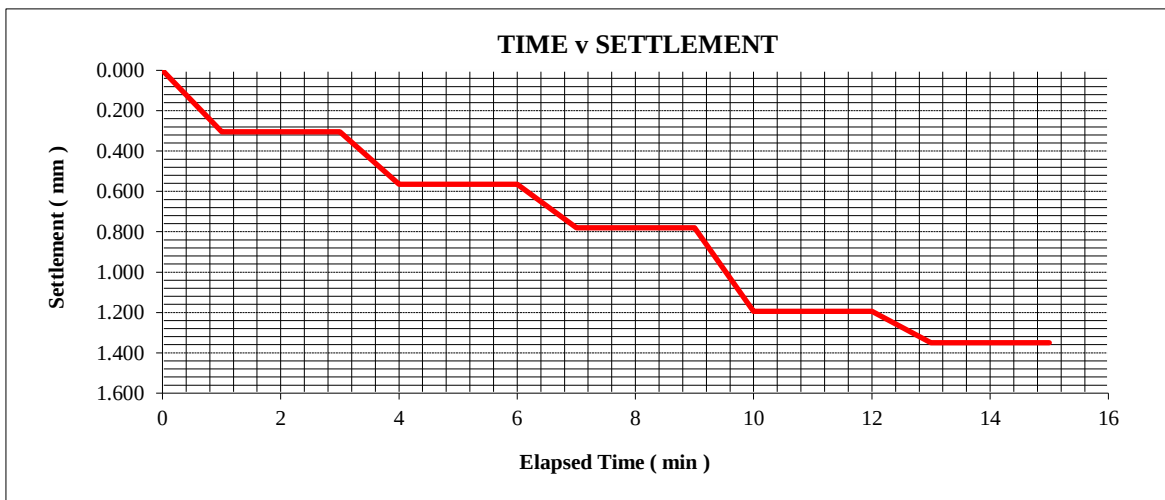
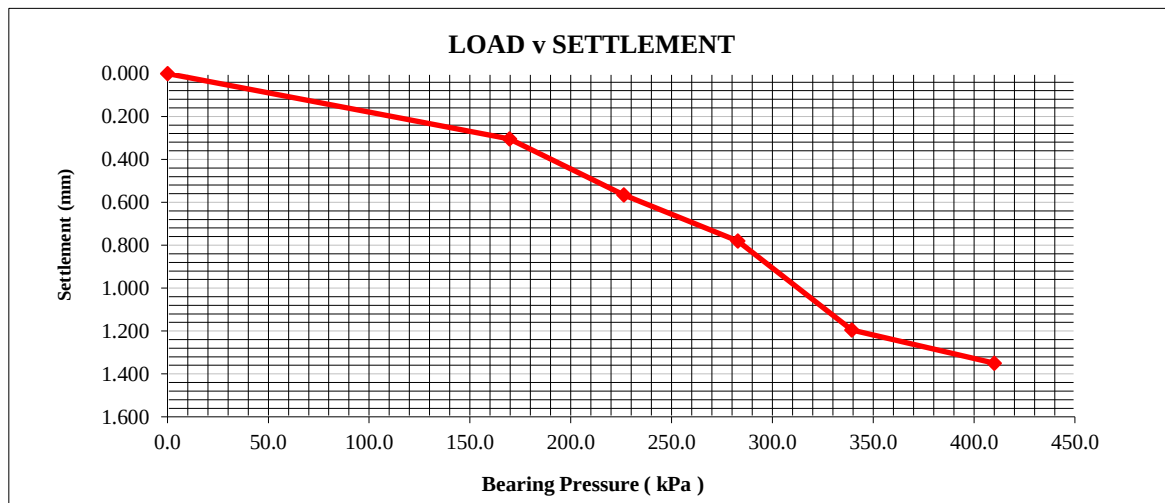
DATE : 22/05/2023



REPORT No : D23234
CLIENT : T.E.C.
SITE : Phoenix Wharf

TEST RESULTS

TEST No.	: 1
DATE TESTED	: 19 May 2023
SAMPLE TYPE	: Recompacted
DEPTH (m)	: 300mm b.e.g.l.
SAMPLE DESCRIPTION	: Brown sandy silty GRAVEL
LOCATION	: TP214
Plate Size	: 300 mm
LOAD TO ACHIEVE 1.25mm SETTLEMENT >	: 364.45 kN/m ²
MODULUS OF SUBGRADE REACTION (k_{762}) >	: 128781 kN/m ² /m
Equivalent CBR VALUE >	: 44 %

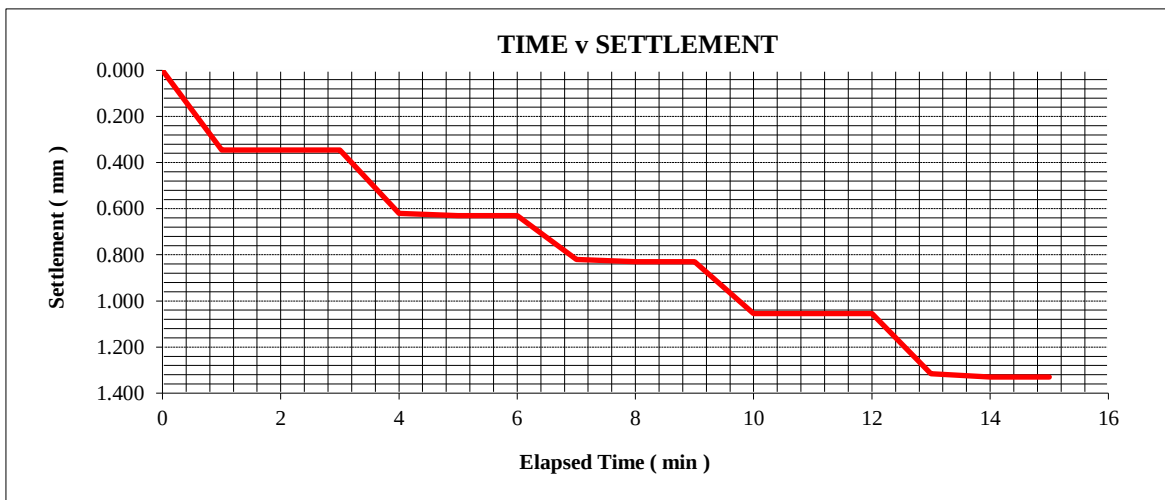
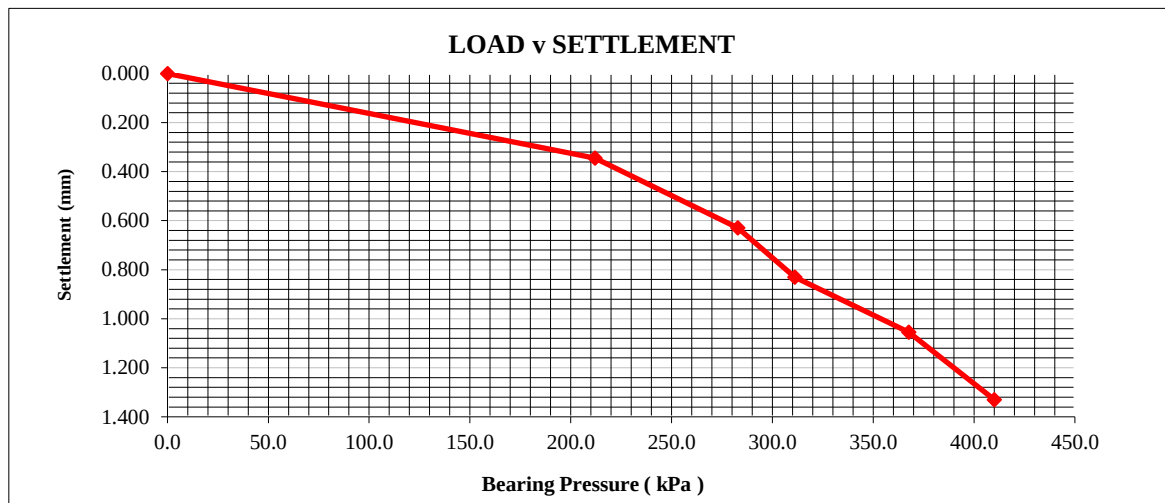




REPORT No : D23234
CLIENT : T.E.C.
SITE : Phoenix Wharf

TEST RESULTS

TEST No.	: 2
DATE TESTED	: 19 May 2023
SAMPLE TYPE	: Recompacted
DEPTH (m)	: 600mm b.e.g.l.
SAMPLE DESCRIPTION	: Dark brown sandy gravelly SILT
LOCATION	: TP214
Plate Size	: 300 mm
LOAD TO ACHIEVE 1.25mm SETTLEMENT >	: 397.72 kN/m ²
MODULUS OF SUBGRADE REACTION (k_{762}) >	: 140538 kN/m ² /m
Equivalent CBR VALUE >	: 51 %

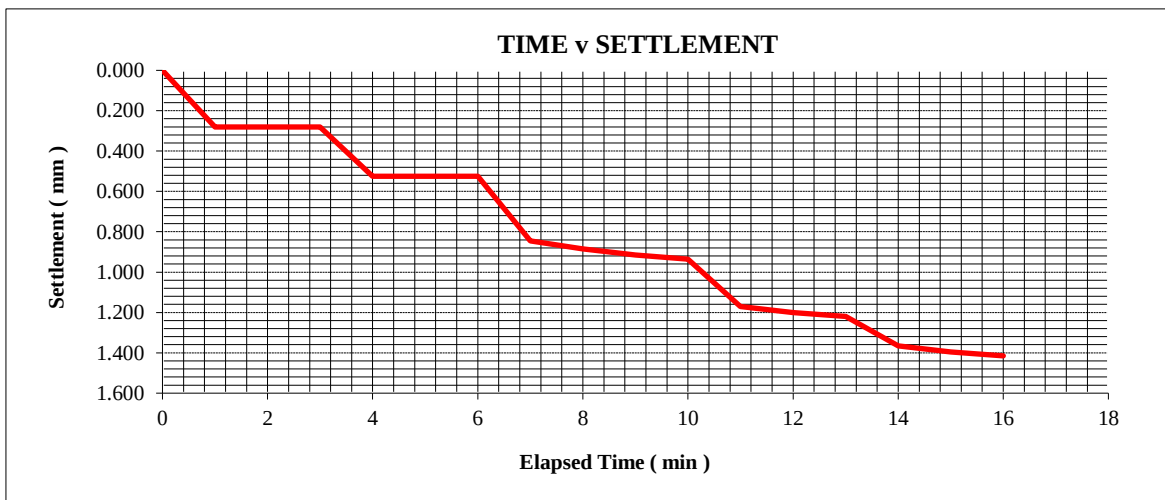
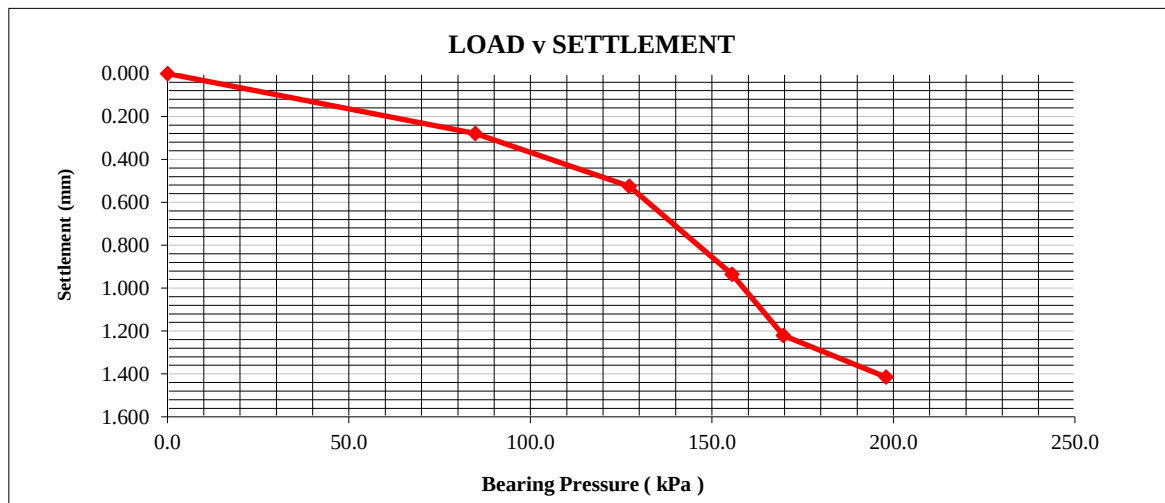




REPORT No : D23234
CLIENT : T.E.C.
SITE : Phoenix Wharf

TEST RESULTS

TEST No.	: 3
DATE TESTED	: 19 May 2023
SAMPLE TYPE	: Recompacted
DEPTH (m)	: 900mm b.e.g.l.
SAMPLE DESCRIPTION	: Brown sandy gravelly SILT
LOCATION	: TP214
Plate Size	: 300 mm
LOAD TO ACHIEVE 1.25mm SETTLEMENT >	: 174.03 kN/m ²
MODULUS OF SUBGRADE REACTION (k_{762}) >	: 61496 kN/m ² /m
Equivalent CBR VALUE >	: 12 %

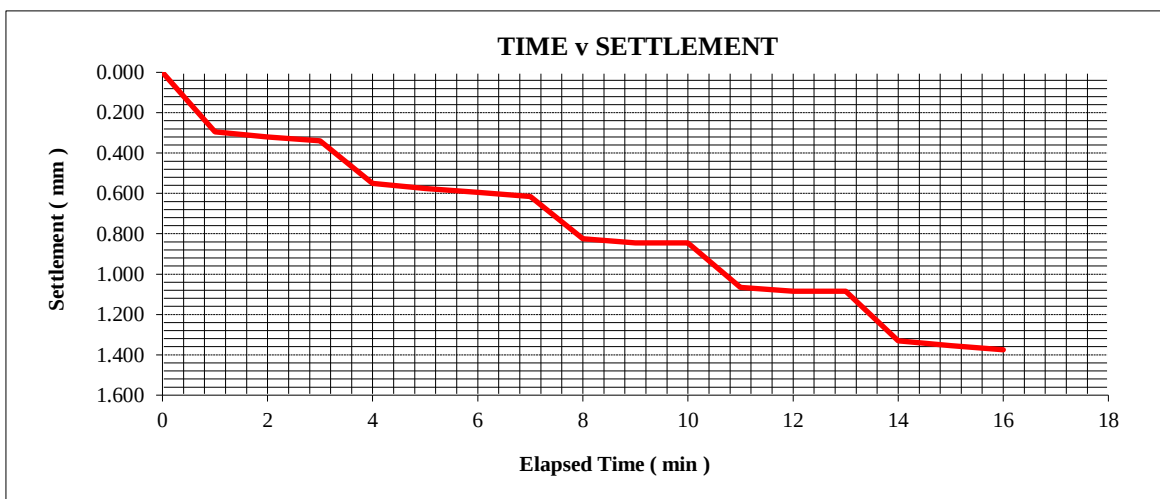
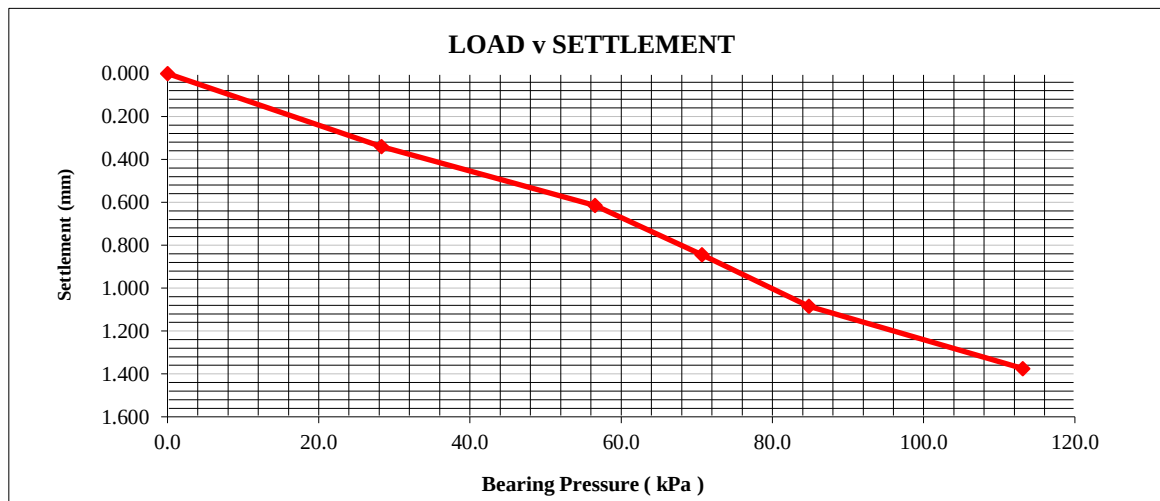




REPORT No : D23234
CLIENT : T.E.C.
SITE : Phoenix Wharf

TEST RESULTS

TEST No.	: 4
DATE TESTED	: 19 May 2023
SAMPLE TYPE	: Recompacted
DEPTH (m)	: 300mm b.e.g.l.
SAMPLE DESCRIPTION	: Brown mottled grey slightly clayey SAND
LOCATION	: TP102
Plate Size	: 300 mm
LOAD TO ACHIEVE 1.25mm SETTLEMENT >	: 100.93 kN/m ²
MODULUS OF SUBGRADE REACTION (k_{762}) >	: 35665 kN/m ² /m
Equivalent CBR VALUE >	: 4.7 %

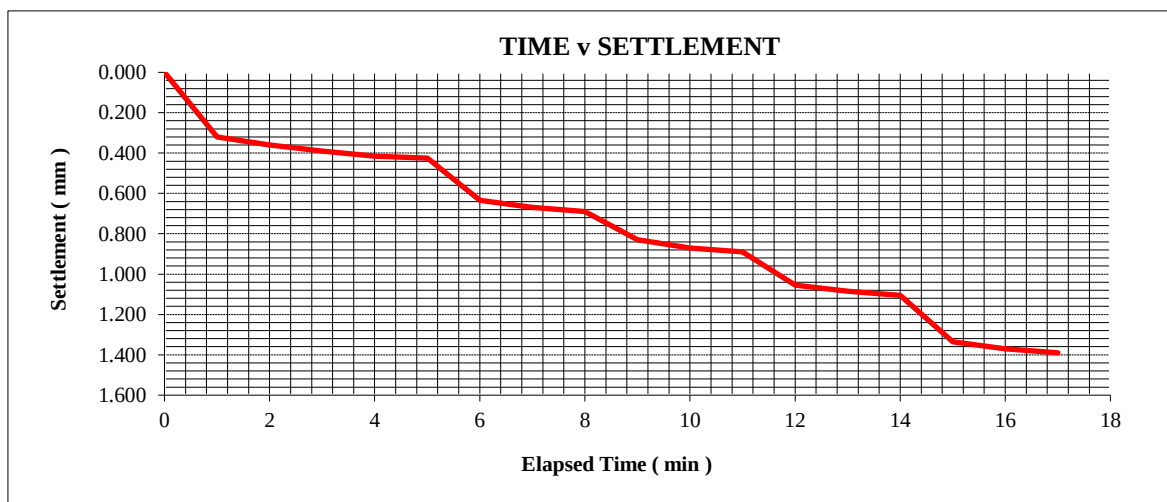
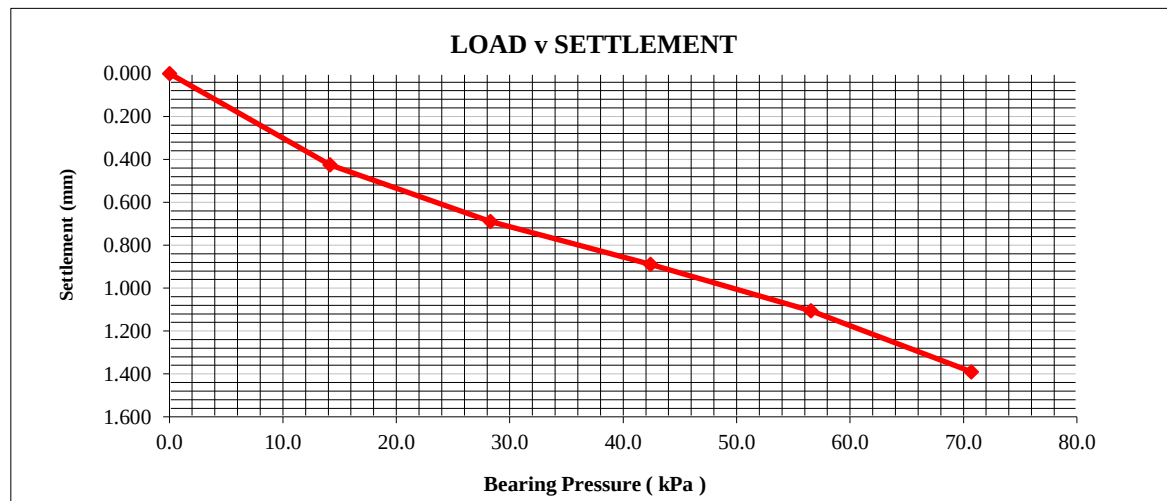




REPORT No : D23234
CLIENT : T.E.C.
SITE : Phoenix Wharf

TEST RESULTS

TEST No.	: 5
DATE TESTED	: 19 May 2023
SAMPLE TYPE	: Recompacted
DEPTH (m)	: 300mm b.e.g.l.
SAMPLE DESCRIPTION	: Black clayey SAND
LOCATION	: TP104
Plate Size	: 300 mm
LOAD TO ACHIEVE 1.25mm SETTLEMENT >	: 63.75 kN/m ²
MODULUS OF SUBGRADE REACTION (k_{762}) >	: 22528 kN/m ² /m
Equivalent CBR VALUE >	: 2.1 %

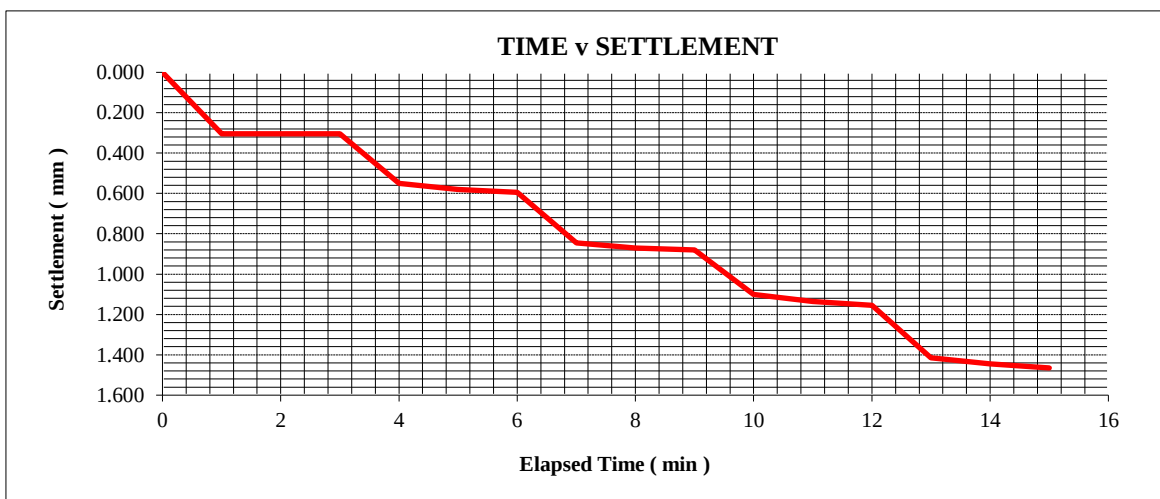
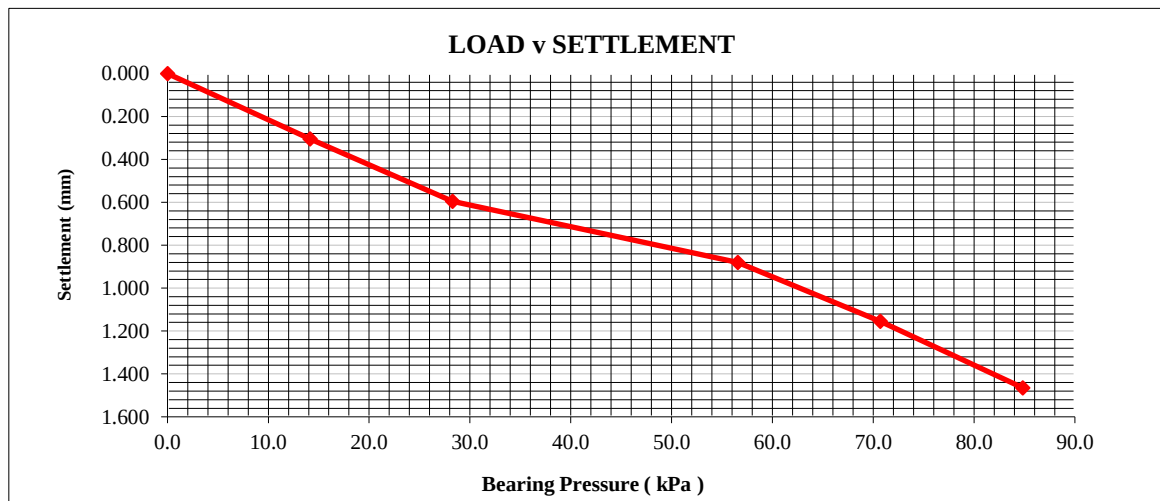




REPORT No : D23234
CLIENT : T.E.C.
SITE : Phoenix Wharf

TEST RESULTS

TEST No.	: 6
DATE TESTED	: 19 May 2023
SAMPLE TYPE	: Recompacted
DEPTH (m)	: 300mm b.e.g.l.
SAMPLE DESCRIPTION	: Black gravelly CLAY
LOCATION	: TP101
Plate Size	: 300 mm
LOAD TO ACHIEVE 1.25mm SETTLEMENT >	: 75.03 kN/m ²
MODULUS OF SUBGRADE REACTION (k_{762}) >	: 26514 kN/m ² /m
Equivalent CBR VALUE >	: 2.8 %

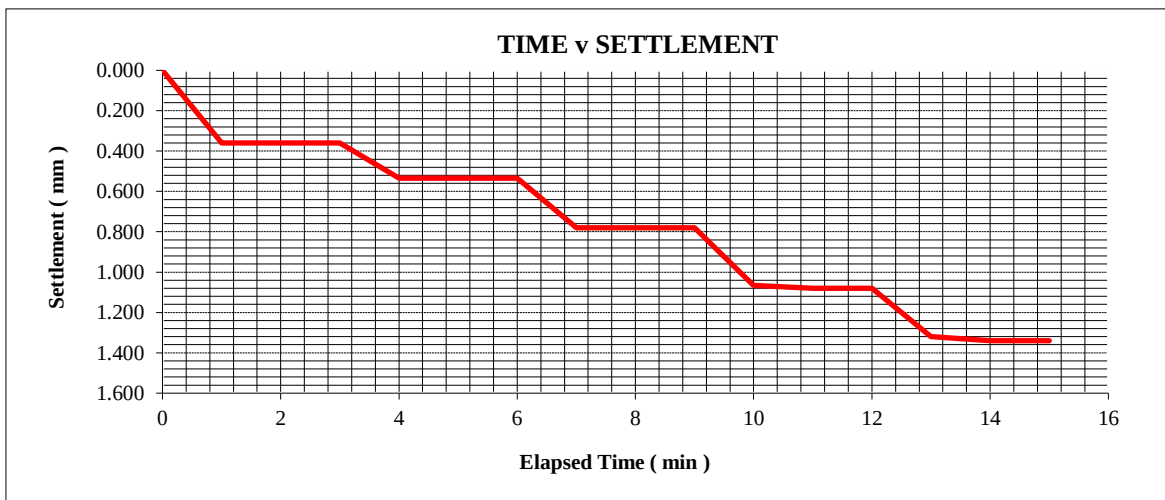
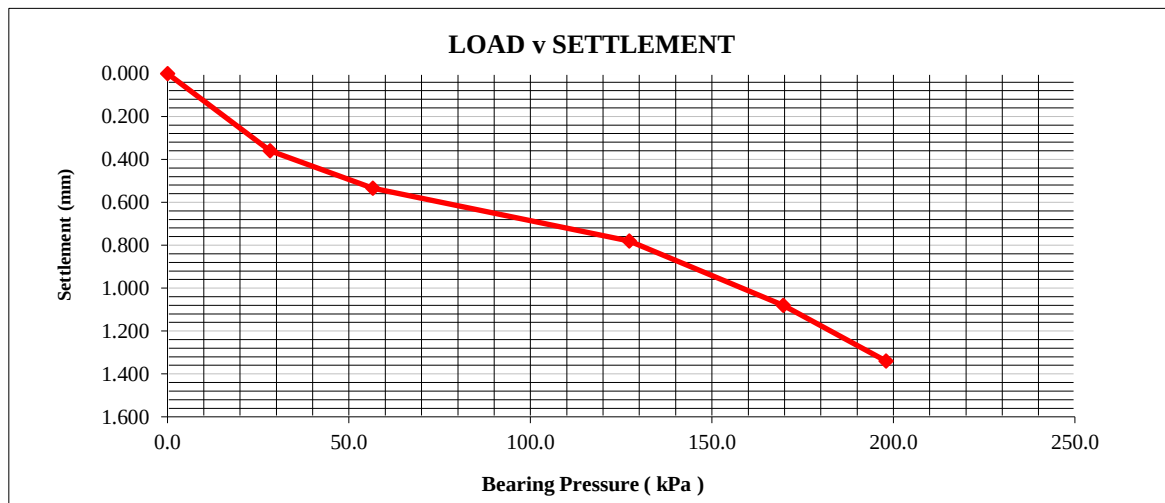




REPORT No : D23234
CLIENT : T.E.C.
SITE : Phoenix Wharf

TEST RESULTS

TEST No.	: 7
DATE TESTED	: 19 May 2023
SAMPLE TYPE	: Recompacted
DEPTH (m)	: 300mm b.e.g.l
SAMPLE DESCRIPTION	: Black gravelly CLAY
LOCATION	: TP105
Plate Size	: 300 mm
LOAD TO ACHIEVE 1.25mm SETTLEMENT >	: 188.17 kN/m ²
MODULUS OF SUBGRADE REACTION (k_{762}) >	: 66492 kN/m ² /m
Equivalent CBR VALUE >	: 14 %

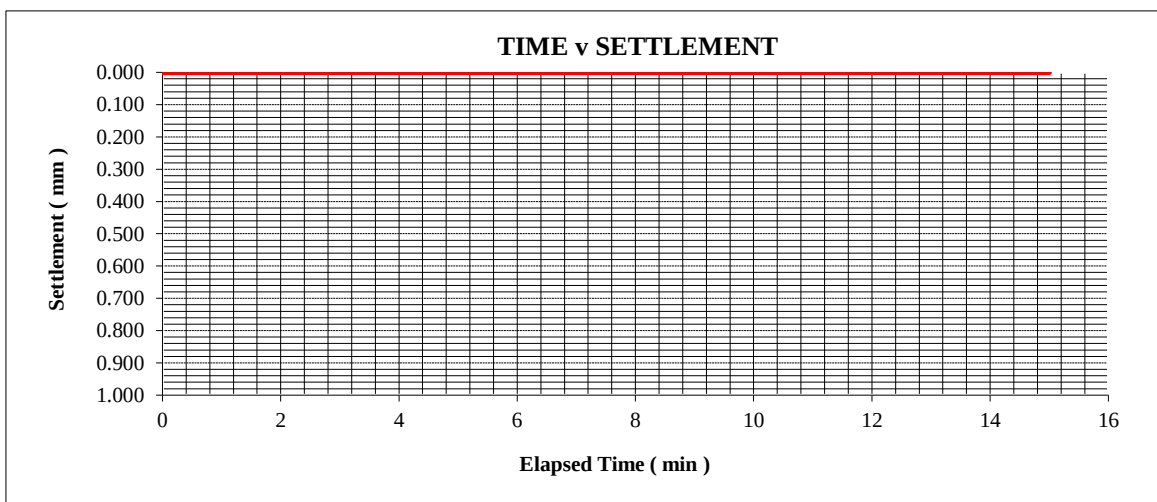
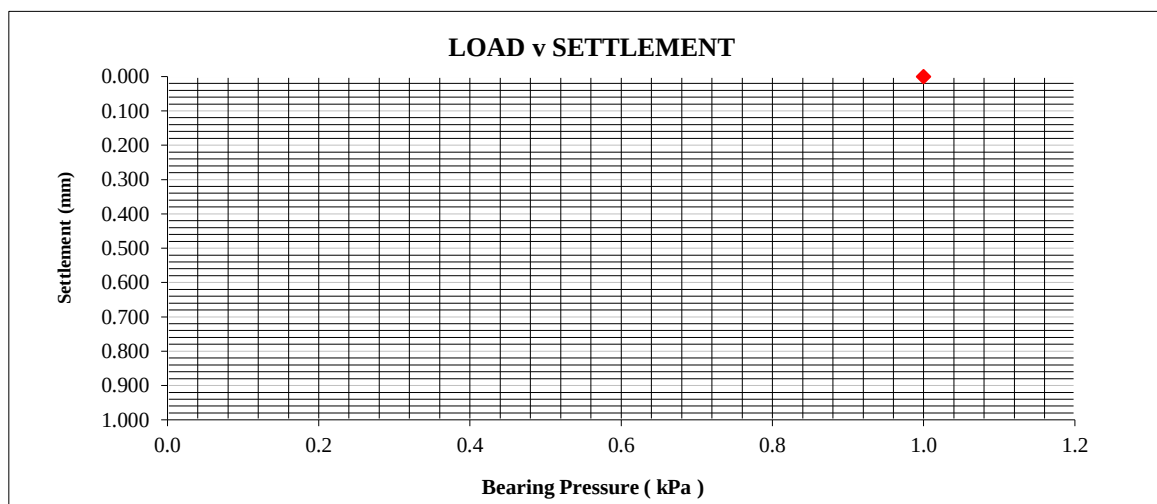




REPORT No : D23234
CLIENT : T.E.C.
SITE : Phoenix Wharf

TEST RESULTS

TEST No.	: 8
DATE TESTED	: 19 May 2023
SAMPLE TYPE	: Recompacted
DEPTH (m)	: 300mm b.e.g.l
SAMPLE DESCRIPTION	: Black PEAT
LOCATION	: TP106
Plate Size	: 300 mm
LOAD TO ACHIEVE 1.25mm SETTLEMENT >	: N/A kN/m ²
MODULUS OF SUBGRADE REACTION (k_{762}) >	: N/A kN/m ² /m
Equivalent CBR VALUE >	: Undetermine %



**Apex Testing Solutions**

Sturmi Way
Village Farm Industrial Estate
Pyle
Bridgend
CF33 6BZ
Telephone :01656 746762
Facsimile :01656 749096
Email andrew.grogan@apex-drilling.com

REPORT No. : D23234 27.06.2023

CLIENT : TEC

SITE : Phoenix Wharf

MATERIAL DESCRIPTION : See Individual Tests Results

DATE TESTED : 27 June 2023

TESTING REQUIRED : 3 No. Plate Load Bearing Tests

RELEVANT SPECIFICATION : BS 1377 : Part 9 : 1990
In House Method / Clients Specification
CD 225 Rev 1 (Supersedes IAN 73/06 rev 1)

TEST METHOD : Clause 4.1.6.4.2

TEST RESULTS : See Pages 3 – 5

**Apex Testing Solutions**

Sturmi Way
Village Farm Industrial Estate
Pyle
Bridgend
CF33 6BZ
Telephone :01656 746762
Facsimile :01656 749096
Email : andrew.grogan@apex-drilling.com

REPORT No. : D23234 27.06.2023

CLIENT : TEC

SITE : Phoenix Wharf

TEST LOCATION : 3 No. Locations as instructed by Client

DEPTH (m) : See Individual Test Results

Reaction Load : 8T Excavator

Plate Diameter : 300 mm

TEST RESULTS

Test No.	1	2	3							
CBR%	>100	81	46							

Test No.										
CBR%										

COMMENTS

Weather - Overcast

CHECKED BY: K Lester

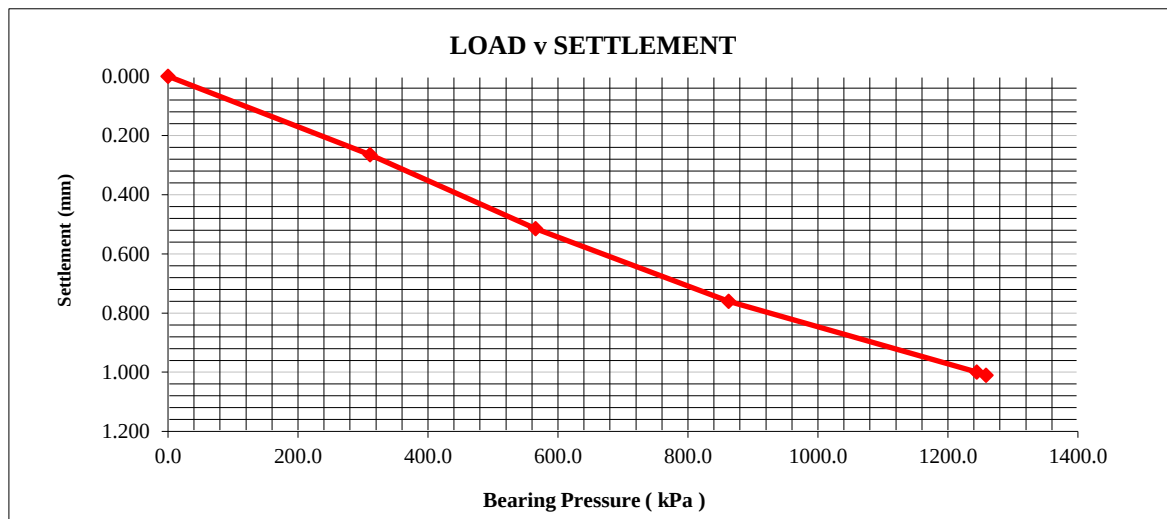
DATE : 27/06/2023



REPORT No : D23234 27.06.2023
CLIENT : TEC
SITE : Phoenix Wharf

TEST RESULTS

TEST No.	: 1
DATE TESTED	: 27 June 2023
SAMPLE TYPE	: Natural
DEPTH (m)	: 450
SAMPLE DESCRIPTION	: Dark reddish brown sandy GRAVEL
LOCATION	: TP213
Plate Size	: 300 mm
LOAD TO ACHIEVE 1.25mm SETTLEMENT >	: 1597.82 kN/m ²
MODULUS OF SUBGRADE REACTION (k_{762}) >	: 564606 kN/m ² /m
Equivalent CBR VALUE >	: 566 %

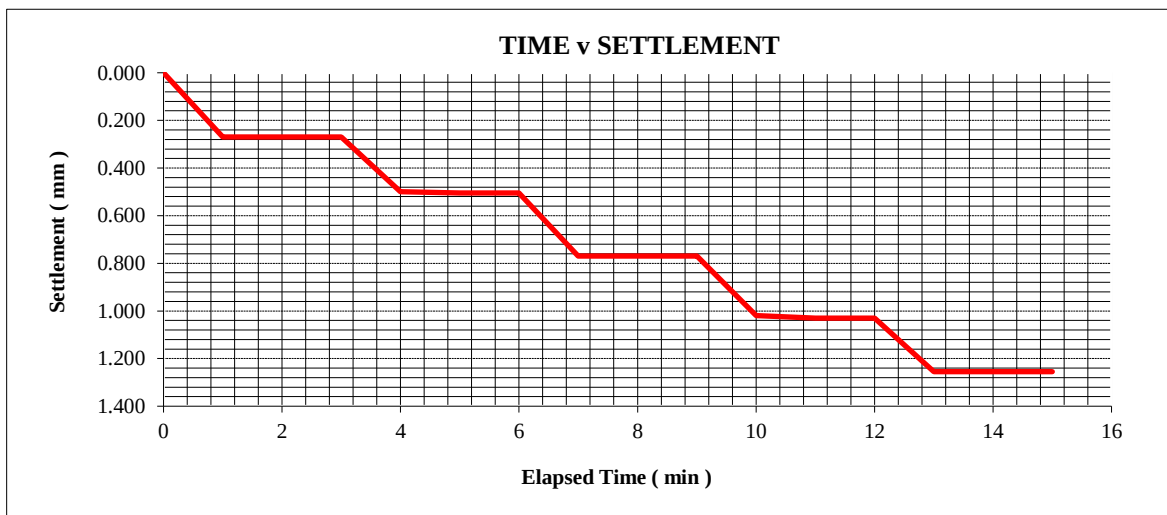
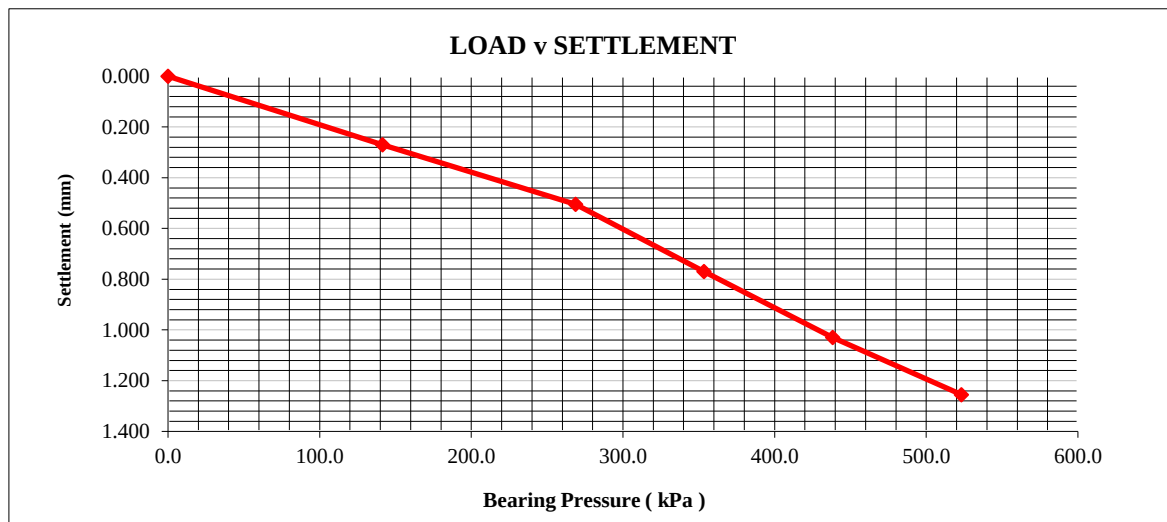




REPORT No : D23234 27.06.2023
CLIENT : TEC
SITE : Phoenix Wharf

TEST RESULTS

TEST No.	: 2
DATE TESTED	: 27 June 2023
SAMPLE TYPE	: Recompacted
DEPTH (m)	: 300
SAMPLE DESCRIPTION	: Grey sandy GRAVEL
LOCATION	: TP204
Plate Size	: 300 mm
LOAD TO ACHIEVE 1.25mm SETTLEMENT >	: 521.29 kN/m ²
MODULUS OF SUBGRADE REACTION (k_{762}) >	: 184205 kN/m ² /m
Equivalent CBR VALUE >	: 81 %

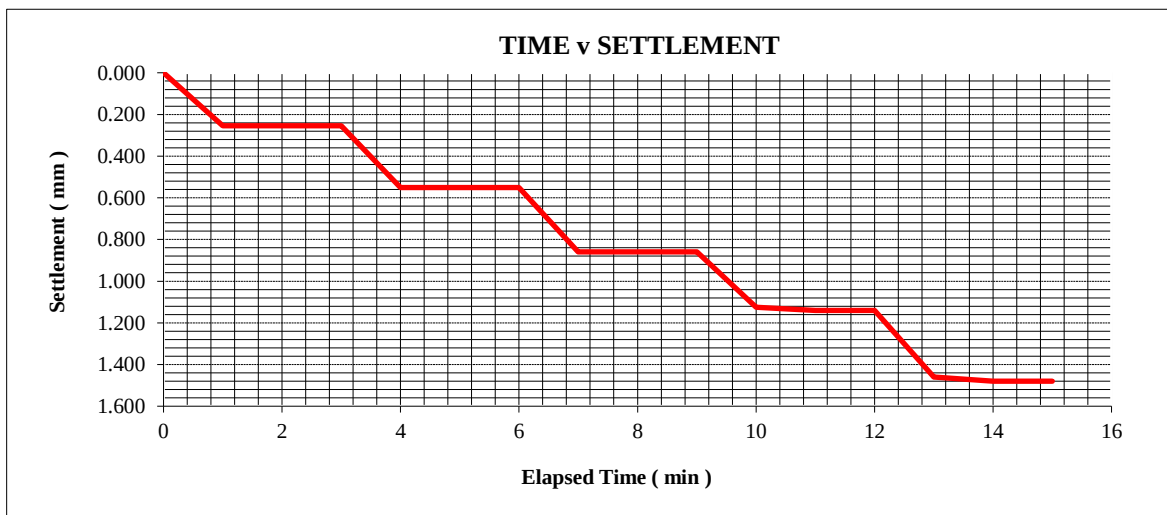
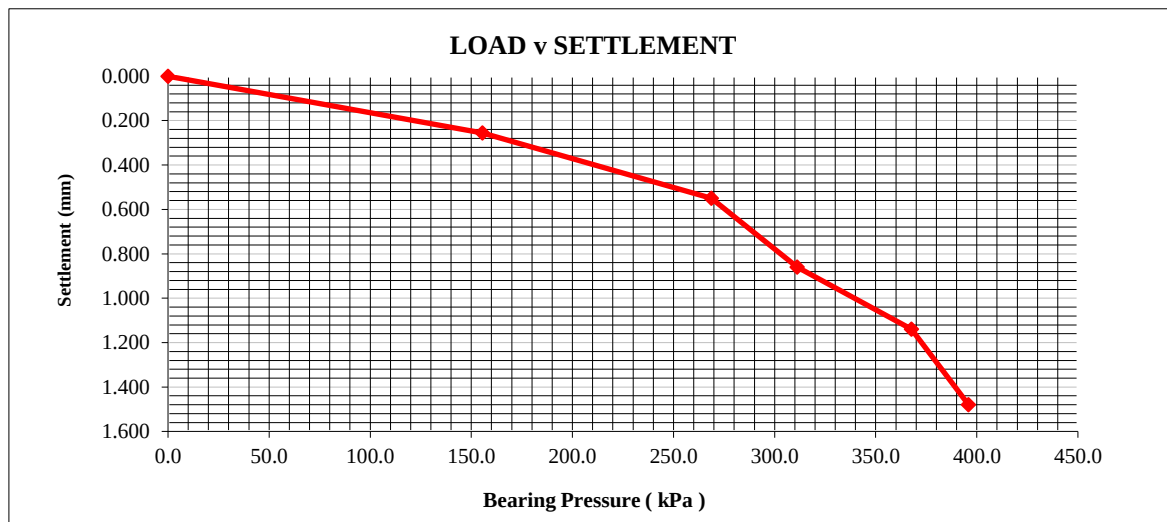




REPORT No : D23234 27.06.2023
CLIENT : TEC
SITE : Phoenix Wharf

TEST RESULTS

TEST No.	: 3
DATE TESTED	: 27 June 2023
SAMPLE TYPE	: Recompacted
DEPTH (m)	: 600
SAMPLE DESCRIPTION	: Dark brown sandy GRAVEL
LOCATION	: TP204
Plate Size	: 300 mm
LOAD TO ACHIEVE 1.25mm SETTLEMENT >	: 376.79 kN/m ²
MODULUS OF SUBGRADE REACTION (k_{762}) >	: 133142 kN/m ² /m
Equivalent CBR VALUE >	: 46 %



Appendix J

Clegg Hammer Test Results

Clegg Impact Soil Tester Results

Project:	Temporary Construction Area at Margam Wharf
Project No:	2111006.006
Location:	TP204
Date:	30-Jun-23
Soil Type:	Silty gravelly sand/ gravelly sandy silt with low cobble content.



TP204

~300mm below ground level

Depth (mbgl):	0.3
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	21	27	31	32	33	60.17	75.34
2	23	25	28	30	34	53.93	67.24
3	24	29	32	36	37	73.46	92.93
AVE				32.67		62.31	78.15

~600mm below ground level

Depth (mbgl):	0.6
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	9	13	14	19	21	24.87	30.91
2	7	11	13	15	16	16.66	21.16
3	11	14	17	18	20	22.69	28.30
AVE				17.33		21.28	26.63

~900mm below ground level

Depth (mbgl):	0.9
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	5	7	9	11	12	9.85	13.25
2	7	12	12	12	15	11.41	15.05
3	12	16	17	18	19	22.69	28.30
AVE				13.67		14.23	18.32

CIV = Clegg Impact Value

CBR = California Bearing Ratio

⁽¹⁾ Baghabra Al-Amoudi et al (2002) equation: $CBR = 0.1691 (CIV)^{1.695}$

⁽²⁾ Clegg (1986) equation: $CBR = (0.24 (CIV) + 1)^2$

Clegg Impact Soil Tester Results

Project:	Temporary Construction Area at Margam Wharf
Project No:	2111006.006
Location:	TP206
Date:	30-Jun-23
Soil Type:	Silty gravelly sand/ gravelly sandy silt with low cobble content.



TP206

~300mm below ground level

Depth (mbgl):	0.3
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	30	35	41	44	59	103.23	133.63
2	34	39	40	46	52	111.31	144.96
3	32	38	39	42	46	95.40	122.77
AVE				44.00		103.23	133.63

~600mm below ground level

Depth (mbgl):	0.6
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	11	14	15	15	16	16.66	21.16
2	12	17	19	22	23	31.88	39.44
3	14	14	17	18	19	22.69	28.30
AVE				18.33		23.41	29.16

~900mm below ground level

Depth (mbgl):	0.9
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	7	10	14	17	19	20.59	25.81
2	9	12	17	19	24	24.87	30.91
3	7	12	18	22	24	31.88	39.44
AVE				19.33		25.61	31.81

CIV = Clegg Impact Value

CBR = California Bearing Ratio

⁽¹⁾ Baghabra Al-Amoudi et al (2002) equation: $CBR = 0.1691 (CIV)^{1.695}$

⁽²⁾ Clegg (1986) equation: $CBR = (0.24 (CIV) + 1)^2$

Clegg Impact Soil Tester Results

Project:	Temporary Construction Area at Margam Wharf
Project No:	2111006.006
Location:	TP208A
Date:	30-Jun-23
Soil Type:	Silty gravelly sand/ gravelly sandy silt with low cobble content.



TP208A

~300mm below ground level

Depth (mbgl):	0.3
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	28	34	37	41	42	91.58	117.51
2	24	30	32	36	38	73.46	92.93
3	27	34	36	37	41	76.96	97.61
AVE				38.00		80.52	102.41

~600mm below ground level

Depth (mbgl):	0.6
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	8	11	17	19	21	24.87	30.91
2	7	11	13	18	24	22.69	28.30
3	12	14	17	20	26	27.13	33.64
AVE				19.00		24.87	30.91

~900mm below ground level

Depth (mbgl):	0.9
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	12	17	20	21	23	29.46	36.48
2	14	15	17	19	20	24.87	30.91
3	7	9	12	18	18	22.69	28.30
AVE				19.33		25.61	31.81

CIV = Clegg Impact Value

CBR = California Bearing Ratio

⁽¹⁾ Baghabra Al-Amoudi et al (2002) equation: $CBR = 0.1691 (CIV)^{1.695}$

⁽²⁾ Clegg (1986) equation: $CBR = (0.24 (CIV) + 1)^2$

Clegg Impact Soil Tester Results

Project:	Temporary Construction Area at Margam Wharf
Project No:	2111006.006
Location:	TP215
Date:	30-Jun-23
Soil Type:	Silty gravelly sand/ gravelly sandy silt with low cobble content.



TP215

~300mm below ground level

Depth (mbgl):	0.3
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	10	13	16	18	19	22.69	28.30
2	12	13	14	14	16	14.82	19.01
3	14	17	17	18	20	22.69	28.30
AVE				16.67		19.91	25.00

~600mm below ground level

Depth (mbgl):	0.6
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	14	16	18	20	21	27.13	33.64
2	15	16	16	19	23	24.87	30.91
3	12	15	16	18	18	22.69	28.30
AVE				19.00		24.87	30.91

~900mm below ground level

Depth (mbgl):	0.9
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	9	11	12	12	14	11.41	15.05
2	14	16	16	17	18	20.59	25.81
3	11	14	15	15	17	16.66	21.16
AVE				14.67		16.04	20.43

CIV = Clegg Impact Value

CBR = California Bearing Ratio

⁽¹⁾ Baghabra Al-Amoudi et al (2002) equation: $CBR = 0.1691 (CIV)^{1.695}$

⁽²⁾ Clegg (1986) equation: $CBR = (0.24 (CIV) + 1)^2$

Clegg Impact Soil Tester Results

Project:	Temporary Construction Area at Margam Wharf
Project No:	2111006.006
Location:	TP217
Date:	30-Jun-23
Soil Type:	Silty gravelly sand/ gravelly sandy silt with low cobble content.



TP217

~300mm below ground level

Depth (mbgl):	0.3
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	5	9	12	13	14	13.07	16.97
2	11	14	14	15	17	16.66	21.16
3	12	14	15	17	20	20.59	25.81
AVE				15.00		16.66	21.16

~600mm below ground level

Depth (mbgl):	0.6
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	6	6	10	13	14	13.07	16.97
2	6	6	9	12	13	11.41	15.05
3	16	18	22	23	25	34.38	42.51
AVE				16.00		18.58	23.43

~900mm below ground level

Depth (mbgl):	0.9
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	19	19	24	27	30	45.11	55.95
2	12	14	14	14	17	14.82	19.01
3	18	19	22	22	24	31.88	39.44
AVE				21.00		29.46	36.48

CIV = Clegg Impact Value

CBR = California Bearing Ratio

⁽¹⁾ Baghabra Al-Amoudi et al (2002) equation: $CBR = 0.1691 (CIV)^{1.695}$

⁽²⁾ Clegg (1986) equation: $CBR = (0.24 (CIV) + 1)^2$

Clegg Impact Soil Tester Results

Project:	Temporary Construction Area at Margam Wharf
Project No:	2111006.006
Location:	TP218
Date:	30-Jun-23
Soil Type:	Silty gravelly sand/ gravelly sandy silt with low cobble content.



TP218

~300mm below ground level

Depth (mbgl):	0.3
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	10	15	16	18	21	22.69	28.30
2	16	19	20	20	24	27.13	33.64
3	12	17	19	19	20	24.87	30.91
AVE				19.00		24.87	30.91

~600mm below ground level

Depth (mbgl):	0.6
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	10	13	15	16	11	18.58	23.43
2	12	14	19	20	26	27.13	33.64
3	11	16	17	22	24	31.88	39.44
AVE				19.33		25.61	31.81

~900mm below ground level

Depth (mbgl):	0.9
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	9	17	19	25	26	39.60	49.00
2	12	14	17	18	19	22.69	28.30
3	14	17	18	18	20	22.69	28.30
AVE				20.33		27.90	34.57

CIV = Clegg Impact Value

CBR = California Bearing Ratio

⁽¹⁾ Baghabra Al-Amoudi et al (2002) equation: $CBR = 0.1691 (CIV)^{1.695}$

⁽²⁾ Clegg (1986) equation: $CBR = (0.24 (CIV) + 1)^2$

Clegg Impact Soil Tester Results

Project:	Temporary Construction Area at Margam Wharf
Project No:	2111006.006
Location:	TP219
Date:	30-Jun-23
Soil Type:	Silty gravelly sand/ gravelly sandy silt with low cobble content.



TP219

~300mm below ground level

Depth (mbgl):	0.3
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	15	24	29	31	34	57.02	71.23
2	12	17	19	22	23	31.88	39.44
3	14	19	24	28	31	47.98	59.60
AVE				27.00		45.11	55.95

~600mm below ground level

Depth (mbgl):	0.6
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	11	16	17	20	20	27.13	33.64
2	12	16	21	25	26	39.60	49.00
3	13	16	17	19	22	24.87	30.91
AVE				21.33		30.26	37.45

~900mm below ground level

Depth (mbgl):	0.9
----------------------	------------

Test No.	CIV 1	CIV 2	CIV 3	CIV 4	CIV 5	CBR ⁽¹⁾	CBR ⁽²⁾
1	10	17	21	23	26	34.38	42.51
2	14	16	17	19	20	24.87	30.91
3	14	18	20	22	22	31.88	39.44
AVE				21.33		30.26	37.45

CIV = Clegg Impact Value

CBR = California Bearing Ratio

⁽¹⁾ Baghabra Al-Amoudi et al (2002) equation: $CBR = 0.1691 (CIV)^{1.695}$

⁽²⁾ Clegg (1986) equation: $CBR = (0.24 (CIV) + 1)^2$