terra firma
Geotechnical & Geoenvironmental Specialists
www.terrafirmawales.co.uk

Our Ref: DE/17250/NEW ROAD

Your Ref:

Contact: David Emanuel

8th June 2022

James and Nicholas LLP

For the attn. of Mr Karl Jones (karl.jones@jamesandnicholas.com)

Dear Mr Jones

NEW ROAD, CELSA, ROVER WAY

TFW Group Limited has been retained by James and Nicholas LLP to assist with a proposed new road at CELSA, south of Rover Way, Cardiff.

In April and May 2022 TFW Group Limited attend site to perform trial pits, undertake soakage testing, undertake chemical analysis and perform Plate Load Tests.

Trial pits were performed by a 30 Tonne excavator with a toothed bucket. Despite the size of the machine excavations were often difficult on account of the ground's density. The locations of the excavations are presented in **Figure 01**.

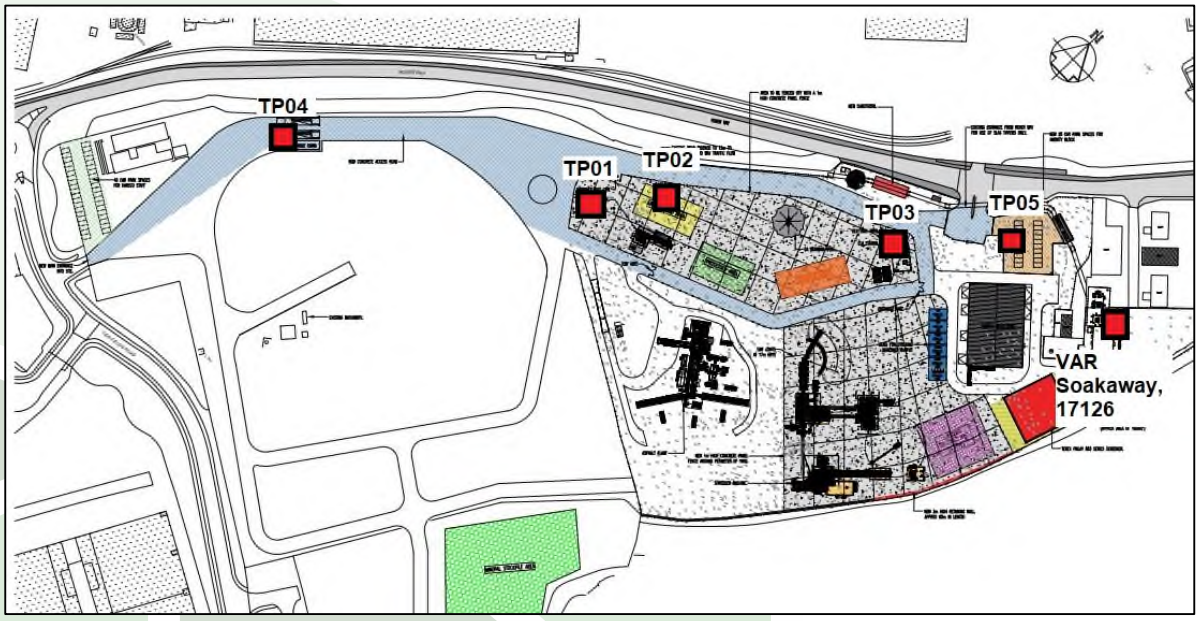


Figure 01. Trial Pit Locations (not to scale)

Ground Conditions
The ground conditions encountered are summarised in **Table 01**.

Table 01. Summary of Ground Conditions	
TP01	**GL – 0.6:** Dense to very dense, grey, slightly silty sandy GRAVEL to COBBLE including brick, metal and slag. **0.6 – 1.2:** Dense to very dense, brown, silty sandy GRAVEL to COBBLE including metal, brick and slag. Trial Pit Dry.
TP02	**GL – 0.4:** Dense to very dense, grey, silty, very sandy GRAVEL of slag **0.4 – 0.9:** Dense to very dense, dark-grey, silty sandy GRAVEL of slag. Trial Pit Dry
TP03	**GL – 0.9:** Dark-brown, silty sandy GARVEL including slag, brick, metal and plastic. Marker tape encountered at 0.9m Trial Pit Dry
TP04	**GL – 1.0:** Very dense, grey to brown, silty sandy GRAVEL to COBBLE Trial Pit Dry
TP05	**GL – 0.5:** Very dense, grey to brown, clayey/silty sandy GRAVEL to COBBLE Trial Pit Dry

In 2019 Terra Firma Wales Ltd performed three shallow and three deep boreholes at the Aggregate and Asphalt Plant (Terra Firma Wales Ltd Job Reference 15264). The approximate location of these boreholes is contained within the area marked on **Figure 02**.

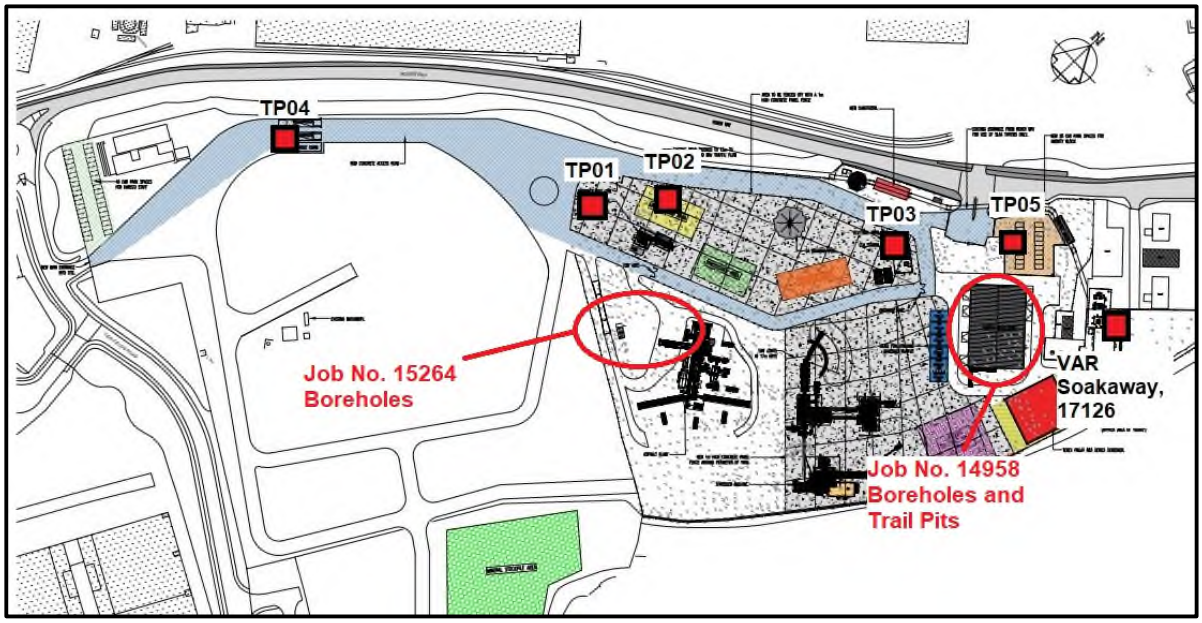


Figure 02. Approximate location of 2019 investigations (not to scale)

The Job No. 15264 boreholes encountered between 7.3m and 7.7m of made ground, recovered as grey to black, granular material including brick and concrete fragments, with traces of clay. The made ground was slow to drill on account of its density and in-situ testing recorded SPT-C Values of >50. Below the made ground, soft clay was encountered, extending to a depth of between 15.0m and 16.4m below ground level, where weathered marl was encountered.

In 2018, near the north-eastern end of the proposed road, Terra Firma Wales Ltd observed the excavation of three trial pits and six rotary boreholes (Job No. 14958). Between 4.7m and 6.5m of made ground were encountered, comprising generally dense to very dense, sandy GRAVEL to BOULDER including slag, concrete and brick. Beneath the made ground grey clay was noted with some gravels and possible channel deposits in two location (silty SAND with gravel). Basal GRAVEL was encountered at one location between 18.3m and 19.0m bgl. Weathered Marl was encountered between 17.6m and 22.3m bgl.

Soakage Tests
Recorded soakage rates are presented in **Table 02**.

Table 02. Summary of Soakage Test Results			
	TP01	**TP02**	**TP04**
Test 1	5.66×10^{-5} ms^{-1}	6.56×10^{-5} ms^{-1}	1.17×10^{-4} ms^{-1}
Test 2	4.21×10^{-5} ms^{-1}	7.39×10^{-5} ms^{-1}	1.11×10^{-4} ms^{-1}
Test 3	3.96×10^{-5} ms^{-1}	4.19×10^{-5} ms^{-1}	1.11×10^{-4} ms^{-1}

A soakaway was attempted in TP05 at 0.5m although the water level did not change over the observation period.

However, soakaways have been successfully performed at greater depth near the eastern end of the new road, at the proposed VAR Static Compensator (Terra Firma Report 17126, February 2022) where soakage rates of soakage rates of between 2.27×10^{-5} ms^{-1} and 1.76×10^{-5} ms^{-1} were recorded within the made ground in a 2.4m deep pit.

Soakaway Test Results are presented in **Annex A**.

CHEMICAL ANALYSIS

During the Investigation 6 samples were submitted for chemical analysis for a broad suite of common industrial determinants and asbestos. Four samples were also subject to volatile/semi volatile organic compounds (VOC/SVOC) analysis. Chemical test results are presented in **Annex B**.

The results of the chemical analysis are summarised in **Tables 03**, along with the published Generic Assessment Criteria for Human Health in a Commercial/Industrial setting.

Project: 17250 Celsa												
Client: Terra Firma (Wales) Ltd	Chemtest Job No.:						22-15458	22-15458	22-15458	22-15458	22-18521	22-18521
Quotation No.: Q21-24021	Chemtest Sample ID.:				Commercial/ Industrial Guidelines	Source	1418011	1418012	1418013	1418014	1431404	1431405
	Sample Location:						TP01	TP02	TP02	TP03	TP04	TP05
	Sample Type:						SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):						0.1	0	0.4	0	0.0	0.0
	Bottom Depth (m):							0.4	0.9	0.9	1.0	0.5
	Asbestos Lab:						NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
ACM Type	U	2192		N/A			-	-	-	-	-	-
Asbestos Identification	U	2192		N/A			No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A			-	-	-	-	-	-
Moisture	N	2030	%	0.020			5.1	7.6	9.4	11	7.1	7.2
Soil Colour	N	2040		N/A			Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A			Stones	Stones	Stones	Stones	Stones	Stones
Soil Texture	N	2040		N/A			Sand	Sand	Sand	Sand	Gravel	Gravel
pH	M	2010		4.0			11.4	10.8	10	9.7	11.0	10.7
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	240,000		8.4	13	3.4	3	3.0	4.7
Cyanide (Total)	M	2300	mg/kg	0.50	480	CLEA (WITHDRAWN)	< 0.50	< 0.50	0.7	0.8	< 0.50	< 0.50
Sulphate (Acid Soluble)	U	2430	%	0.010			0.14	0.14	0.041	0.061	0.22	0.17
Arsenic	M	2455	mg/kg	0.5	640	S4UL	4.8	3.8	13	17	7.5	11
Cadmium	M	2455	mg/kg	0.10	190	S4UL	2.9	2.3	2.9	4.0	4.0	2.8
Chromium	M	2455	mg/kg	0.5			1200	1100	210	220	970	1000
Mercury Low Level	M	2450	mg/kg	0.05	1,100	S4UL	0.13	0.10	1.2	1.3	0.09	0.31
Copper	M	2455	mg/kg	0.50	68,000	S4UL	270	300	66	76	240	470
Nickel	M	2455	mg/kg	0.50	980	S4UL	70	61	58	66	140	230
Lead	M	2455	mg/kg	0.50	2,330	C4SL	170	83	270	350	180	370
Selenium	M	2455	mg/kg	0.25	12,000	S4UL	0.71	0.53	0.70	0.72	1.1	1.2
Zinc	M	2455	mg/kg	0.50	730,000	S4UL	1300	1100	520	720	1100	1100
Chromium (Trivalent)	N	2490	mg/kg	1.0	8600	S4UL	1200	1100	210	220	970	1000
Chromium (Hexavalent)	N	2490	mg/kg	0.50	33	S4UL	< 0.50	0.53	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	3,200	S4UL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	7,800	S4UL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	2,000	S4UL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	9,700	S4UL	< 1.0	< 1.0	< 1.0	< 1.0	17	46
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	59,000	S4UL	< 1.0	< 1.0	< 1.0	< 1.0	57	580
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	1,600,000	S4UL	< 1.0	< 1.0	< 1.0	< 1.0	150	800
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	1,600,000	S4UL	< 1.0	< 1.0	< 1.0	66	4300	1600
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	1,600,000	S4UL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0			< 5.0	< 5.0	< 5.0	66	4500	3000
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	26,000	S4UL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	56,000	S4UL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	3,500	S4UL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	16,000	S4UL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	36,000	S4UL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	65
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	28,000	S4UL	< 1.0	< 1.0	< 1.0	< 1.0	52	88
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	28,000	S4UL	< 1.0	< 1.0	< 1.0	180	170	380
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	28,000	S4UL	< 1.0	< 1.0	< 1.0	< 1.0	17	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0			< 5.0	< 5.0	< 5.0	180	240	530
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0			< 10	< 10	< 10	240	4700	3600
Naphthalene	M	2700	mg/kg	0.10	190	S4UL	< 0.10	< 0.10	4	5.2	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	83,000	S4UL	< 0.10	< 0.10	0.67	0.88	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	84,000	S4UL	< 0.10	< 0.10	0.75	0.67	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	63,000	S4UL	< 0.10	< 0.10	0.71	0.41	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	22,000	S4UL	< 0.10	< 0.10	3	1.5	< 0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	520,000	S4UL	< 0.10	< 0.10	0.65	0.31	< 0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	23,000	S4UL	0.78	< 0.10	4.2	2.1	0.58	0.38
Pyrene	M	2700	mg/kg	0.10	54,000	S4UL	0.89	< 0.10	4.5	2.5	0.72	3.5
Benzo[a]anthracene	M	2700	mg/kg	0.10	170	S4UL	< 0.10	< 0.10	2.9	1.3	< 0.10	2.8
Chrysene	M	2700	mg/kg	0.10	350	S4UL	< 0.10	< 0.10	4.1	2.5	< 0.10	6.2
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	44	S4UL	< 0.10	< 0.10	4.3	2.3	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	1,200	S4UL	< 0.10	< 0.10	1.8	1.1	< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	35	S4UL	< 0.10	< 0.10	3.2	1.9	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	500	S4UL	< 0.10	< 0.10	2.2	1.3	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	3.5	S4UL	< 0.10	< 0.10	0.59	0.4	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	3,900	S4UL	< 0.10	< 0.10	2.3	1.5	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0			< 2.0	< 2.0	40	26	< 2.0	13

Table 03. Summary of Soil Chemical Testing and Commercial GACs

During VOC/SVOC testing only benzene, toluene, ethyl-benzene, xylene and selected PAH species were detected and these were at concentration significantly below the corresponding GACs. All other determinants tested were either not detected or at concentrations below their corresponding Generic Assessment Criteria for an industrial setting.

Asbestos was not detected during screening.

GEOTECHNICAL TESTING

Two samples of slag were submitted to GSTL to assess swelling potential via their in-house method. Volume changes of between 0.05% and 0.07% were recorded, which would be considered insignificant. The results of the geotechnical testing are presented in **Annex C**.

On 27th April 2022, 5 No. Plate Load Tests were performed along the route of the proposed road using a 600mm plate. The applied load was taken to 300 kN/m^2 and the process included an off-load/reload cycle. The location of the Plate Load Tests are presented in **Figure 03** and the results of the tests are summarised in **Table 06**.

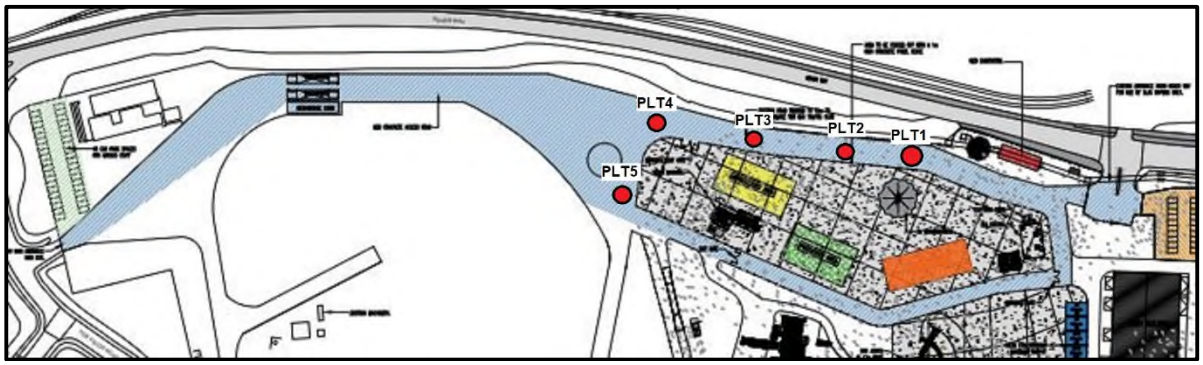


Figure 03. Location of Plate Load Tests

Table 06. Results of Plate Load Tests	
Location	**Average Plate Settlement after 2nd Load Cycle at 300kN/m^2 (mm)**
PLT 1	0.90
PLT 2	0.30
PLT 3	0.46
PLT 4	1.36
PLT 5	0.83

Plate Load Test Results are presented in **Annex C**.

We trust that the above is to your satisfaction, however, if you have any queries or require any further information please do not hesitate to contact us.

Yours sincerely
for: Terra Firma (Wales) Ltd

Mr D Emanuel

Annex A
Soakage Test Results

Terra Firma (Wales) Ltd. 5 Deryn Court, Wharfedale Road, Pentwyn, Cardiff CF23 7HA
Tel: 029 2073 5354 **Fax:** 029 2073 5433 **Email:** info@terrafirmawales.co.uk **www.terrafirmawales.co.uk**
Registered in Wales No. 4013230. VAT No: 753 2566 25. Registered Office: 5 Deryn Court, Wharfedale Road, Pentwyn, Cardiff CF23 7HA

SOAKAWAY TEST

terra firma
Geotechnical & Geoenvironmental Specialists

Site Name: CELSA New Road
Project Number: 17250
Date: 26/04/2022
Engineer: DE

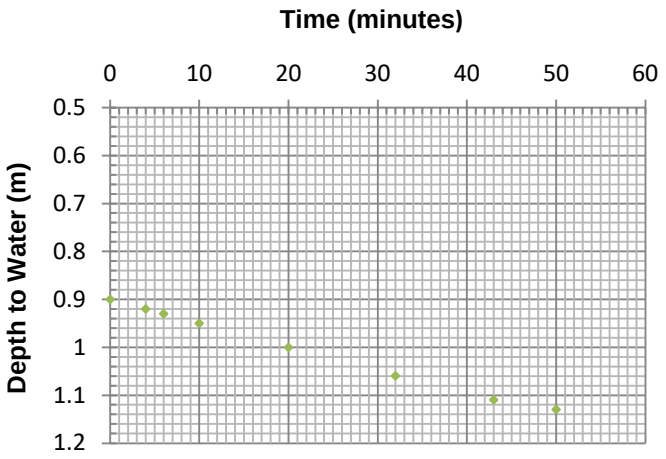
Trial Pit: **TP01**

TEST 1

Length	2.00	m
Bredth	2.00	m
Depth	1.20	m
Fill Level	0.90	m

V_{p75-25}	0.6	m^3
a_{p50}	5.2	m^2
t_{p75-25}	34	minutes

Soil Infiltration Rate, f **5.66E-05** **ms^{-1}**

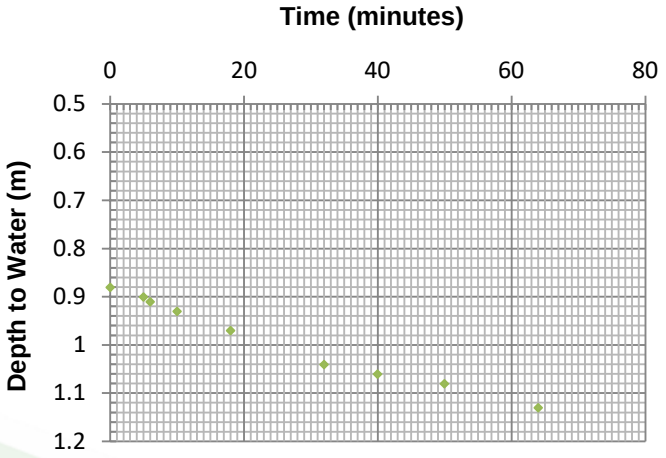


TEST 2

Length	2.00	m
Bredth	2.00	m
Depth	1.20	m
Fill Level	0.88	m

V_{p75-25}	0.64	m^3
a_{p50}	5.28	m^2
t_{p75-25}	48	minutes

Soil Infiltration Rate, f **4.21E-05** **ms^{-1}**

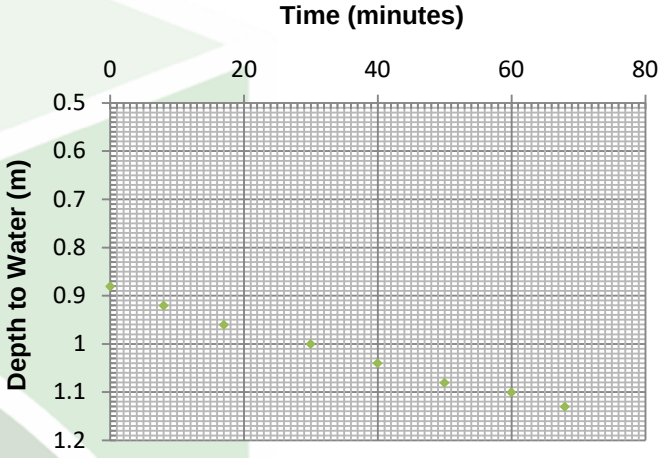


TEST 3

Length	2.00	m
Bredth	2.00	m
Depth	1.20	m
Fill Level	0.88	m

V_{p75-25}	0.64	m^3
a_{p50}	5.28	m^2
t_{p75-25}	51	minutes

Soil Infiltration Rate, f **3.96E-05** **ms^{-1}**



REMARKS:
Test carried out in accordance with BRE Digest 365 (2016)

SOAKAWAY TEST

terra firma
Geotechnical & Geoenvironmental Specialists

Site Name: CELSA New Road
Project Number: 17250
Date: 26/04/2022
Engineer: DE

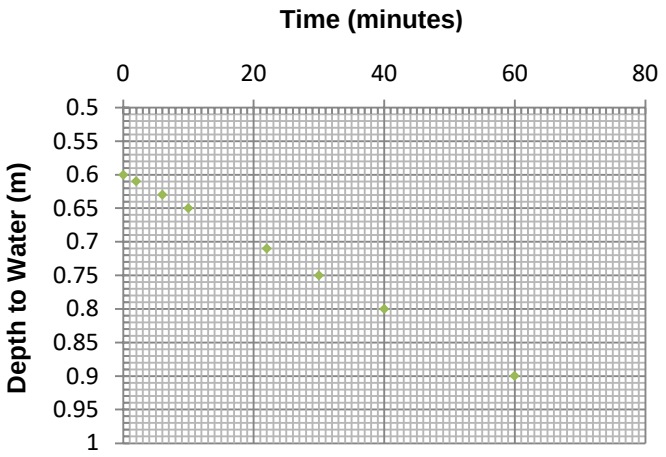
Trial Pit: **TP02**

TEST 1

Length	2.00	m
Bredth	2.50	m
Depth	0.90	m
Fill Level	0.60	m

V_{p75-25}	0.75	m^3
a_{p50}	6.35	m^2
t_{p75-25}	30	minutes

Soil Infiltration Rate, f **6.56E-05** **ms^{-1}**

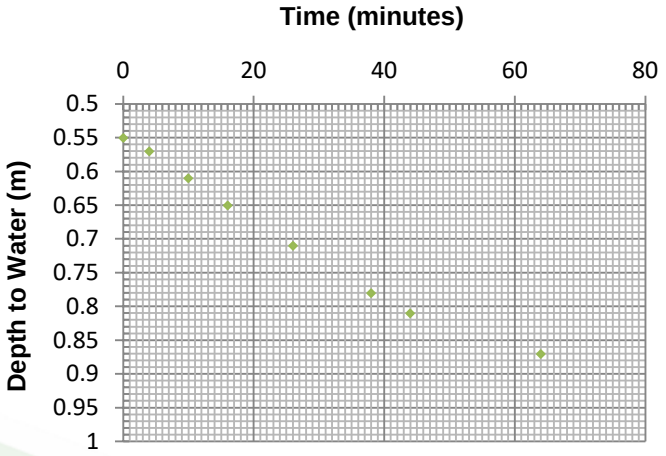


TEST 2

Length	2.00	m
Bredth	2.50	m
Depth	0.90	m
Fill Level	0.55	m

V_{p75-25}	0.875	m^3
a_{p50}	6.575	m^2
t_{p75-25}	30	minutes

Soil Infiltration Rate, f **7.39E-05** **ms^{-1}**

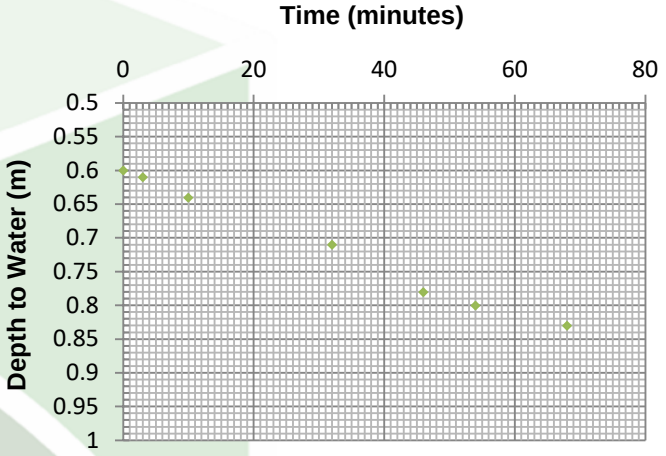


TEST 3

Length	2.00	m
Bredth	2.50	m
Depth	0.90	m
Fill Level	0.60	m

V_{p75-25}	0.75	m^3
a_{p50}	6.35	m^2
t_{p75-25}	47	minutes

Soil Infiltration Rate, f **4.19E-05** **ms^{-1}**



REMARKS:
Test carried out in accordance with BRE Digest 365 (2016)

SOAKAWAY TEST

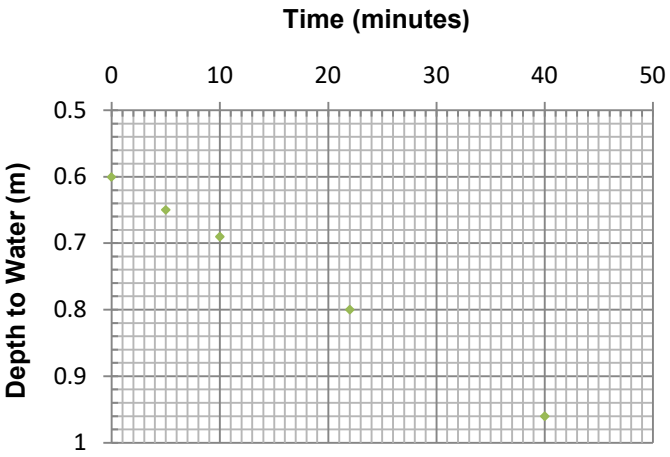
terra firma
Geotechnical & Geoenvironmental Specialists

Site Name: CELSA New Road
Project Number: 17250
Date: 17/05/2022
Engineer: DE

Trial Pit: **TP04**

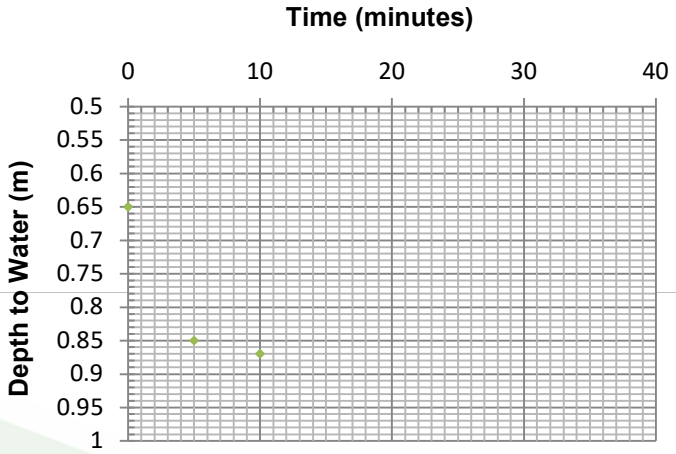
TEST 1

Length	2.00	m
Bredth	2.50	m
Depth	1.00	m
Fill Level	0.60	m
V_{p75-25}	1	m^3
a_{p50}	6.8	m^2
t_{p75-25}	21	minutes
Soil Infiltration Rate, f	**1.17E-04**	**ms^{-1}**



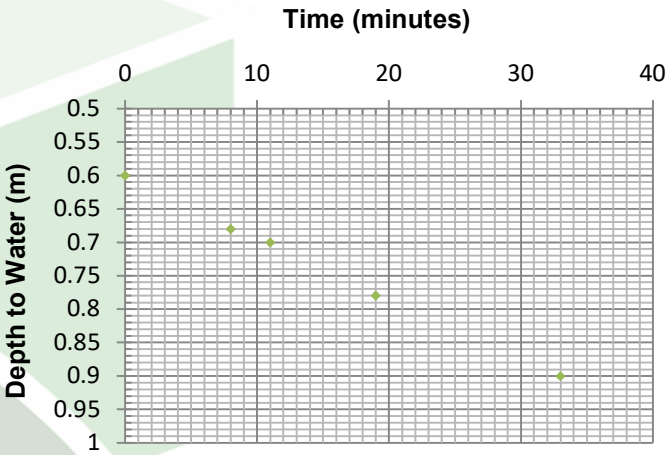
TEST 2

Length	2.00	m
Bredth	2.50	m
Depth	1.00	m
Fill Level	0.65	m
V_{p75-25}	0.875	m^3
a_{p50}	6.575	m^2
t_{p75-25}	20	minutes
Soil Infiltration Rate, f	**1.11E-04**	**ms^{-1}**



TEST 3

Length	2.00	m
Bredth	2.50	m
Depth	1.00	m
Fill Level	0.60	m
V_{p75-25}	1	m^3
a_{p50}	6.8	m^2
t_{p75-25}	22	minutes
Soil Infiltration Rate, f	**1.11E-04**	**ms^{-1}**



REMARKS:
Test carried out in accordance with BRE Digest 365 (2016)

Annex B
Chemical Test Results

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	22-15458-1		
Initial Date of Issue:	03-May-2022		
Client	Terra Firma (Wales) Ltd		
Client Address:	5 Deryn Court Wharfedale Road Pentwyn Cardiff CF23 7HA		
Contact(s):	Dave Emanuel		
Project	17250 Celsa		
Quotation No.:	Q21-24021	**Date Received:**	27-Apr-2022
Order No.:		**Date Instructed:**	27-Apr-2022
No. of Samples:	4		
Turnaround (Wkdays):	5	**Results Due:**	04-May-2022
Date Approved:	03-May-2022		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Soil

Project: 17250 Celsa

Client: Terra Firma (Wales) Ltd		**Chemtest Job No.:**			22-15458	22-15458	22-15458	22-15458
Quotation No.: Q21-24021		**Chemtest Sample ID.:**			1418011	1418012	1418013	1418014
		Sample Location:			TP01	TP02	TP02	TP03
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.1	0	0.4	0
		Bottom Depth (m):				0.4	0.9	0.9
		Asbestos Lab:			NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-	-
Moisture	N	2030	%	0.020	5.1	7.6	9.4	11
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand	Sand	Sand
pH	M	2010		4.0	[A] 11.4	[A] 10.8	[A] 10.0	[A] 9.7
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	[A] 8.4	[A] 13	[A] 3.4	[A] 3.0
Cyanide (Total)	M	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] 0.70	[A] 0.80
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.14	[A] 0.14	[A] 0.041	[A] 0.061
Arsenic	M	2455	mg/kg	0.5	4.8	3.8	13	17
Cadmium	M	2455	mg/kg	0.10	2.9	2.3	2.9	4.0
Chromium	M	2455	mg/kg	0.5	1200	1100	210	220
Mercury Low Level	M	2450	mg/kg	0.05	0.13	0.10	1.2	1.3
Copper	M	2455	mg/kg	0.50	270	300	66	76
Nickel	M	2455	mg/kg	0.50	70	61	58	66
Lead	M	2455	mg/kg	0.50	170	83	270	350
Selenium	M	2455	mg/kg	0.25	0.71	0.53	0.70	0.72
Zinc	M	2455	mg/kg	0.50	1300	1100	520	720
Chromium (Trivalent)	N	2490	mg/kg	1.0	1200	1100	210	220
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	0.53	< 0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 66
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] 66
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 180

Results - Soil

Project: 17250 Celsa

Client: Terra Firma (Wales) Ltd			**Chemtest Job No.:**		22-15458	22-15458	22-15458	22-15458
Quotation No.: Q21-24021			**Chemtest Sample ID.:**		1418011	1418012	1418013	1418014
			Sample Location:		TP01	TP02	TP02	TP03
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.1	0	0.4	0
			Bottom Depth (m):			0.4	0.9	0.9
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] 180
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[A] < 10	[A] 240
Naphthalene	M	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] 4.0	[A] 5.2
Acenaphthylene	M	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] 0.67	[A] 0.88
Acenaphthene	M	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] 0.75	[A] 0.67
Fluorene	M	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] 0.71	[A] 0.41
Phenanthrene	M	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] 3.0	[A] 1.5
Anthracene	M	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] 0.65	[A] 0.31
Fluoranthene	M	2700	mg/kg	0.10	[A] 0.78	[A] < 0.10	[A] 4.2	[A] 2.1
Pyrene	M	2700	mg/kg	0.10	[A] 0.89	[A] < 0.10	[A] 4.5	[A] 2.5
Benzo[a]anthracene	M	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] 2.9	[A] 1.3
Chrysene	M	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] 4.1	[A] 2.5
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] 4.3	[A] 2.3
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] 1.8	[A] 1.1
Benzo[a]pyrene	M	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] 3.2	[A] 1.9
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] 2.2	[A] 1.3
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] 0.59	[A] 0.40
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] 2.3	[A] 1.5
Total Of 16 PAH's	M	2700	mg/kg	2.0	[A] < 2.0	[A] < 2.0	[A] 40	[A] 26
Dichlorodifluoromethane	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Chloromethane	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Bromomethane	M	2760	µg/kg	20	[A] < 20	[A] < 20	[A] < 20	[A] < 20
Chloroethane	U	2760	µg/kg	2.0	[A] < 2.0	[A] < 2.0	[A] < 2.0	[A] < 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Bromochloromethane	U	2760	µg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Trichloromethane	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Benzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 7.1
1,2-Dichloroethane	M	2760	µg/kg	2.0	[A] < 2.0	[A] < 2.0	[A] < 2.0	[A] < 2.0
Trichloroethene	N	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
1,2-Dichloropropane	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: 17250 Celsa

Client: Terra Firma (Wales) Ltd		**Chemtest Job No.:**			22-15458	22-15458	22-15458	22-15458
Quotation No.: Q21-24021		**Chemtest Sample ID.:**			1418011	1418012	1418013	1418014
		Sample Location:			TP01	TP02	TP02	TP03
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.1	0	0.4	0
		Bottom Depth (m):				0.4	0.9	0.9
		Asbestos Lab:			NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Dibromomethane	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	[A] < 10	[A] < 10	[A] < 10	[A] < 10
Toluene	M	2760	µg/kg	1.0	[A] 1.7	[A] < 1.0	[A] < 1.0	[A] 5.5
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	[A] < 10	[A] < 10	[A] < 10	[A] < 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	[A] < 10	[A] < 10	[A] < 10	[A] < 10
Tetrachloroethene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	[A] < 2.0	[A] < 2.0	[A] < 2.0	[A] < 2.0
Dibromochloromethane	U	2760	µg/kg	10	[A] < 10	[A] < 10	[A] < 10	[A] < 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Chlorobenzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	[A] < 2.0	[A] < 2.0	[A] < 2.0	[A] < 2.0
Ethylbenzene	M	2760	µg/kg	1.0	[A] 1.3	[A] < 1.0	[A] < 1.0	[A] 1.4
m & p-Xylene	M	2760	µg/kg	1.0	[A] 2.9	[A] < 1.0	[A] < 1.0	[A] 6.4
o-Xylene	M	2760	µg/kg	1.0	[A] 1.3	[A] < 1.0	[A] < 1.0	[A] 1.8
Styrene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Tribromomethane	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Bromobenzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	[A] < 50	[A] < 50	[A] < 50	[A] < 50
N-Propylbenzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	[A] < 50	[A] < 50	[A] < 50	[A] < 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	[A] < 2.0	[A] < 2.0	[A] < 2.0	[A] < 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Phenol	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50

Results - Soil

Project: 17250 Celsa

Client: Terra Firma (Wales) Ltd			**Chemtest Job No.:**		22-15458	22-15458	22-15458	22-15458
Quotation No.: Q21-24021			**Chemtest Sample ID.:**		1418011	1418012	1418013	1418014
			Sample Location:		TP01	TP02	TP02	TP03
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.1	0	0.4	0
			Bottom Depth (m):			0.4	0.9	0.9
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
2-Chlorophenol	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
2-Methylphenol	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Hexachloroethane	N	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
4-Methylphenol	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Nitrobenzene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Isophorone	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Naphthalene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Acenaphthylene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Acenaphthene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Dibenzofuran	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Fluorene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Diethyl Phthalate	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50

Results - Soil

Project: 17250 Celsa

Client: Terra Firma (Wales) Ltd		**Chemtest Job No.:**			22-15458	22-15458	22-15458	22-15458
Quotation No.: Q21-24021		**Chemtest Sample ID.:**			1418011	1418012	1418013	1418014
			Sample Location:		TP01	TP02	TP02	TP03
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.1	0	0.4	0
			Bottom Depth (m):			0.4	0.9	0.9
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Azobenzene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Phenanthrene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] 1.1
Anthracene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Carbazole	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Fluoranthene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] 1.9
Pyrene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] 1.6
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] 1.3
Chrysene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] 1.3
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] 1.7
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] 0.56
Benzo[a]pyrene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] 1.3
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] 0.99
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] 1.1
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Organic Matter BS1377	N	2930	%	0.10	[A] 0.90	[A] 1.6	[A] 0.30	[A] 3.3

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1418011			TP01		A	Amber Glass 250ml
1418011			TP01		A	Plastic Tub 500g
1418012			TP02		A	Amber Glass 250ml
1418012			TP02		A	Plastic Tub 500g
1418013			TP02		A	Amber Glass 250ml
1418013			TP02		A	Plastic Tub 500g
1418014			TP03		A	Amber Glass 250ml
1418014			TP03		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
2930	Organic Matter	Organic Matter	Acid Dichromate digestion/Titration

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	22-15463-1		
Initial Date of Issue:	06-May-2022		
Client	Terra Firma (Wales) Ltd		
Client Address:	5 Deryn Court Wharfedale Road Pentwyn Cardiff CF23 7HA		
Contact(s):	Jamie Alderman		
Project	17250 Celsa		
Quotation No.:	Q21-24021	**Date Received:**	27-Apr-2022
Order No.:		**Date Instructed:**	27-Apr-2022
No. of Samples:	3		
Turnaround (Wkdays):	7	**Results Due:**	06-May-2022
Date Approved:	06-May-2022		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - 2 Stage WAC

Project: 17250 Celsa

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-15463								
Chemtest Sample ID:	1418022								
Sample Ref:									
Sample ID:									
Sample Location:	TP01								
Top Depth(m):	0.1								
Bottom Depth(m):									
Sampling Date:									
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%			[A] 0.72	3	5	6
Loss On Ignition	2610	M	%			2.6	--	--	10
Total BTEX	2760	M	mg/kg			[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			0.16	1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	M				12.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.56	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0002	0.0007	0.0023	0.5	2	25
Barium	1455	U	5.9	2.4	12	27	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.030	0.027	0.060	0.27	0.5	10	70
Copper	1455	U	0.030	0.013	0.061	0.021	2	50	100
Mercury	1455	U	0.00009	0.00016	0.00018	0.0015	0.01	0.2	2
Molybdenum	1455	U	0.11	0.071	0.22	0.73	0.5	10	30
Nickel	1455	U	0.0012	0.0007	0.0025	0.0076	0.4	10	40
Lead	1455	U	0.0070	0.0064	0.014	0.064	0.5	10	50
Antimony	1455	U	0.0012	0.0020	0.0024	0.020	0.06	0.7	5
Selenium	1455	U	0.0037	0.0028	0.0074	0.029	0.1	0.5	7
Zinc	1455	U	0.038	0.019	0.076	0.20	4	50	200
Chloride	1220	U	64	29	130	310	800	15000	25000
Fluoride	1220	U	2.2	2.2	4.4	22	10	150	500
Sulphate	1220	U	< 1.0	10	< 10	94	1000	20000	50000
Total Dissolved Solids	1020	N	1900	1500	3900	15000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	10	3.5	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	6.8

Leachate Test Information	
Leachant volume 1st extract/l	0.337
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.112

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: 17250 Celsa

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-15463								
Chemtest Sample ID:	1418023								
Sample Ref:									
Sample ID:									
Sample Location:	TP02								
Top Depth(m):	0								
Bottom Depth(m):	0.4								
Sampling Date:									
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%			[A] < 0.20	3	5	6
Loss On Ignition	2610	M	%			0.85	--	--	10
Total BTEX	2760	M	mg/kg			[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	M				10.8	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.23	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0002	0.0006	0.0024	0.5	2	25
Barium	1455	U	1.1	0.74	2.1	8.0	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.046	0.017	0.092	0.22	0.5	10	70
Copper	1455	U	0.026	0.010	0.053	0.049	2	50	100
Mercury	1455	U	0.00092	0.00039	0.0018	0.0048	0.01	0.2	2
Molybdenum	1455	U	0.17	0.048	0.34	0.70	0.5	10	30
Nickel	1455	U	0.0007	< 0.0005	0.0013	0.0012	0.4	10	40
Lead	1455	U	0.0020	0.0010	0.0040	0.011	0.5	10	50
Antimony	1455	U	0.0015	0.0022	0.0030	0.021	0.06	0.7	5
Selenium	1455	U	0.0055	0.0026	0.011	0.031	0.1	0.5	7
Zinc	1455	U	0.006	0.003	0.012	0.036	4	50	200
Chloride	1220	U	8.1	1.7	16	28	800	15000	25000
Fluoride	1220	U	2.0	1.5	4.0	16	10	150	500
Sulphate	1220	U	28	25	56	260	1000	20000	50000
Total Dissolved Solids	1020	N	12000	490	24000	25000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	4.5	2.6	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	8.0

Leachate Test Information	
Leachant volume 1st extract/l	0.335
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.303

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: 17250 Celsa

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-15463								
Chemtest Sample ID:	1418024								
Sample Ref:									
Sample ID:									
Sample Location:	TP03								
Top Depth(m):	0								
Bottom Depth(m):	0.9								
Sampling Date:									
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%			[A] 36	3	5	6
Loss On Ignition	2610	M	%			10	--	--	10
Total BTEX	2760	M	mg/kg			[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			0.25	1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			24	100	--	--
pH	2010	M				9.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.015	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0085	0.0077	0.017	0.079	0.5	2	25
Barium	1455	U	0.067	0.038	0.13	0.43	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0048	0.023	0.0095	0.20	0.5	10	70
Copper	1455	U	0.0042	0.0040	0.0084	0.0080	2	50	100
Mercury	1455	U	0.00015	0.00010	0.00030	0.0011	0.01	0.2	2
Molybdenum	1455	U	0.077	0.017	0.15	0.27	0.5	10	30
Nickel	1455	U	0.0024	0.0029	0.0048	0.028	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0083	0.0046	0.017	0.052	0.06	0.7	5
Selenium	1455	U	0.0031	0.0026	0.0061	0.027	0.1	0.5	7
Zinc	1455	U	< 0.003	0.079	< 0.003	0.66	4	50	200
Chloride	1220	U	6.1	20	12	180	800	15000	25000
Fluoride	1220	U	0.57	0.34	1.1	3.8	10	150	500
Sulphate	1220	U	71	19	140	280	1000	20000	50000
Total Dissolved Solids	1020	N	260	130	520	1500	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	12	5.7	< 50	67	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	8.1

Leachate Test Information	
Leachant volume 1st extract/l	0.335
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.296

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1418022			TP01		A	Amber Glass 250ml
1418022			TP01		A	Plastic Tub 500g
1418023			TP02		A	Amber Glass 250ml
1418023			TP02		A	Plastic Tub 500g
1418024			TP03		A	Amber Glass 250ml
1418024			TP03		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	22-18521-1
Initial Date of Issue:	25-May-2022
Client	Terra Firma (Wales) Ltd
Client Address:	5 Deryn Court Wharfedale Road Pentwyn Cardiff CF23 7HA
Contact(s):	Dave Emanuel
Project	17250 CELSA

Quotation No.:		**Date Received:**	19-May-2022
Order No.:		**Date Instructed:**	19-May-2022
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	25-May-2022
Date Approved:	25-May-2022		

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Soil

Project: 17250 CELSA

Client: Terra Firma (Wales) Ltd			**Chemtest Job No.:**		22-18521	22-18521
Quotation No.:			**Chemtest Sample ID.:**		1431404	1431405
			Sample Location:		TP04	TP05
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.0	0.0
			Bottom Depth (m):		1.0	0.5
			Date Sampled:		17-May-2022	17-May-2022
			Asbestos Lab:		DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-
Moisture	N	2030	%	0.020	7.1	7.2
Soil Colour	N	2040		N/A	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones
Soil Texture	N	2040		N/A	Gravel	Gravel
pH	M	2010		4.0	11.0	10.7
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	3.0	4.7
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Sulphate (Acid Soluble)	U	2430	%	0.010	0.22	0.17
Arsenic	M	2455	mg/kg	0.5	7.5	11
Cadmium	M	2455	mg/kg	0.10	4.0	2.8
Chromium	M	2455	mg/kg	0.5	970	1000
Mercury Low Level	M	2450	mg/kg	0.05	0.09	0.31
Copper	M	2455	mg/kg	0.50	240	470
Nickel	M	2455	mg/kg	0.50	140	230
Lead	M	2455	mg/kg	0.50	180	370
Selenium	M	2455	mg/kg	0.25	1.1	1.2
Zinc	M	2455	mg/kg	0.50	1100	1100
Chromium (Trivalent)	N	2490	mg/kg	1.0	970	1000
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	17	46
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	57	580
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	150	800
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	4300	1600
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	4500	3000
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	65
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	52	88

Results - Soil

Project: 17250 CELSA

Client: Terra Firma (Wales) Ltd		**Chemtest Job No.:**			22-18521	22-18521
Quotation No.:		**Chemtest Sample ID.:**			1431404	1431405
		Sample Location:			TP04	TP05
		Sample Type:			SOIL	SOIL
		Top Depth (m):			0.0	0.0
		Bottom Depth (m):			1.0	0.5
		Date Sampled:			17-May-2022	17-May-2022
		Asbestos Lab:			DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	170	380
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	17	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	240	530
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	4700	3600
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	0.58	0.38
Pyrene	M	2700	mg/kg	0.10	0.72	3.5
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	2.8
Chrysene	M	2700	mg/kg	0.10	< 0.10	6.2
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	13
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10
Organic Matter BS1377	N	2930	%	0.10	2.0	3.4

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
2930	Organic Matter	Organic Matter	Acid Dichromate digestion/Titration

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All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
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Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Annex C
Geotechnical Test Results

Laboratory Report

2788

GEO Site & Testing Services Ltd

Contract Number: 59304

Client Ref:
Client PO:

Report Date: **22-05-2022**

Client **Terrafirma Wales Ltd**
5 Deryn Court
Wharfedale Road
Pentwyn
Cardiff
CF23 7HB

Contract Title: **CELSA**
For the attention of: **David Emanuel**

Date Received: **28-04-2022**
Date Completed: **22-05-2022**

Test Description	Qty
Determination of the Swelling Potential of Fill Material (Rapid Slag Expansion Test) In House Test Method DIHM 003 - @ Non Accredited Test	2
Disposal of samples for job	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

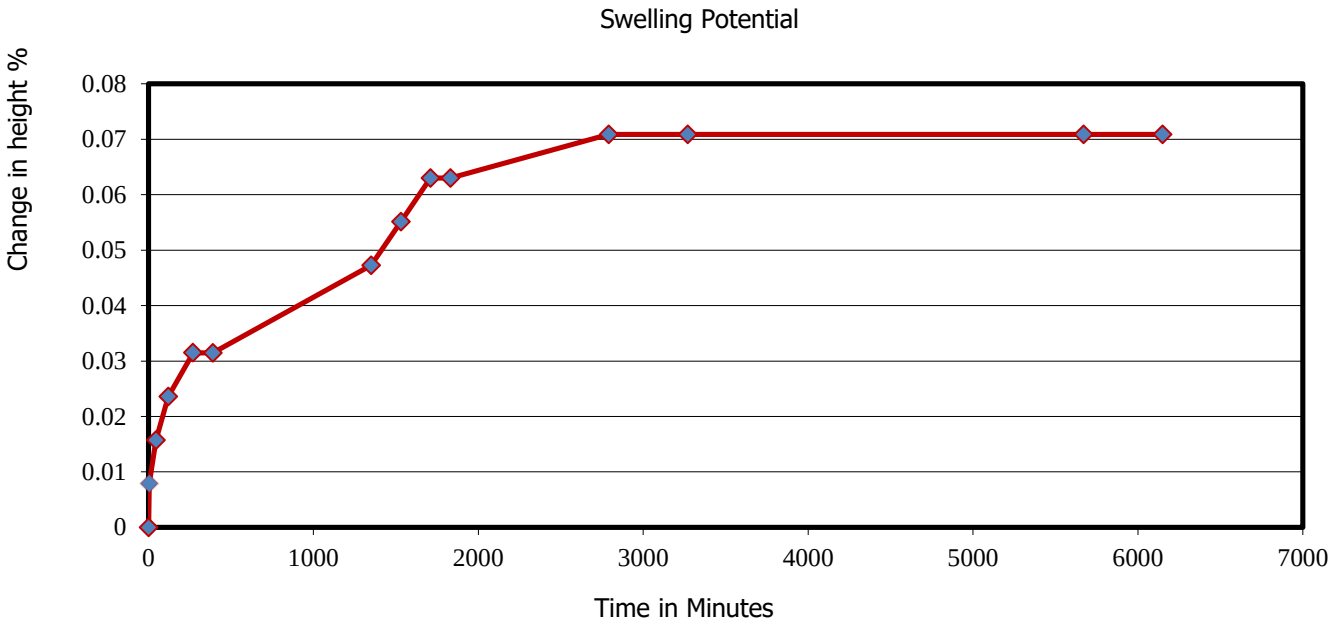
Approved Signatories:
Emma Sharp (Business Support Manager) - Paul Evans (Director) - Richard John (Quality/Technical Manager)
Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager) - Wayne Honey (Quality Assistant / Administrator / Health and Safety Coordinator)

GEO Site & Testing Services Ltd
Unit 3-4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

Test Report: **Determination of the Swelling Potential of Fill Material. Rapid Assessment, In house Method**

Client:	Terra Firma Wales
Client ref:	Unknown
Location:	CELSA
Contract Number:	59304
Date Test Started:	09/05/22
Sample Number:	TP01
Depth (m) :	0.40-0.90m
Tested By:	Conal Aliffe
Description:	Black gravelly silty ASHFILL/SLAG

INITIAL CONDITIONS.		**FINAL CONDITIONS.**	
Initial Height - mm:	127.00	Final Height - mm:	127.09
Moisture Content - %:	8.5	Moisture Content - %:	9
Bulk Density - Mg/m3:	1.89	Bulk Density - Mg/m3:	1.91
Dry Density - Mg/m3:	1.74	Dry Density - Mg/m3:	1.74
Test Temperature C°:	90		



Swelling after 96 Hours -%
0.07

For and behalf of GEO Site & Testing Services Ltd

Remarks:

Authorised By:
Richard John (Quality/Technical Manager)

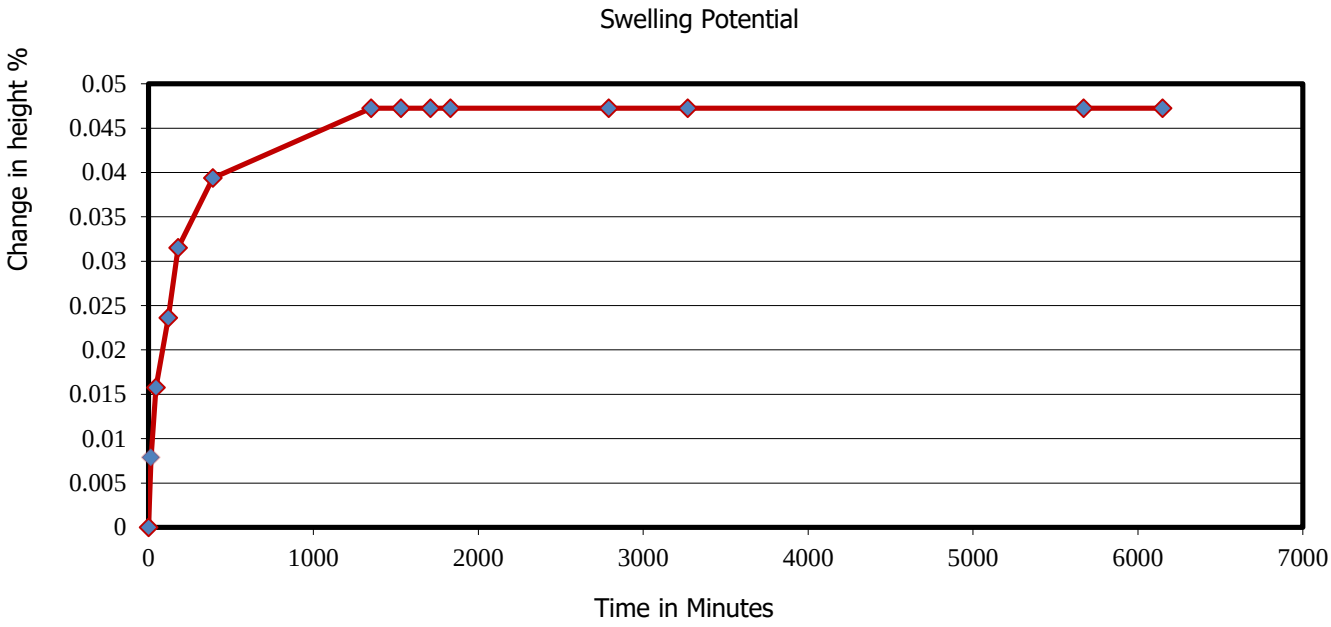
GSTL
GEO SITE & TESTING SERVICES LTD

Date: 22.5.22

Test Report: **Determination of the Swelling Potential of Fill Material. Rapid Assessment, In house Method**

Client:	Terra Firma Wales
Client ref:	Unknown
Location:	CELSA
Contract Number:	59304
Date Test Started:	09/05/22
Sample Number:	TP02
Depth (m) :	0.60-1.20m
Tested By:	Conal Aliffe
Description:	Black gravelly silty ASHFILL/SLAG

INITIAL CONDITIONS.		**FINAL CONDITIONS.**	
Initial Height - mm:	127.00	Final Height - mm:	127.06
Moisture Content - %:	11.9	Moisture Content - %:	13
Bulk Density - Mg/m3:	1.88	Bulk Density - Mg/m3:	1.91
Dry Density - Mg/m3:	1.68	Dry Density - Mg/m3:	1.68
Test Temperature C°:	90		



Swelling after 96 Hours -%
0.05

For and behalf of GEO Site & Testing Services Ltd

Remarks:

Authorised By:
Richard John (Quality/Technical Manager)

GSTL
GEO SITE & TESTING SERVICES LTD

Date: 22.5.22

SOUTH WALES GROUND TESTING

Plate Load Test Settlement v Time Data

Contract: Celsa, Rover Way, Cardiff | Date: 27.04.22

Test Reference: Test 1 | Test Depth: Surface | Plate Diameter: 600mm | Seating Load: 7.5kN/m^2

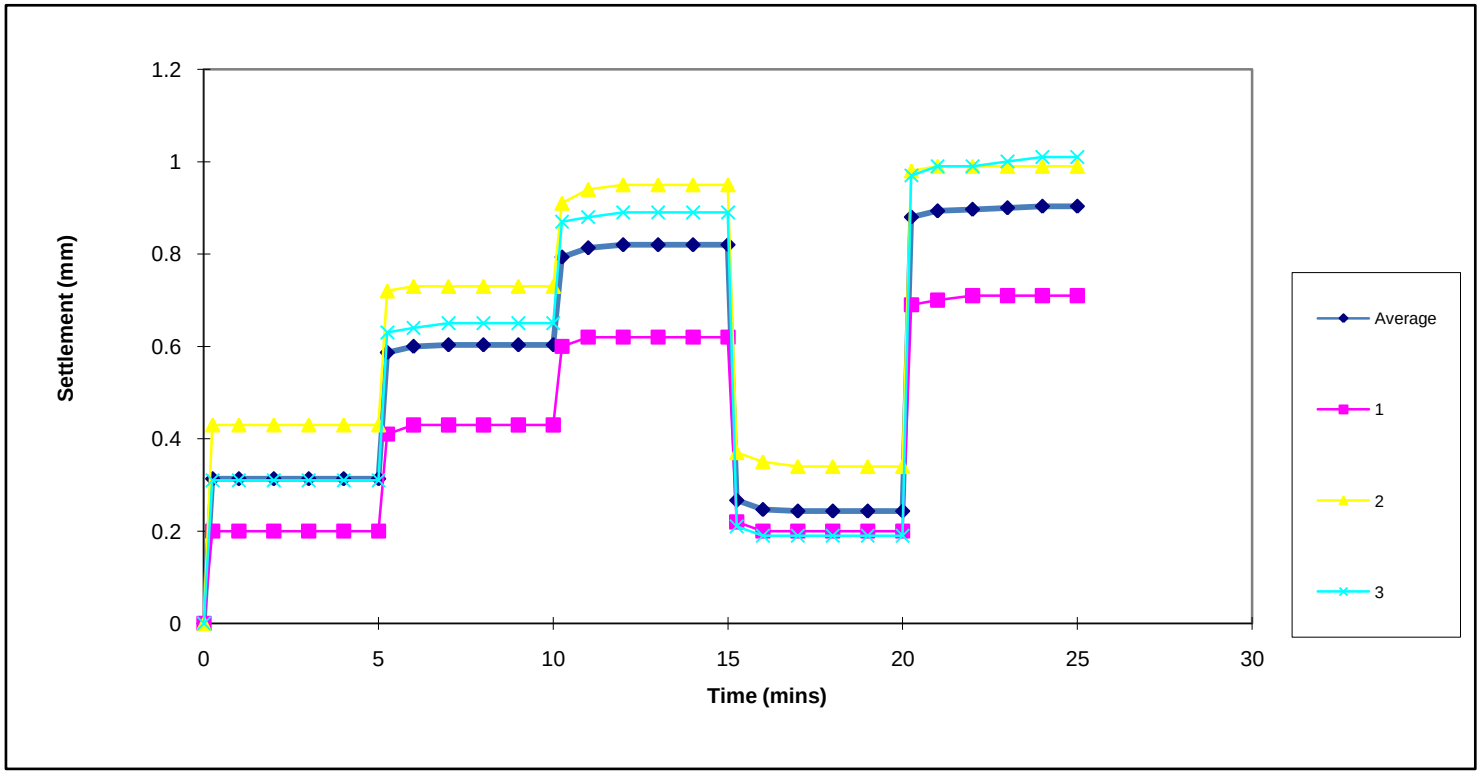
		Travel Gauges set on plate			
	Time (mins)	Gauge 1	Gauge 2	Gauge 3	Average Plate Settlement mm
100kN/m^2 Load	0	0	0	0	0
	0.25	0.20	0.43	0.31	0.31
	1	0.20	0.43	0.31	0.31
	2	0.20	0.43	0.31	0.31
	3	0.20	0.43	0.31	0.31
	4	0.20	0.43	0.31	0.31
	5	0.20	0.43	0.31	0.31
200kN/m^2 Load	5.25	0.41	0.72	0.63	0.59
	6	0.43	0.73	0.64	0.60
	7	0.43	0.73	0.65	0.60
	8	0.43	0.73	0.65	0.60
	9	0.43	0.73	0.65	0.60
	10	0.43	0.73	0.65	0.60
300kN/m^2 Load	10.25	0.60	0.91	0.87	0.79
	11	0.62	0.94	0.88	0.81
	12	0.62	0.95	0.89	0.82
	13	0.62	0.95	0.89	0.82
	14	0.62	0.95	0.89	0.82
	15	0.62	0.95	0.89	0.82
0kN/m^2 Unload	15.25	0.22	0.37	0.21	0.27
	16	0.20	0.35	0.19	0.25
	17	0.20	0.34	0.19	0.24
	18	0.20	0.34	0.19	0.24
	19	0.20	0.34	0.19	0.24
	20	0.20	0.34	0.19	0.24
300kN/m^2 Load	20.25	0.69	0.98	0.97	0.88
	21	0.70	0.99	0.99	0.89
	22	0.71	0.99	0.99	0.90
	23	0.71	0.99	1.00	0.90
	24	0.71	0.99	1.01	0.90
	25	0.71	0.99	1.01	0.90

SOUTH WALES GROUND TESTING

SOUTH WALES GROUND TESTING

Plate Load Test Settlement v Time Plot

Test Reference: Test 1



Contract:

Celsa, Rover Way, Cardiff

Date:

27.04.22

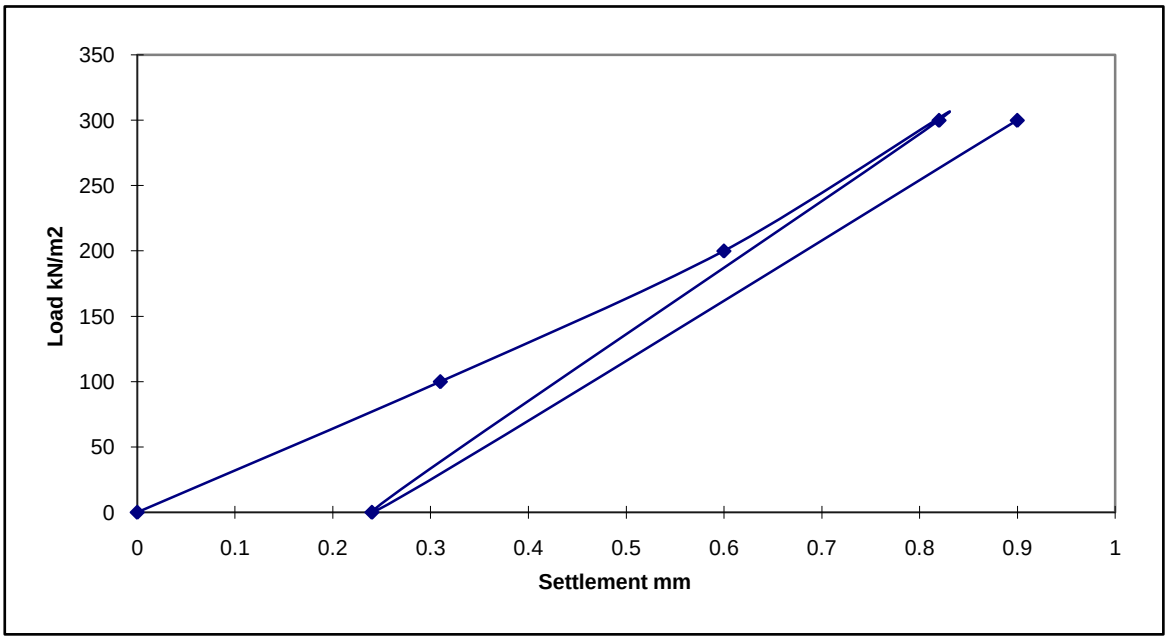
SOUTH WALES GROUND TESTING

PLATE LOAD TEST SUMMARY

Test Reference: Test 1	Test Depth: GL	Plate Diameter: 600mm	Soil Description: Compacted slag

Average Plate Settlement (mm)	Load (kN/m^2)	Time (mins)
0	0	0
0.31	100	5
0.60	200	10
0.82	300	15
0.24	0	20
0.90	300	25

Deformation Modulus (Ev1)	157.3	MN/m2
Elastic Modulus (Ev2)	195.5	MN/m2
Compaction Ratio (Ev2/Ev1)	1.2	
Degree of Rebound	70.7	%
Modulus of subgrade reaction (k762)	379.6	MPa/m
Approximate CBR value	**284.6**	%



Notes:

1: Circular steel plate bedded on uniform coarse sand.
2: Tracked excavator used as counter weight.
3: Load applied to plate via hydraulic jack and loading columns.
4: Each load increment applied until plate settlement less than 0.01mm per minute.
5: Plate settlement measured by three travel gauges fixed to datum beams.
6: Load measured using UKAS calibrated electric load cell.

SOUTH WALES GROUND TESTING

Approved by : D. McArthur

David McArthur BSc MSc ARSM

REMARKS: Test carried out in accordance with BS1377.1990, Part 9.
k752 for 600mm circular plate = pressure requied to achieve 1.25mm penetration x 0.83

CONTRACT:	Date: 27.04.22
Celsa,m Rover Way, Cardiff	Sheet 1 of 1

SOUTH WALES GROUND TESTING

Plate Load Test Settlement v Time Data

Contract: Celsa, Rover Way, Cardiff | Date: 27.04.22

Test Reference: Test 2 | Test Depth: Surface | Plate Diameter: 600mm | Seating Load: 7.5kN/m^2

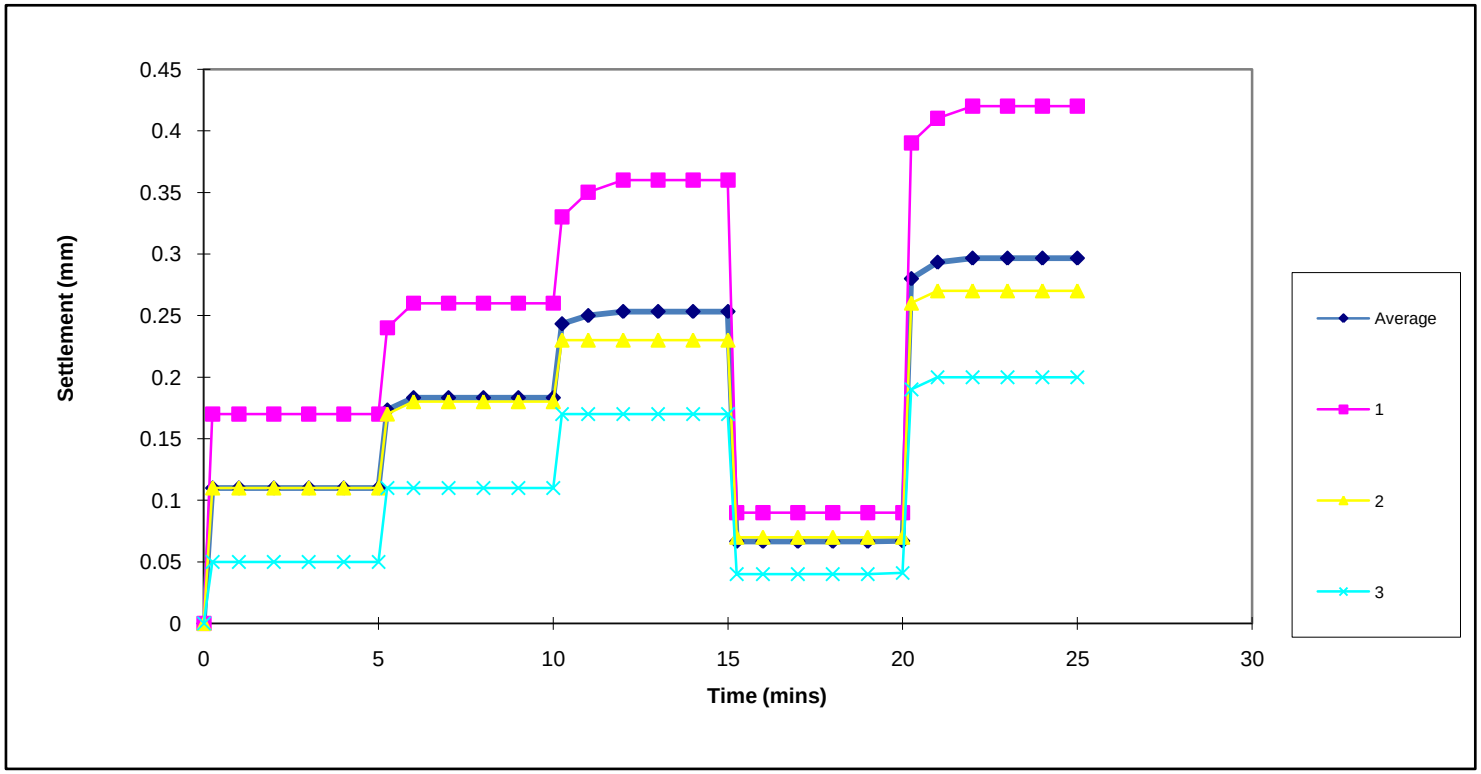
		Travel Gauges set on plate			
	Time (mins)	Gauge 1	Gauge 2	Gauge 3	Average Plate Settlement mm
100kN/m^2 Load	0	0	0	0	0
	0.25	0.17	0.11	0.05	0.11
	1	0.17	0.11	0.05	0.11
	2	0.17	0.11	0.05	0.11
	3	0.17	0.11	0.05	0.11
	4	0.17	0.11	0.05	0.11
	5	0.17	0.11	0.05	0.11
200kN/m^2 Load	5.25	0.24	0.17	0.11	0.17
	6	0.26	0.18	0.11	0.18
	7	0.26	0.18	0.11	0.18
	8	0.26	0.18	0.11	0.18
	9	0.26	0.18	0.11	0.18
	10	0.26	0.18	0.11	0.18
300kN/m^2 Load	10.25	0.33	0.23	0.17	0.24
	11	0.35	0.23	0.17	0.25
	12	0.36	0.23	0.17	0.25
	13	0.36	0.23	0.17	0.25
	14	0.36	0.23	0.17	0.25
	15	0.36	0.23	0.17	0.25
0kN/m^2 Unload	15.25	0.09	0.07	0.04	0.07
	16	0.09	0.07	0.04	0.07
	17	0.09	0.07	0.04	0.07
	18	0.09	0.07	0.04	0.07
	19	0.09	0.07	0.04	0.07
	20	0.09	0.07	0.04	0.07
300kN/m^2 Load	20.25	0.39	0.26	0.19	0.28
	21	0.41	0.27	0.20	0.29
	22	0.42	0.27	0.20	0.30
	23	0.42	0.27	0.20	0.30
	24	0.42	0.27	0.20	0.30
	25	0.42	0.27	0.20	0.30

SOUTH WALES GROUND TESTING

SOUTH WALES GROUND TESTING

Plate Load Test Settlement v Time Plot

Test Reference: Test 2



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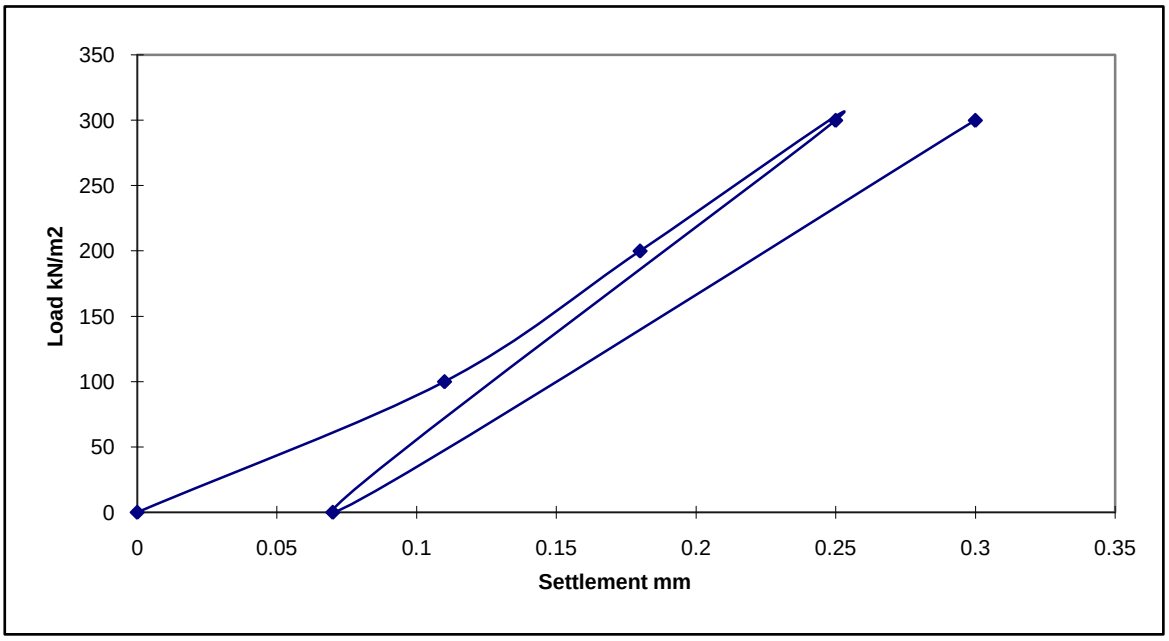
SOUTH WALES GROUND TESTING

PLATE LOAD TEST SUMMARY

Test Reference: Test 2	Test Depth: GL	Plate Diameter: 600mm	Soil Description: Compacted slag

Average Plate Settlement (mm)	Load (kN/m^2)	Time (mins)
0	0	0
0.11	100	5
0.18	200	10
0.25	300	15
0.07	0	20
0.30	300	25

Deformation Modulus (Ev1)	516.0	MN/m2
Elastic Modulus (Ev2)	560.9	MN/m2
Compaction Ratio (Ev2/Ev1)	1.1	
Degree of Rebound	72.0	%
Modulus of subgrade reaction (k762)	1245	MPa/m
Approximate CBR value	**2229.8**	%



Notes:

1: Circular steel plate bedded on uniform coarse sand.
2: Tracked excavator used as counter weight.
3: Load applied to plate via hydraulic jack and loading columns.
4: Each load increment applied until plate settlement less than 0.01mm per minute.
5: Plate settlement measured by three travel gauges fixed to datum beams.
6: Load measured using UKAS calibrated electric load cell.

SOUTH WALES GROUND TESTING

Approved by : D. McArthur

David McArthur BSc MSc ARSM

REMARKS: Test carried out in accordance with BS1377.1990, Part 9.
k752 for 600mm circular plate = pressure requied to achieve 1.25mm penetration x 0.83

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SOUTH WALES GROUND TESTING

Plate Load Test Settlement v Time Data

Contract: Celsa, Rover Way, Cardiff | Date: 27.04.22

Test Reference: Test 3 | Test Depth: Surface | Plate Diameter: 600mm | Seating Load: 7.5kN/m^2

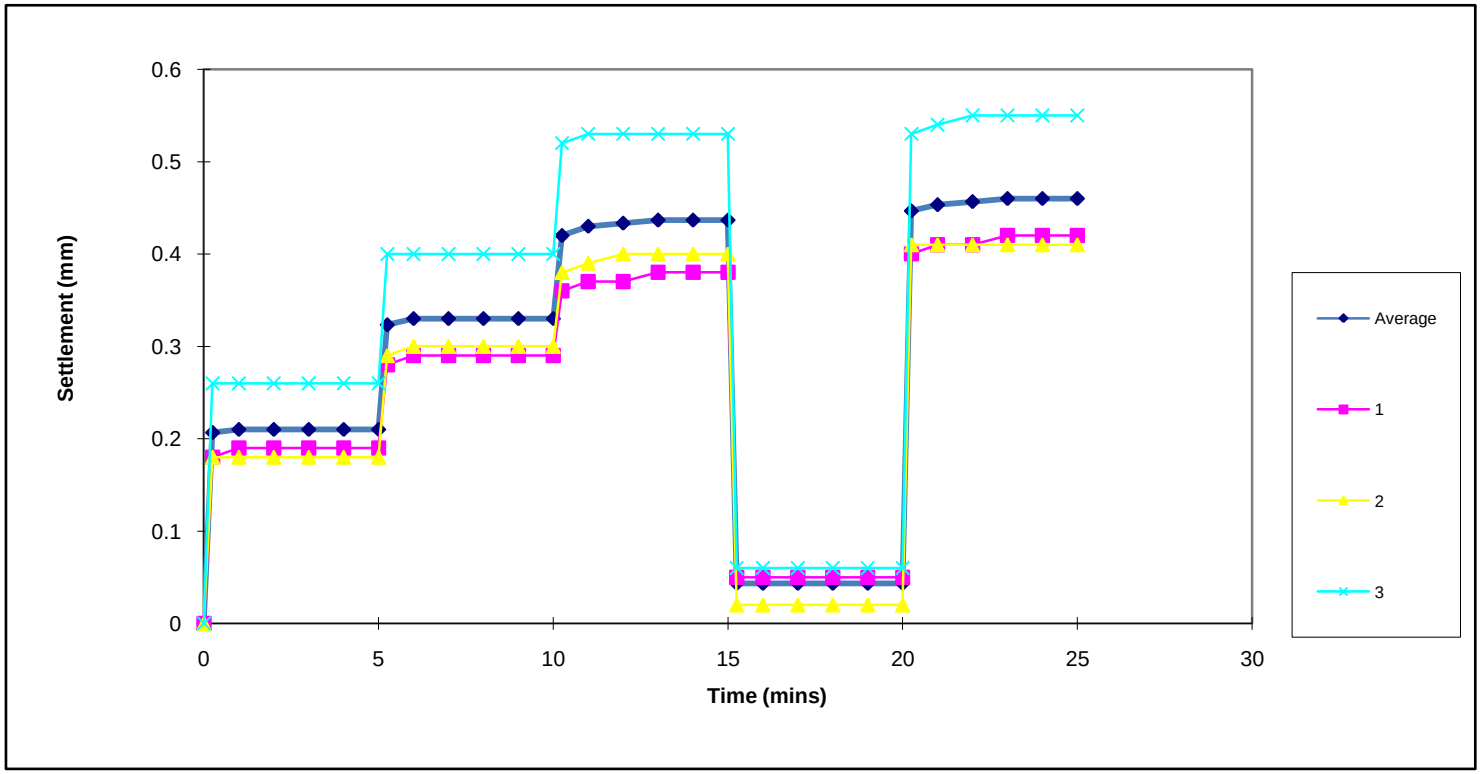
		Travel Gauges set on plate			
	Time (mins)	Gauge 1	Gauge 2	Gauge 3	Average Plate Settlement mm
100kN/m^2 Load	0	0	0	0	0
	0.25	0.18	0.18	0.26	0.21
	1	0.19	0.18	0.26	0.21
	2	0.19	0.18	0.26	0.21
	3	0.19	0.18	0.26	0.21
	4	0.19	0.18	0.26	0.21
	5	0.19	0.18	0.26	0.21
200kN/m^2 Load	5.25	0.28	0.29	0.40	0.32
	6	0.29	0.30	0.40	0.33
	7	0.29	0.30	0.40	0.33
	8	0.29	0.30	0.40	0.33
	9	0.29	0.30	0.40	0.33
	10	0.29	0.30	0.40	0.33
300kN/m^2 Load	10.25	0.36	0.38	0.52	0.42
	11	0.37	0.39	0.53	0.43
	12	0.37	0.40	0.53	0.43
	13	0.38	0.40	0.53	0.44
	14	0.38	0.40	0.53	0.44
	15	0.38	0.40	0.53	0.44
0kN/m^2 Unload	15.25	0.05	0.02	0.06	0.04
	16	0.05	0.02	0.06	0.04
	17	0.05	0.02	0.06	0.04
	18	0.05	0.02	0.06	0.04
	19	0.05	0.02	0.06	0.04
	20	0.05	0.02	0.06	0.04
300kN/m^2 Load	20.25	0.40	0.41	0.53	0.45
	21	0.41	0.41	0.54	0.45
	22	0.41	0.41	0.55	0.46
	23	0.42	0.41	0.55	0.46
	24	0.42	0.41	0.55	0.46
	25	0.42	0.41	0.55	0.46

SOUTH WALES GROUND TESTING

SOUTH WALES GROUND TESTING

Plate Load Test Settlement v Time Plot

Test Reference: Test 3



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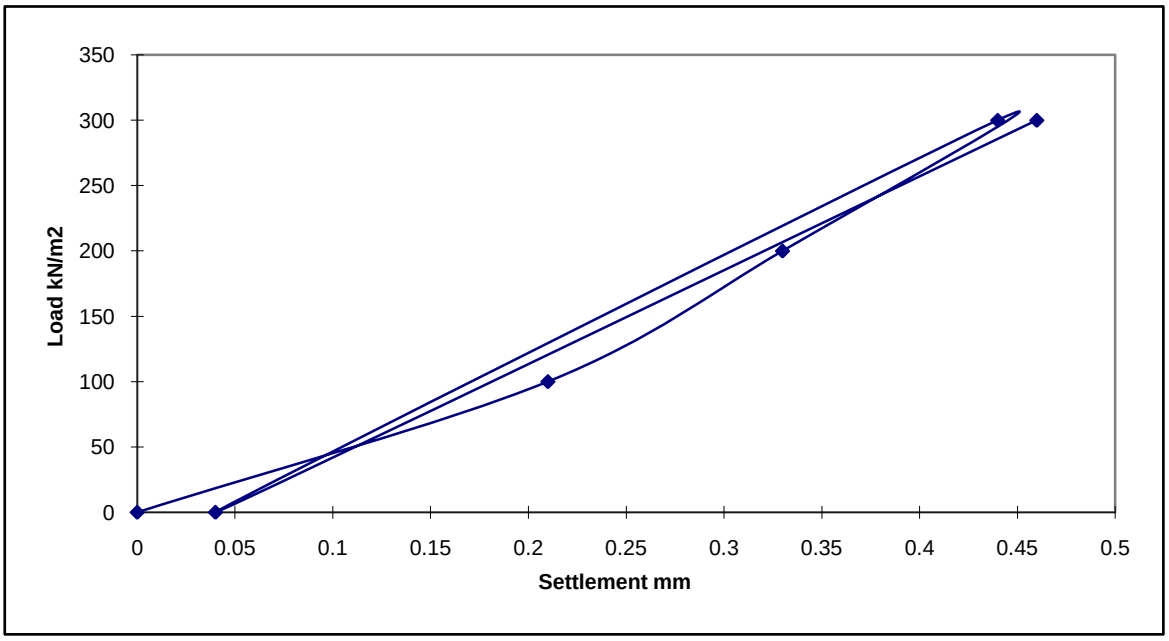
SOUTH WALES GROUND TESTING

PLATE LOAD TEST SUMMARY

Test Reference: Test 3	Test Depth: GL	Plate Diameter: 600mm	Soil Description: Compacted slag

Average Plate Settlement (mm)	Load (kN/m^2)	Time (mins)
0	0	0
0.21	100	5
0.33	200	10
0.44	300	15
0.04	0	20
0.46	300	25

Deformation Modulus (Ev1)	293.2	MN/m2
Elastic Modulus (Ev2)	307.1	MN/m2
Compaction Ratio (Ev2/Ev1)	1.0	
Degree of Rebound	90.9	%
Modulus of subgrade reaction (k762)	707.4	MPa/m
Approximate CBR value	**837.1**	%



Notes:

1: Circular steel plate bedded on uniform coarse sand.
2: Tracked excavator used as counter weight.
3: Load applied to plate via hydraulic jack and loading columns.
4: Each load increment applied until plate settlement less than 0.01mm per minute.
5: Plate settlement measured by three travel gauges fixed to datum beams.
6: Load measured using UKAS calibrated electric load cell.

SOUTH WALES GROUND TESTING

Approved by : D. McArthur

David McArthur BSc MSc ARSM

REMARKS: Test carried out in accordance with BS1377.1990, Part 9.
k752 for 600mm circular plate = pressure requied to achieve 1.25mm penetration x 0.83

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SOUTH WALES GROUND TESTING

Plate Load Test Settlement v Time Data

Contract: Celsa, Rover Way, Cardiff | Date: 27.04.22

Test Reference: Test 4 | Test Depth: Surface | Plate Diameter: 600mm | Seating Load: 7.5kN/m^2

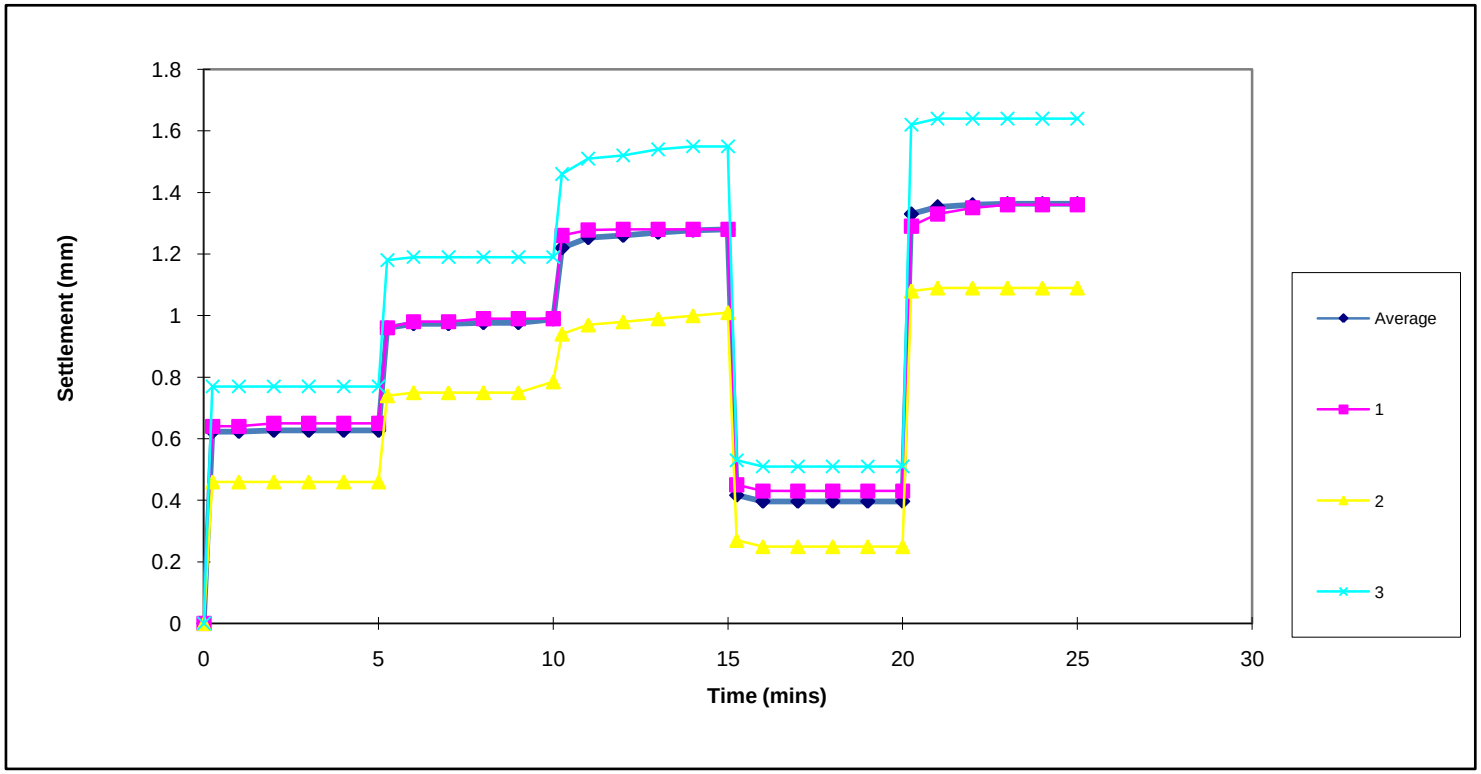
		Travel Gauges set on plate			
	Time (mins)	Gauge 1	Gauge 2	Gauge 3	Average Plate Settlement mm
100kN/m^2 Load	0	0	0	0	0
	0.25	0.64	0.46	0.77	0.62
	1	0.64	0.46	0.77	0.62
	2	0.65	0.46	0.77	0.63
	3	0.65	0.46	0.77	0.63
	4	0.65	0.46	0.77	0.63
	5	0.65	0.46	0.77	0.63
200kN/m^2 Load	5.25	0.96	0.74	1.18	0.96
	6	0.98	0.75	1.19	0.97
	7	0.98	0.75	1.19	0.97
	8	0.99	0.75	1.19	0.98
	9	0.99	0.75	1.19	0.98
	10	0.99	0.79	1.19	0.99
300kN/m^2 Load	10.25	1.26	0.94	1.46	1.22
	11	1.28	0.97	1.51	1.25
	12	1.28	0.98	1.52	1.26
	13	1.28	0.99	1.54	1.27
	14	1.28	1.00	1.55	1.28
	15	1.28	1.01	1.55	1.28
0kN/m^2 Unload	15.25	0.45	0.27	0.53	0.42
	16	0.43	0.25	0.51	0.40
	17	0.43	0.25	0.51	0.40
	18	0.43	0.25	0.51	0.40
	19	0.43	0.25	0.51	0.40
	20	0.43	0.25	0.51	0.40
300kN/m^2 Load	20.25	1.29	1.08	1.62	1.33
	21	1.33	1.09	1.64	1.35
	22	1.35	1.09	1.64	1.36
	23	1.36	1.09	1.64	1.36
	24	1.36	1.09	1.64	1.36
	25	1.36	1.09	1.64	1.36

SOUTH WALES GROUND TESTING

SOUTH WALES GROUND TESTING

Plate Load Test Settlement v Time Plot

Test Reference: Test 4



Contract:

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Date:

27.04.22

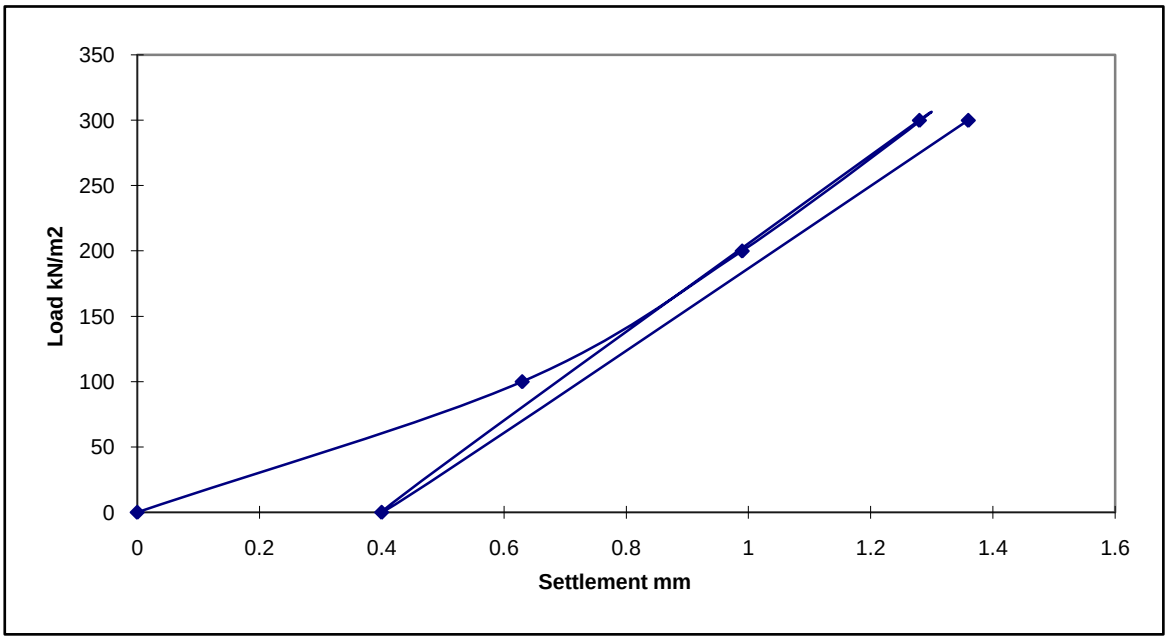
SOUTH WALES GROUND TESTING

PLATE LOAD TEST SUMMARY

Test Reference: Test 4	Test Depth: GL	Plate Diameter: 600mm	Soil Description: Compacted slag

Average Plate Settlement (mm)	Load (kN/m^2)	Time (mins)
0	0	0
0.63	100	5
0.99	200	10
1.28	300	15
0.40	0	20
1.36	300	25

Deformation Modulus (Ev1)	100.8	MN/m2
Elastic Modulus (Ev2)	134.4	MN/m2
Compaction Ratio (Ev2/Ev1)	1.3	
Degree of Rebound	68.8	%
Modulus of subgrade reaction (k762)	243.2	MPa/m
Approximate CBR value	**131.6**	%



Notes:

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2: Tracked excavator used as counter weight.
3: Load applied to plate via hydraulic jack and loading columns.
4: Each load increment applied until plate settlement less than 0.01mm per minute.
5: Plate settlement measured by three travel gauges fixed to datum beams.
6: Load measured using UKAS calibrated electric load cell.

SOUTH WALES GROUND TESTING

Approved by : D. McArthur

David McArthur BSc MSc ARSM

REMARKS: Test carried out in accordance with BS1377.1990, Part 9.
k752 for 600mm circular plate = pressure requied to achieve 1.25mm penetration x 0.83

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SOUTH WALES GROUND TESTING

Plate Load Test Settlement v Time Data

Contract: Celsa, Rover Way, Cardiff | Date: 27.04.22

Test Reference: Test 5 | Test Depth: Surface | Plate Diameter: 600mm | Seating Load: 7.5kN/m^2

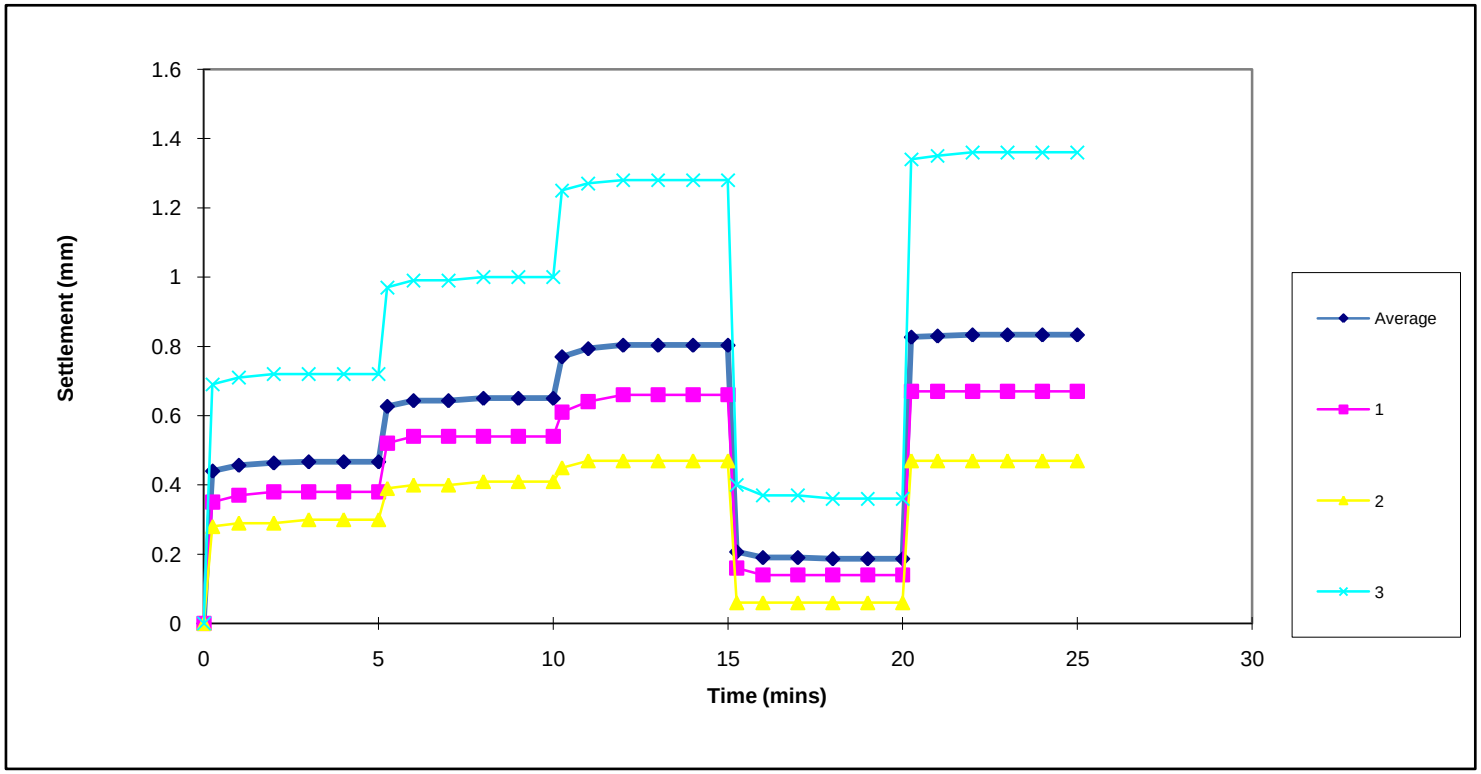
		Travel Gauges set on plate			
	Time (mins)	Gauge 1	Gauge 2	Gauge 3	Average Plate Settlement mm
100kN/m^2 Load	0	0	0	0	0
	0.25	0.35	0.28	0.69	0.44
	1	0.37	0.29	0.71	0.46
	2	0.38	0.29	0.72	0.46
	3	0.38	0.30	0.72	0.47
	4	0.38	0.30	0.72	0.47
	5	0.38	0.30	0.72	0.47
200kN/m^2 Load	5.25	0.52	0.39	0.97	0.63
	6	0.54	0.40	0.99	0.64
	7	0.54	0.40	0.99	0.64
	8	0.54	0.41	1.00	0.65
	9	0.54	0.41	1.00	0.65
	10	0.54	0.41	1.00	0.65
300kN/m^2 Load	10.25	0.61	0.45	1.25	0.77
	11	0.64	0.47	1.27	0.79
	12	0.66	0.47	1.28	0.80
	13	0.66	0.47	1.28	0.80
	14	0.66	0.47	1.28	0.80
	15	0.66	0.47	1.28	0.80
0kN/m^2 Unload	15.25	0.16	0.06	0.40	0.21
	16	0.14	0.06	0.37	0.19
	17	0.14	0.06	0.37	0.19
	18	0.14	0.06	0.36	0.19
	19	0.14	0.06	0.36	0.19
	20	0.14	0.06	0.36	0.19
300kN/m^2 Load	20.25	0.67	0.47	1.34	0.83
	21	0.67	0.47	1.35	0.83
	22	0.67	0.47	1.36	0.83
	23	0.67	0.47	1.36	0.83
	24	0.67	0.47	1.36	0.83
	25	0.67	0.47	1.36	0.83

SOUTH WALES GROUND TESTING

SOUTH WALES GROUND TESTING

Plate Load Test Settlement v Time Plot

Test Reference: Test 5



Contract:

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Date:

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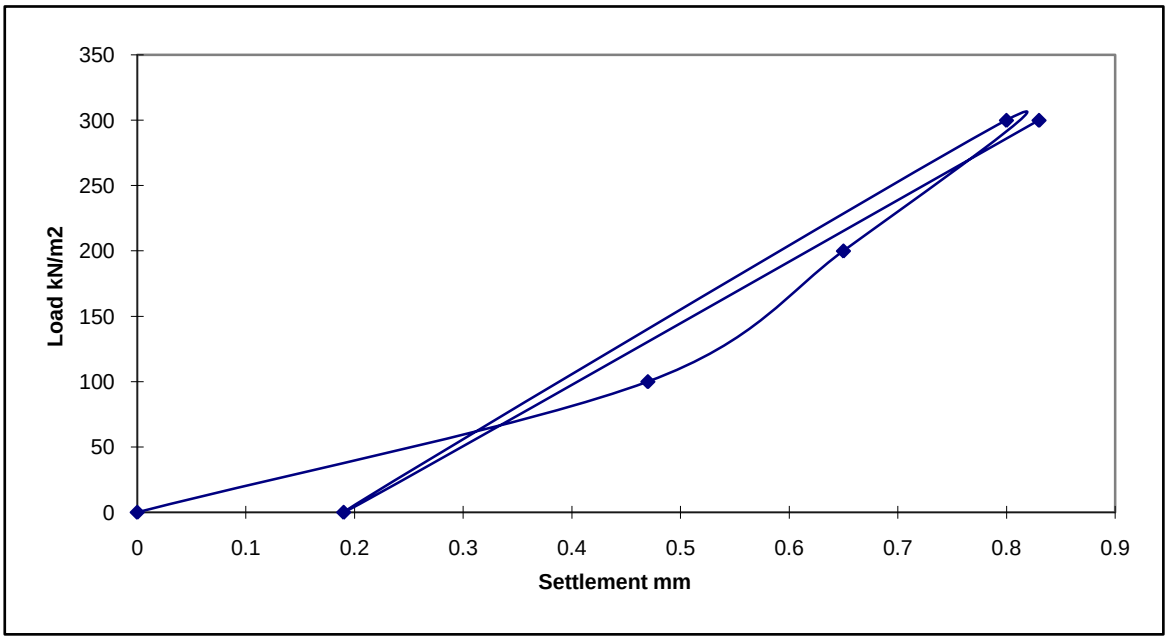
SOUTH WALES GROUND TESTING

PLATE LOAD TEST SUMMARY

Test Reference: Test 5	Test Depth: GL	Plate Diameter: 600mm	Soil Description: Compacted slag

Average Plate Settlement (mm)	Load (kN/m^2)	Time (mins)
0	0	0
0.47	100	5
0.65	200	10
0.80	300	15
0.19	0	20
0.83	300	25

Deformation Modulus (Ev1)	161.3	MN/m2
Elastic Modulus (Ev2)	201.6	MN/m2
Compaction Ratio (Ev2/Ev1)	1.3	
Degree of Rebound	76.3	%
Modulus of subgrade reaction (k762)	389.1	MPa/m
Approximate CBR value	**297.1**	%



Notes:

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SOUTH WALES GROUND TESTING

Approved by : D. McArthur

David McArthur BSc MSc ARSM

REMARKS: Test carried out in accordance with BS1377.1990, Part 9.
k752 for 600mm circular plate = pressure requied to achieve 1.25mm penetration x 0.83

CONTRACT:	Date: 27.04.22
Celsa,m Rover Way, Cardiff	Sheet 1 of 1