

ANNEX G
Laboratory Soil Chemical Test Results



Final Report

Report No.: 22-40720-1
Initial Date of Issue: 07-Nov-2022
Client Terra Firma (Wales) Ltd

Client Address: 5 Deryn Court
Wharfedale Road
Pentwyn
Cardiff
CF23 7HA

Contact(s): Jamie Alderman

Project Neath

Quotation No.: **Date Received:** 25-Oct-2022

Order No.: 17509 **Date Instructed:** 25-Oct-2022

No. of Samples: 2

Turnaround (Wkdays): 10 **Results Due:** 07-Nov-2022

Date Approved: 07-Nov-2022

Approved By:

Details: Stuart Henderson, Technical
Manager

Results - Soil

Project: Neath

Client: Terra Firma (Wales) Ltd	Chemtest Job No.:				22-40720	22-40720
Quotation No.:	Chemtest Sample ID.:				1531309	1531310
	Sample Location:				TP01	TP01
	Sample Type:				SOIL	SOIL
	Top Depth (m):				0.60	1.00
	Date Sampled:				20-Oct-2022	20-Oct-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
Moisture	N	2030	%	0.020	24	23
Soil Colour	N	2040		N/A	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand
pH	M	2010		4.0	8.7	8.2
pH (2.5:1)	N	2010		4.0	8.7	8.4
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.55	0.48
Magnesium (Water Soluble)	M	2120	mg/kg	20	< 20	< 20
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.010	0.033
Total Sulphur	M	2175	%	0.010	0.53	0.60
Chloride (Water Soluble)	M	2220	g/l	0.010	< 0.010	< 0.010
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010	0.018
Cyanide (Complex)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Ammonium (Extractable)	M	2425	mg/kg	0.50	1.1	1.1
Sulphate (Total)	U	2430	%	0.010	0.053	0.068
Sulphate (Acid Soluble)	U	2430	%	0.010	0.12	0.13
Arsenic	M	2455	mg/kg	0.5	29	12
Beryllium	U	2455	mg/kg	0.5	0.6	< 0.5
Cadmium	M	2455	mg/kg	0.10	0.21	< 0.10
Chromium	M	2455	mg/kg	0.5	6.5	1.8
Mercury Low Level	M	2450	mg/kg	0.05	0.25	0.26
Manganese	M	2455	mg/kg	1.0	370	68
Molybdenum	M	2455	mg/kg	0.5	2.3	1.1
Antimony	N	2455	mg/kg	2.0	8.5	3.3
Copper	M	2455	mg/kg	0.50	760	250
Nickel	M	2455	mg/kg	0.50	25	9.8
Lead	M	2455	mg/kg	0.50	320	160
Selenium	M	2455	mg/kg	0.25	0.68	1.1
Zinc	M	2455	mg/kg	0.50	150	61
Chromium (Trivalent)	N	2490	mg/kg	1.0	6.5	1.8
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	U	2680	mg/kg	1.0	< 1.0	< 1.0

Results - Soil

Project: Neath

Client: Terra Firma (Wales) Ltd	Chemtest Job No.:				22-40720	22-40720
Quotation No.:	Chemtest Sample ID.:				1531309	1531310
	Sample Location:				TP01	TP01
	Sample Type:				SOIL	SOIL
	Top Depth (m):				0.60	1.00
	Date Sampled:				20-Oct-2022	20-Oct-2022
	Asbestos Lab:				DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD		
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0
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	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	0.42	1.3
Acenaphthylene	M	2700	mg/kg	0.10	0.15	0.35
Acenaphthene	M	2700	mg/kg	0.10	0.16	0.49
Fluorene	M	2700	mg/kg	0.10	0.16	0.52
Phenanthrene	M	2700	mg/kg	0.10	0.97	2.2
Anthracene	M	2700	mg/kg	0.10	0.20	0.57
Fluoranthene	M	2700	mg/kg	0.10	1.6	3.7
Pyrene	M	2700	mg/kg	0.10	1.7	3.5
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.88	2.5
Chrysene	M	2700	mg/kg	0.10	1.4	3.2
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	2.0	4.2
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	1.7
Benzo[a]pyrene	M	2700	mg/kg	0.10	0.10	2.9
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.80	1.7
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	0.33	0.83
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.73	1.6
Total Of 16 PAH's	M	2700	mg/kg	2.0	12	31
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010

Results - Soil

Project: Neath

Client: Terra Firma (Wales) Ltd	Chemtest Job No.:				22-40720	22-40720
Quotation No.:	Chemtest Sample ID.:				1531309	1531310
	Sample Location:				TP01	TP01
	Sample Type:				SOIL	SOIL
	Top Depth (m):				0.60	1.00
	Date Sampled:				20-Oct-2022	20-Oct-2022
	Asbestos Lab:				DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD		
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10
Organic Matter BS1377	N	2930	%	0.10	4.1	4.9

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
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measurement by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
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.
2455	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-diphenylcarbazine.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >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; Dibenzo[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)
2815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: 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



Final Report

Report No.: 22-38300-1
Initial Date of Issue: 16-Oct-2022
Client Terra Firma (Wales) Ltd

Client Address: 5 Deryn Court
Wharfedale Road
Pentwyn
Cardiff
CF23 7HA

Contact(s): elliot@terrafirmawales.co.uk;
jamie@terrafirmawales.co.uk

Project Neath

Quotation No.: **Date Received:** 07-Oct-2022

Order No.: 17464 **Date Instructed:** 07-Oct-2022

No. of Samples: 4

Turnaround (Wkdays): 5 **Results Due:** 13-Oct-2022

Date Approved: 16-Oct-2022

Approved By:

Details: Stuart Henderson, Technical
Manager

Results - Soil

Project: Neath

Client: Terra Firma (Wales) Ltd	Chemtest Job No.:				22-38300	22-38300	22-38300	22-38300
Quotation No.:	Chemtest Sample ID.:				1520285	1520286	1520287	1520288
	Client Sample ID.:				ES1	ES2	ES1	ES2
	Sample Location:				WS05	WS05	WS06	WS06
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.2	1.2	0.4	0.8
	Bottom Depth (m):				0.4	1.4	0.6	1.0
	Date Sampled:				05-Oct-2022	05-Oct-2022	05-Oct-2022	05-Oct-2022
	Time Sampled:				12:00	12:00	12:00	12:00
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY
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
Moisture	N	2030	%	0.020	3.4	13	11	23
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	Clay
pH	M	2010		4.0	8.3	8.1	7.4	6.3
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	1.7	0.51	1.6	2.2
Cyanide (Complex)	M	2300	mg/kg	0.50	< 0.50	1.6	0.50	< 0.50
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	0.50	1.8	0.60	0.60
Sulphate (Acid Soluble)	U	2430	%	0.010	0.061	0.21	1.7	0.083
Arsenic	M	2455	mg/kg	0.5	2.9	21	730	10
Beryllium	U	2455	mg/kg	0.5	0.6	< 0.5	1.4	< 0.5
Cadmium	M	2455	mg/kg	0.10	< 0.10	0.59	19	< 0.10
Chromium	M	2455	mg/kg	0.5	12	19	15	15
Mercury Low Level	M	2450	mg/kg	0.05	0.05	0.43	0.07	< 0.05
Manganese	M	2455	mg/kg	1.0	360	550	1000	1300
Molybdenum	M	2455	mg/kg	0.5	< 0.5	1.1	13	2.9
Antimony	N	2455	mg/kg	2.0	< 2.0	21	46	< 2.0
Copper	M	2455	mg/kg	0.50	6.8	56	2100	20
Nickel	M	2455	mg/kg	0.50	14	11	78	8.4
Lead	M	2455	mg/kg	0.50	23	420	1800	32
Selenium	M	2455	mg/kg	0.25	0.35	0.50	1.7	1.3
Zinc	M	2455	mg/kg	0.50	27	380	2500	65
Chromium (Trivalent)	N	2490	mg/kg	1.0	12	19	15	15
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: Neath

Client: Terra Firma (Wales) Ltd	Chemtest Job No.:				22-38300	22-38300	22-38300	22-38300
Quotation No.:	Chemtest Sample ID.:				1520285	1520286	1520287	1520288
	Client Sample ID.:				ES1	ES2	ES1	ES2
	Sample Location:				WS05	WS05	WS06	WS06
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.2	1.2	0.4	0.8
	Bottom Depth (m):				0.4	1.4	0.6	1.0
	Date Sampled:				05-Oct-2022	05-Oct-2022	05-Oct-2022	05-Oct-2022
	Time Sampled:				12:00	12:00	12:00	12:00
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD				
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	0.70	0.23	< 0.10
Pyrene	M	2700	mg/kg	0.10	< 0.10	0.72	0.31	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	0.87	< 0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	1.2	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	1.2	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	0.40	< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	1.1	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	0.63	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.47	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	0.63	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	7.9	< 2.0	< 2.0
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Organic Matter BS1377	N	2930	%	0.10	3.7	0.30	1.2	0.30

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	Alkaline 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.
2455	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-diphenylcarbazine.
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; Dibenzo[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

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



Final Report

Report No.: 22-37142-1
Initial Date of Issue: 11-Oct-2022
Client Terra Firma (Wales) Ltd
Client Address: 5 Deryn Court
Wharfedale Road
Pentwyn
Cardiff
CF23 7HA
Contact(s): Info
Jamie Alderman
Project 17464 Neath Workingman's Club
Quotation No.:
Order No.:
No. of Samples: 3
Turnaround (Wkdays): 5
Date Approved: 11-Oct-2022

Date Received: 29-Sep-2022

Date Instructed: 29-Sep-2022

Results Due: 05-Oct-2022

Approved By:

Details: Stuart Henderson, Technical
Manager

Results - Soil

Project: 17464 Neath Workingman's Club

Client: Terra Firma (Wales) Ltd	Chemtest Job No.:		22-37142	22-37142	22-37142
Quotation No.:	Chemtest Sample ID.:		1514990	1514991	1514992
Order No.:	Client Sample Ref.:		1ES	1ES	1ES
	Sample Location:		WS02	WS03	WS04
	Sample Type:		SOIL	SOIL	SOIL
	Top Depth (m):		0.40	0.20	0.30
	Date Sampled:		26-Sep-2022	26-Sep-2022	26-Sep-2022
	Asbestos Lab:		DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Moisture	N	2030	%	0.020	20
Soil Colour	N	2040		N/A	Grey
Other Material	N	2040		N/A	Stones
Soil Texture	N	2040		N/A	Sand
pH	M	2010		4.0	8.6
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.53
Cyanide (Complex)	M	2300	mg/kg	0.50	1.7
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	1.8
Sulphate (Acid Soluble)	U	2430	%	0.010	0.14
Arsenic	M	2455	mg/kg	0.5	28
Beryllium	U	2455	mg/kg	0.5	0.9
Cadmium	M	2455	mg/kg	0.10	1.3
Chromium	M	2455	mg/kg	0.5	14
Mercury Low Level	M	2450	mg/kg	0.05	0.93
Manganese	M	2455	mg/kg	1.0	600
Molybdenum	M	2455	mg/kg	0.5	2.4
Antimony	N	2455	mg/kg	2.0	9.5
Copper	M	2455	mg/kg	0.50	760
Nickel	M	2455	mg/kg	0.50	27
Lead	M	2455	mg/kg	0.50	450
Selenium	M	2455	mg/kg	0.25	0.75
Zinc	M	2455	mg/kg	0.50	1300
Chromium (Trivalent)	N	2490	mg/kg	1.0	14
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0

Results - Soil

Project: 17464 Neath Workingman's Club

Client: Terra Firma (Wales) Ltd	Chemtest Job No.:		22-37142	22-37142	22-37142
Quotation No.:	Chemtest Sample ID.:		1514990	1514991	1514992
Order No.:	Client Sample Ref.:		1ES	1ES	1ES
	Sample Location:		WS02	WS03	WS04
	Sample Type:		SOIL	SOIL	SOIL
	Top Depth (m):		0.40	0.20	0.30
	Date Sampled:		26-Sep-2022	26-Sep-2022	26-Sep-2022
	Asbestos Lab:		DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	M	2700	mg/kg	0.10	0.88
Acenaphthylene	M	2700	mg/kg	0.10	0.76
Acenaphthene	M	2700	mg/kg	0.10	0.38
Fluorene	M	2700	mg/kg	0.10	0.68
Phenanthrene	M	2700	mg/kg	0.10	4.3
Anthracene	M	2700	mg/kg	0.10	1.1
Fluoranthene	M	2700	mg/kg	0.10	6.5
Pyrene	M	2700	mg/kg	0.10	6.0
Benzo[a]anthracene	M	2700	mg/kg	0.10	3.1
Chrysene	M	2700	mg/kg	0.10	3.8
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	3.4
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	1.1
Benzo[a]pyrene	M	2700	mg/kg	0.10	3.0
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	1.9
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	0.31
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	2.3
Total Of 16 PAH's	M	2700	mg/kg	2.0	40
Total Phenols	M	2920	mg/kg	0.10	< 0.10
Organic Matter BS1377	N	2930	%	0.10	4.6

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:
1514992	1ES		WS04	26-Sep-2022	C	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	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
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customerservices@chemtest.com

ANNEX H
Laboratory Soil Geotechnical Test Results



Results Summary

Apex Testing Solutions Limited

Sturmi Way
Village Farm Industrial Estate
Pyle
Bridgend
CF33 6BZ

Telephone: 01656 746762

E-mail: andrew.grogan@apex-drilling.com

laura.davis@apex-drilling.com

<u>Reporting Details</u>		<u>Key Information</u>	
Company Name:	TFW Group Ltd	Site Name:	Neath
Address:	5 Deryn Court Wharfdale Road Cardiff CF23 7HA	Job Number:	D22473
Contact Name:	Elliot	Date Received:	10/10/2022
Contact Number:		Job Coordinator:	A. Grogan

Item No.	Tests Undertaken	Number of Tests
1	Atterburg Limits (4 point) - BS1377-2: 1990	1
2	Moisture Content - BS1377 -2: 1990	1

Results Issued: 18/10/2022

Comments

Results herein relate only to samples received in the laboratory and where not sampled by Apex Testing Solutions personnel relate to the samples as received.

Where tests are UKAS accredited any Opinion and/or Interpretation expressed herein are outside the scope of the UKAS Accreditation. The reports shall not be reproduced in full without the written approval of the laboratory.

Please contact the job coordinator should any further information be required.

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014

Project No: D22473

Project Name: 17464 - Neath

ATS Sample No: 29853

Client: TFW Group Ltd

Address: 5 Deryn Court

Wharfdale Road

Cardiff

CF23 7HA

Site Ref / Hole ID: WS06

Sample No:

**Sampling Certificate
Received:** No

Depth (m): 1.00 - 1.20

Sample Type: Disturbed

Material Description: Brown slightly sandy
gravelly SILT

Location in Works: N/A

Material Source: Site Generated

Date Sampled: Unknown

Material Supplier: Site Generated

Sampled By: Client

Specification: BS1377

Date Received: 10 October 2022

Date Tested: 18 October 2022

Test Results

Moisture Content (%)

13.1

Remarks:

QA Ref.

EN ISO 17892-
1:2014 E



Apex Testing Solutions

Sturmi Way, Village Farm Industrial Est,
Pyle, Bridgend, CF33 6BZ

Tel: 01656 746762 Fax: 01656 746096



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Approver

A Grogan

A Grogan, Laboratory Manager

Date

18/10/2022

Fig

MC

TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

Project No: D22473
Project Name: 17464 - Neath
ATS Sample No: 29853

Client: TFW Group Ltd
Address: 5 Deryn Court
 Wharfdale Road
 Cardiff
 CF23 7HA

Site Ref / Hole ID: WS06

Depth (m): 1.00 - 1.20

Sample No:

Sample Type: Disturbed

Sampling Certificate Received: No

Material Description: Brown slightly sandy gravelly SILT

Location in Works: N/A

Material Source: Site Generated

Date Sampled: Unknown

Material Supplier: Site Generated

Sampled By: Client

Specification: BS1377

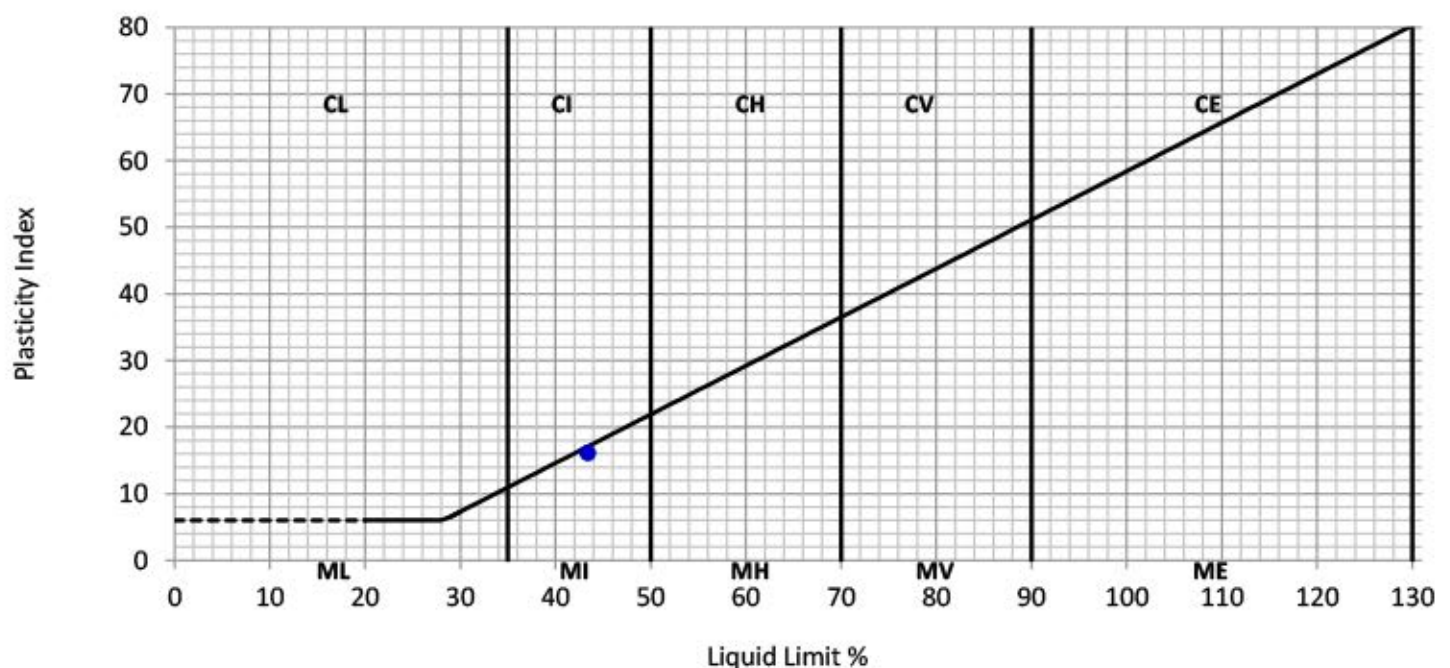
Date Received: 10 October 2022

Date Tested: 17 October 2022

Test Results

Liquid Limit	43	%
Plastic Limit	27	%
Plasticity Index	16	%

Preparation:	4.2.4 Sieved Specimen
Proportion retained on 425µm sieve:	35 %



Remarks:

QA Ref.

BS1377 - 2
Rev. 3.0



Apex Testing Solutions

Sturmi Way, Village Farm Industrial Est, Pyle,
 Bridgend, CF33 6BZ
 Tel: 01856 746762 Fax: 01856 749096



7771

Approver

A Grogan

A Grogan, Laboratory Manager

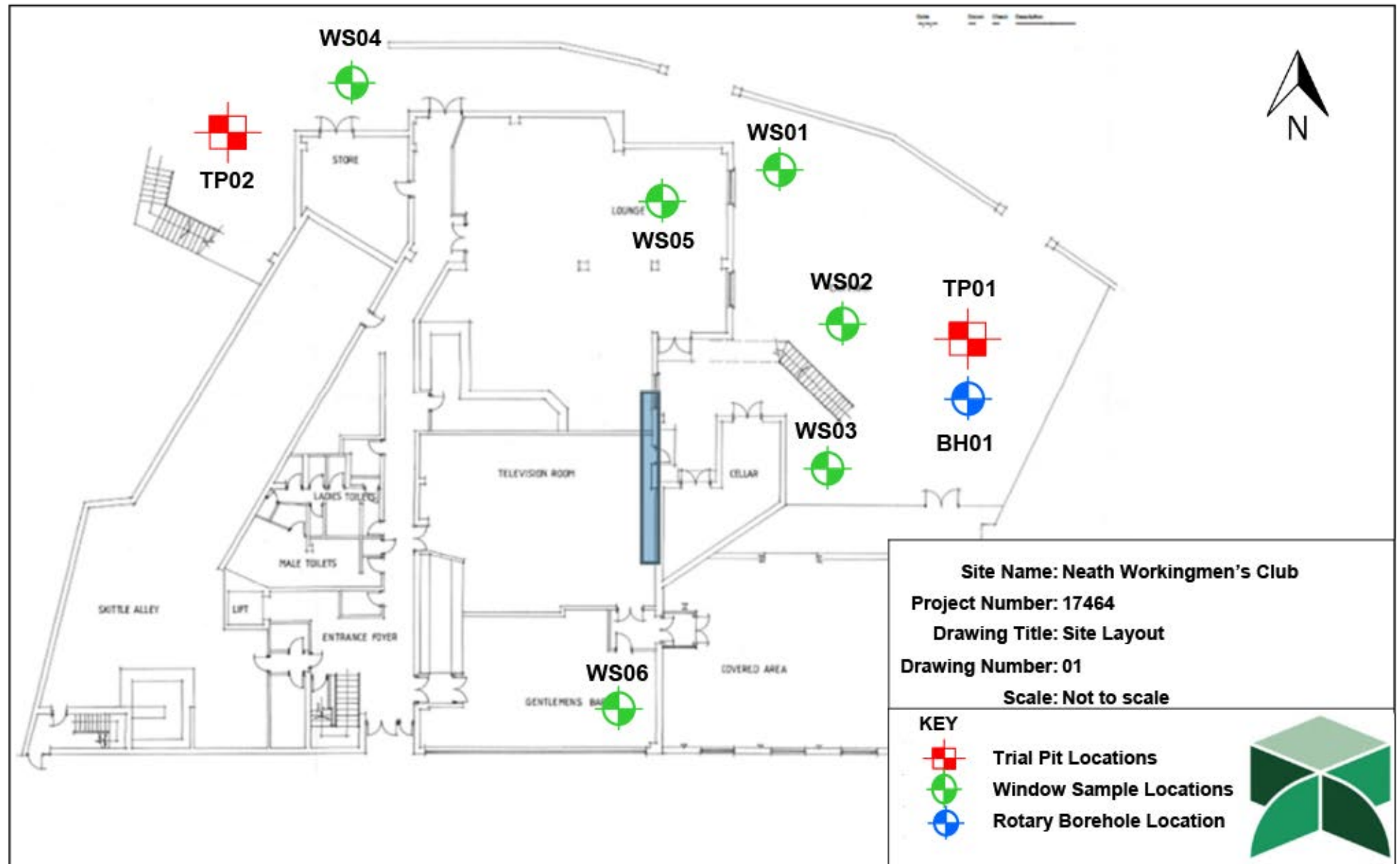
Date

18/07/2022

Fig.

ATT

DRAWINGS





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