

 Integral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com			Project Name: Mount Surgery			Project No.: 14053		Trial Pit No.: TP01 Sheet 1 of 1	
Location: Port Talbot			Client: Prichard Barnes Architects			Logged By: FG		Scale 1:25	
Equipment: Hand Dug Trial Pit			Coordinates:			Dimensions 0.32m			
Date Excavated: 23/06/2022			Level:			Depth : 0.85m 0.33m			
Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description			
Depth (m)	Type	Results							
			0.30			Loose brown very slightly sandy very silty GRAVEL with frequent roots and rootlets. Gravel is fine to coarse angular to sub-rounded of mudstone, sandstone and quartz. (Topsoil)			
			0.85			MADE GROUND: Soft greyish brown slightly sandy gravelly SILT with occasional roots and rootlets. Gravel is fine to coarse angular to sub-rounded of sandstone, mudstone and quartz. Inclusions of timber and very rare plastic.			
						End of Trialpit at 0.85 m			
						1			
						2			
						3			
						4			
						5			
Remarks: 1. Hand dug trial pit. 2. Very slow progress of excavation below 0.85m bgl. 3. Soil infiltration testing undertaken in pit.			Groundwater: 1. No groundwater encountered			Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample			
			Stability: Stable in the short term.						

 Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com			Project Name: Mount Surgery			Project No.: 14053		Trial Pit No.: TP02 Sheet 1 of 1	
Location: Port Talbot			Client: Prichard Barnes Architects			Logged By: FG		Scale 1:25	
Equipment: Hand Dug Trial Pit			Coordinates:			Dimensions 0.30m			
Date Excavated: 23/06/2022			Level:			Depth : 0.70m 0.27m			
Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description			
Depth (m)	Type	Results							
			0.20		 Loose brown very slightly sandy very silty GRAVEL with frequent roots and rootlets. Gravel is fine to coarse angular to sub-rounded of mudstone, sandstone and quartz. (Topsoil)				
			0.70		 MADE GROUND: Soft greyish brown slightly sandy gravelly SILT with occasional roots and rootlets. Gravel is fine to coarse angular to sub-rounded of sandstone, mudstone and quartz. Inclusions of timber and very rare plastic.				
						End of Trialpit at 0.70 m			
						1			
						2			
						3			
						4			
						5			
Remarks: 1. Hand dug trial pit. 2. Very slow progress of excavation below 0.7m bgl. 3. Soil infiltration testing undertaken in pit.			Groundwater: 1. No groundwater encountered			Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample			
			Stability: Stable in the short term						

APPENDIX F

SOIL INFILTRATION TEST RESULTS

14053 Mount Surgery, Port Talbot

Remarks
1. Infiltration stalled after 77 minutes. 2. Insufficient infiltration to calculate design infiltration rate. Test failed.

	Cycle 1	Cycle 2	Cycle 3
Final Excavation Depth (m)			
At end of testing cycle	0.85		
Water Depths (m)			
Water depth at start of test	0.27		
Water depth at end of test	0.47		
Effective depth (measured)	0.20		
% Effective storage depth	0.34		
Effective Storage Depths (m)			
Effective storage depth (100%)	0.58		
Effective storage depth (75%)	0.44		
Effective storage depth (50%)	0.29		
Effective storage depth (25%)	0.15		
Outflow Time (min)			
Time for measured outflow	120		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m³)			
Over measured effective depth	0.02		
Over 100% effective depth	0.06		
From 75% - 25% effective depth	0.03		
Surface Area (m²)			
For 100% effective storage	0.86		
For 50% effective storage	0.48		
Over measured depth	0.37		
Soil Infiltration Rate (m/s)			
Over 100% effective depth		Cycle 2	Cycle 3
Over measured depth			
Over 75% - 25% effective depth	8.0E-06		



14053 Mount Surgery, Port Talbot

Remarks
1. Infiltration stalled after 120 minutes. 2. Insufficient infiltration to calculate design infiltration rate. Test failed.

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	0.70		
Water Depths (m)			
Water depth at start of test	0.15		
Water depth at end of test	0.54		
Effective depth (measured)	0.39		
% Effective storage depth	0.71		
Effective Storage Depths (m)			
Effective storage depth (100%)	0.55		
Effective storage depth (75%)	0.41		
Effective storage depth (50%)	0.28		
Effective storage depth (25%)	0.14		
Outflow Time (min)			
Time for measured outflow	180		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m³)			
Over measured effective depth	0.03		
Over 100% effective depth	0.04		
From 75% - 25% effective depth	0.02		
Surface Area (m²)			
For 100% effective storage	0.71		
For 50% effective storage	0.39		
Over measured depth	0.53		
Soil Infiltration Rate (m/s)			
Over 100% effective depth			
Over measured depth			
Over 75% - 25% effective depth			



APPENDIX G

LABORATORY CHEMICAL TEST RESULTS



Finn Guilfoyle
Integral Geotechnique
Integral House
7 Beddau Way
Castlegate Business Park
CF83 2AX

t: 02920807991
f: 02920862176
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i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

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

Analytical Report Number : 22-67308

Project / Site name:	Mount Surgery, Port Talbot	Samples received on:	27/06/2022
Your job number:	14053	Samples instructed on/ Analysis started on:	27/06/2022
Your order number:	14053 FG	Analysis completed by:	07/07/2022
Report Issue Number:	1	Report issued on:	07/07/2022
Samples Analysed:	4 soil samples		

Signed:

Izabela Wójcik

Izabela Wójcik
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

Analytical Report Number: 22-67308
 Project / Site name: Mount Surgery, Port Talbot
 Your Order No: 14053 FG

Lab Sample Number				2327303	2327304	2327305	2327306
Sample Reference				WS01	WS02	WS03	WS06
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.30	1.20	0.30
Date Sampled				23/06/2022	23/06/2022	23/06/2022	23/06/2022
Time Taken				0900	0920	1030	1200
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	43	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	4	4	14	2.7
Total mass of sample received	kg	0.001	NONE	1	1	0.5	1

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

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.9	7.8	7.2	8.5
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	330	140	330	170
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.012	0.009	0.072	0.019
Sulphide	mg/kg	1	MCERTS	< 1.0	53	< 1.0	60
Total Sulphur	mg/kg	50	MCERTS	410	120	180	120
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	2.8	< 0.1	0.6	0.2
Loss on Ignition @ 450oC	%	0.2	MCERTS	8.3	0.7	3.3	0.7

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.67	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	11	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	2.8	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	28	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	25	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	16	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	12	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	16	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	9.6	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	16	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	7.8	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	2.6	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	9.1	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	156	< 0.80	< 0.80	< 0.80
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Analytical Report Number: 22-67308

Project / Site name: Mount Surgery, Port Talbot

Your Order No: 14053 FG

Lab Sample Number				2327303	2327304	2327305	2327306
Sample Reference				WS01	WS02	WS03	WS06
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.30	1.20	0.30
Date Sampled				23/06/2022	23/06/2022	23/06/2022	23/06/2022
Time Taken				0900	0920	1030	1200
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	73	4.5	13	3.8
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.77	0.15	1.1	0.13
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	< 0.2	0.5	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.4	< 0.2	0.4
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	5.8	21	5.1
Copper (aqua regia extractable)	mg/kg	1	MCERTS	280	11	15	12
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	8.1	15	7
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	3	31	2.8
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	6.1	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	32	4.5	28	4.1
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	410	18	86	18

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 22-67308

Project / Site name: Mount Surgery, Port Talbot

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2327303	WS01	None Supplied	0.5	Brown sandy clay with stones.
2327304	WS02	None Supplied	0.3	Brown clay and sand with gravel.
2327305	WS03	None Supplied	1.2	Brown clay and sand.
2327306	WS06	None Supplied	0.3	Brown clay and sand with gravel.

Analytical Report Number : 22-67308

Project / Site name: Mount Surgery, Port Talbot

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In house method.	L047-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS



Analytical Report Number : 22-67308

Project / Site name: Mount Surgery, Port Talbot

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

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

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

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

APPENDIX H

LABORATORY 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:	IG	Site Name:	Cae Beddgellet
Address:	7 Beddau Way Castlegate Business Park Caerphilly CF83 8PH	Job Number:	D22291
		Date Received:	20/06/2022
Contact Name:		Job Coordinator:	A Grogan
Contact Number:			

Item No.	Tests Undertaken	Number of Tests
1.1	Moisture Contents	3
1.2	Atterberg limits	3
1.4	Ph & SO4	3
RESULTS ISSUED 13/7/22		

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:	D22307	Client:	Integral Geotechnique
Project Name:	14053 - Mount Surgery	Address:	7 Beddau Way
ATS Sample No:	28511		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	WS01	Depth (m):	2.00 - 3.00
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Grey clayey GRAVEL
Location in Works:	N/A	Material Source:	Site Gen
Date Sampled:	23 June 2022	Material Supplier:	Site Gen
Sampled By:	Client	Specification:	BS1377
Date Received:	30 June 2022	Date Tested:	01 July 2022

Test Results

Moisture Content (%)

13.2

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 749096



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Approver

G Llewellyn

Date

11/07/2022

Fig

MC

G Llewellyn, Senior Technician

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

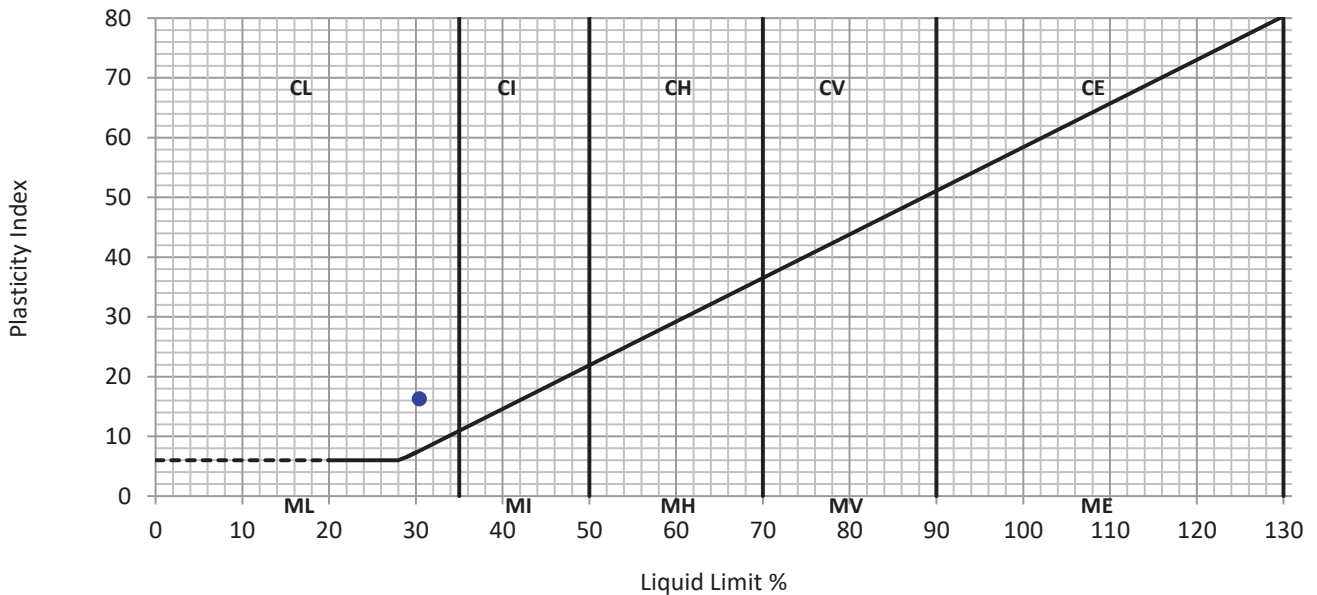
Project No: D22307 Project Name: 14053 - Mount Surgery ATS Sample No: 28511	Client: Integral Geotechnique Address: 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX
--	--

Site Ref / Hole ID: WS01 Sample No: Sampling Certificate Received: No Location in Works: N/A Date Sampled: 23 June 2022 Sampled By: Client Date Received: 30 June 2022	Depth (m): 2.00 - 3.00 Sample Type: Bulk Material Description: Grey clayey GRAVEL Material Source: Site Gen Material Supplier: Site Gen Specification: BS1377 Date Tested: 06 July 2022
---	--

Test Results

Liquid Limit	30	%
Plastic Limit	14	%
Plasticity Index	16	%

Preparation:	4.2.4 Sieved Specimen
Proportion retained on 425µm sieve:	70 %



Remarks:

QA Ref.

BS1377 - 2
Rev. 3.0



Apex Testing Solutions

Sturmi Way, Village Farm Industrial Est, Pyle,
Bridgend, CF33 6BZ
Tel: 01656 746762 Fax: 01656 749096



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Approver

G Llewellyn

G Llewellyn, Senior Technician

Date

11/07/2022

Fig.

ATT

TEST REPORT
Determination Of Water Content
ISO 17892-1: 2014

Project No:	D22307	Client:	Integral Geotechnique
Project Name:	14053 - Mount Surgery	Address:	7 Beddau Way
ATS Sample No:	28512		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	WS04	Depth (m):	1.00 - 1.80
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Grey slightly gravelly CLAY
Location in Works:	N/A	Material Source:	Site Gen
Date Sampled:	23 June 2022	Material Supplier:	Site Gen
Sampled By:	Client	Specification:	BS1377
Date Received:	30 June 2022	Date Tested:	01 July 2022

Test Results

Moisture Content (%)

21.7

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 749096



7771

Approver

G Llewellyn

Date

11/07/2022

Fig

MC

G Llewellyn, Senior Technician

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

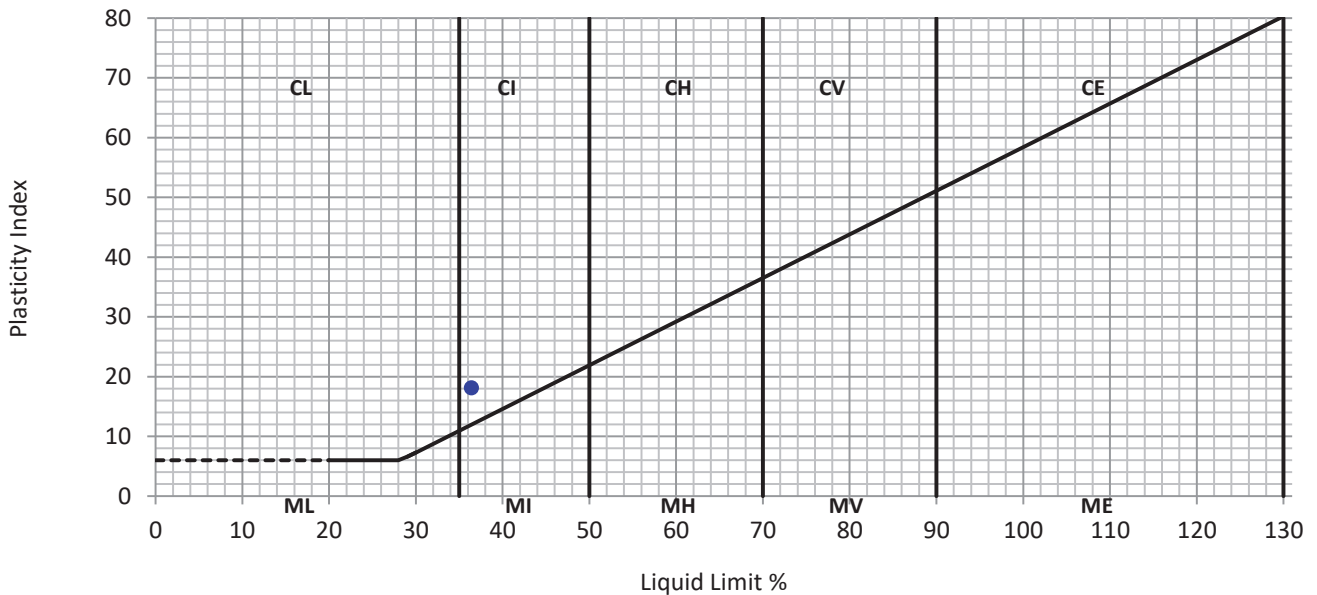
Project No: D22307 Project Name: 14053 - Mount Surgery ATS Sample No: 28512	Client: Integral Geotechnique Address: 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX
--	--

Site Ref / Hole ID: WS04 Sample No: Sampling Certificate Received: No Location in Works: N/A Date Sampled: 23 June 2022 Sampled By: Client Date Received: 30 June 2022	Depth (m): 1.00 - 1.80 Sample Type: Bulk Material Description: Grey slightly gravelly CLAY Material Source: Site Gen Material Supplier: Site Gen Specification: BS1377 Date Tested: 06 July 2022
---	---

Test Results

Liquid Limit	36	%
Plastic Limit	18	%
Plasticity Index	18	%

Preparation:	4.2.4 Sieved Specimen
Proportion retained on 425µm sieve:	24 %



Remarks:

QA Ref.

BS1377 - 2
Rev. 3.0



Apex Testing Solutions

Sturmi Way, Village Farm Industrial Est, Pyle,
Bridgend, CF33 6BZ
Tel: 01656 746762 Fax: 01656 749096



7771

Approver

G Llewellyn

G Llewellyn, Senior Technician

Date

11/07/2022

Fig.

ATT

TEST REPORT
Determination Of Water Content
ISO 17892-1: 2014

Project No:	D22307	Client:	Integral Geotechnique
Project Name:	14053 - Mount Surgery	Address:	7 Beddau Way
ATS Sample No:	28513		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	WS06	Depth (m):	1.00 - 2.00
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Grey slightly gravelly CLAY
Location in Works:	N/A	Material Source:	Site Gen
Date Sampled:	23 June 2022	Material Supplier:	Site Gen
Sampled By:	Client	Specification:	BS1377
Date Received:	30 June 2022	Date Tested:	01 July 2022

Test Results

Moisture Content (%)

20.8

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 749096



7771

Approver

G Llewellyn

Date

11/07/2022

Fig

MC

G Llewellyn, Senior Technician

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

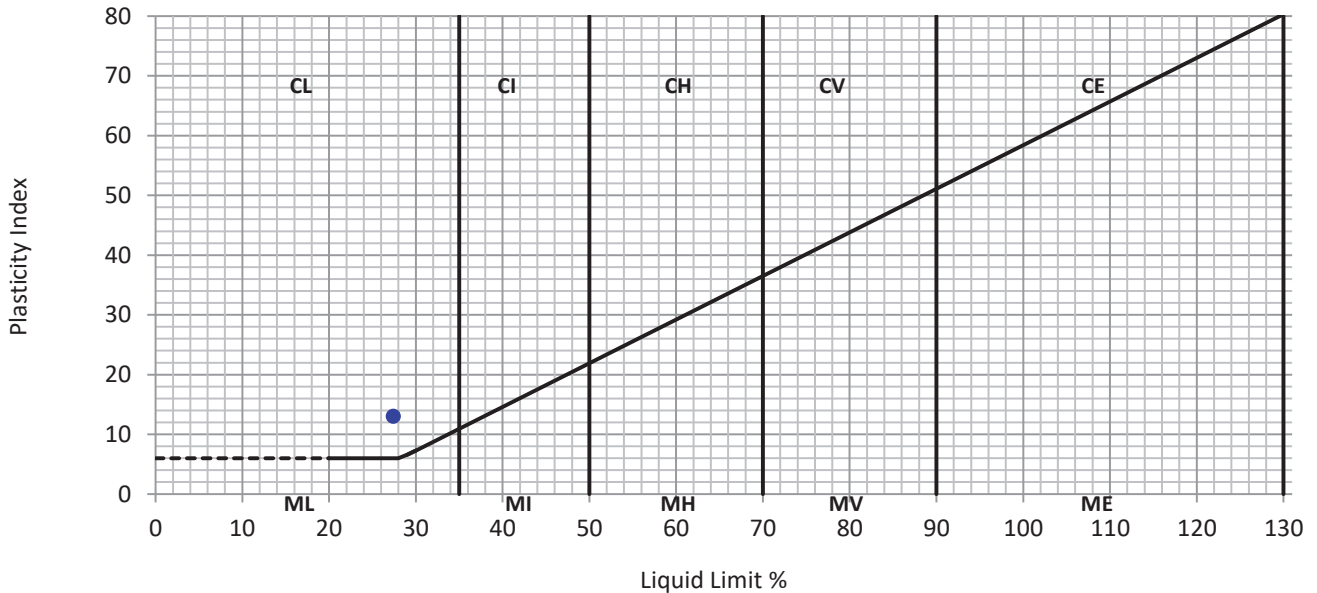
Project No: D22307 Project Name: 14053 - Mount Surgery ATS Sample No: 28513	Client: Integral Geotechnique Address: 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX
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Site Ref / Hole ID: WS06 Sample No: Sampling Certificate Received: No Location in Works: N/A Date Sampled: 23 June 2022 Sampled By: Client Date Received: 30 June 2022	Depth (m): 1.00 - 2.00 Sample Type: Bulk Material Description: Grey slightly gravelly CLAY Material Source: Site Gen Material Supplier: Site Gen Specification: BS1377 Date Tested: 06 July 2022
---	---

Test Results

Liquid Limit	27	%
Plastic Limit	14	%
Plasticity Index	13	%

Preparation:	4.2.4 Sieved Specimen
Proportion retained on 425µm sieve:	41 %



Remarks:

QA Ref.

BS1377 - 2
Rev. 3.0



Apex Testing Solutions

Sturmi Way, Village Farm Industrial Est, Pyle,
Bridgend, CF33 6BZ
Tel: 01656 746762 Fax: 01656 749096



7771

Approver

G Llewellyn

G Llewellyn, Senior Technician

Date

11/07/2022

Fig.

ATT



Apex Testing Solutions Limited
Sturmi Way
Village Farm Industrial Estate
Pyle
Bridgend
CF33 6BZ

Attention: Andrew Grogan

CERTIFICATE OF ANALYSIS

Date of report Generation:	13 July 2022
Customer:	Apex Testing Solutions Limited
Sample Delivery Group (SDG):	220706-53
Your Reference:	D22307
Location:	Mount Surgery
Report No:	654227
Order Number:	ATS 1673

We received 3 samples on Wednesday July 06, 2022 and 3 of these samples were scheduled for analysis which was completed on Wednesday July 13, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220706-53
Client Ref.: D22307

Report Number: 654227
Location: Mount Surgery

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26544669	WS01		2.00 - 3.00	04/07/2022
26544673	WS04		1.00 - 1.80	04/07/2022
26544671	WS06		1.00 - 2.00	04/07/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

SDG: 220706-53
Client Ref.: D22307Report Number: 654227
Location: Mount Surgery

Superseded Report:

Results Legend



Test

No Determination
Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

26544671
26544673
26544669Customer
Sample ReferenceWS06
WS04
WS01

AGS Reference

Depth (m)

1.00 - 2.00
1.00 - 1.80
2.00 - 3.00

Container

250g Amber Jar
(ALE210)
250g Amber Jar
(ALE210)
250g Amber Jar
(ALE210)

Sample Type

S
S
S

Anions by Kone (soil)

All

NDPs: 0
Tests: 3X
X
X

pH

All

NDPs: 0
Tests: 3X
X
X

Sample description

All

NDPs: 0
Tests: 3X
X
X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220706-53
Client Ref.: D22307

Report Number: 654227
Location: Mount Surgery

Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
-----------	----------	------	-----------------	--------	-------------	--------	------------	-------------	-------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
26544669	WS01	2.00 - 3.00	Dark Brown	Loamy Sand	Stones	None
26544673	WS04	1.00 - 1.80	Dark Brown	Sandy Loam	Stones	None
26544671	WS06	1.00 - 2.00	Dark Brown	Sandy Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220706-53
Client Ref.: D22307

Report Number: 654227
Location: Mount Surgery

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM243		Mixed Anions In Soils By Kone

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 220706-53
Client Ref.: D22307

Report Number: 654227
Location: Mount Surgery

Superseded Report:

Test Completion Dates

Lab Sample No(s)	26544669	26544673	26544671
Customer Sample Ref.	WS01	WS04	WS06
AGS Ref.			
Depth	2.00 - 3.00	1.00 - 1.80	1.00 - 2.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	13-Jul-2022	13-Jul-2022	13-Jul-2022
pH	08-Jul-2022	08-Jul-2022	08-Jul-2022
Sample description	07-Jul-2022	07-Jul-2022	07-Jul-2022



CERTIFICATE OF ANALYSIS

SDG: 220706-53
Client Ref: D22307

Report Number: 654227
Location: Mount Surgery

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

APPENDIX I

SUMMARY OF LABORATORY CHEMICAL TEST RESULTS

SUMMARY OF LABORATORY SOIL TEST RESULTS

Job No.: 14053
Site: Mount Surgery, Port Talbot
Soil Type: Made Ground
Soil Organic Matter: 1%

METALS AND SEMI-METALS

No.	Location	Depth (m)	Arsenic (mg/kg)	Boron (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (Elemental) (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)
1	WS01	0.50	73	0.5	0.77	< 0.2	17	< 1.8	280	110	< 0.3	23	< 1.0	32	410
2	WS02	0.30	4.5	< 0.2	0.15	0.4	5.8	< 1.8	11	8.1	< 0.3	3	< 1.0	4.5	18
3	WS03	1.20	13	0.5	1.1	< 0.2	21	< 1.8	15	15	< 0.3	31	6.1	28	86
4	WS06	0.30	3.8	< 0.2	0.13	0.4	5.1	< 1.8	12	7	< 0.3	2.8	< 1.0	4.1	18
Screening Criteria Value			640.0	240000.0	12.0	190.0	-	33.0	68000.0	2330.0	58.0	980.0	12000.0	9000.0	730000.0
Source of Screening Criteria Value			S4UL	S4UL	S4UL	S4UL	-	S4UL	S4UL	C4SL	S4UL	S4UL	S4UL	S4UL	S4UL

SUMMARY OF LABORATORY SOIL TEST RESULTS

INORGANIC CHEMICALS & OTHERS

Job No.: 14053
Site: Mount Surgery, Port Talbot
Soil Type: Made Ground
Soil Organic Matter: 1%

No.	Location	Depth (m)	Cyanide (mg/kg)	Loss on Ignition, dried solids (%)	Moisture content at 30 C (%)	Phenol (mg/kg)	pH (pH units)	Water Soluble Sulphate (g/l)	Sulphate Total as SO4 (mg/kg)	Sulphide (mg/kg)	Total Sulphur (mg/kg)	TOC by Ignition in O2 (%)	Equivalent SOM (%)	Asbestos in Soil	Asbestos Quantification (%)
1	WS01	0.50	< 1.0	8.30	4.00	< 1.0	7.90	0.01	330.00	< 1.0	410.00	2.80	4.82	Not-detected	#N/A
2	WS02	0.30	< 1.0	0.70	4.00	< 1.0	7.80	0.01	140.00	53.00	120.00	< 0.1	<0.1	Not-detected	#N/A
3	WS03	1.20	< 1.0	3.30	14.00	< 1.0	7.20	0.07	330.00	< 1.0	180.00	0.60	1.03	Not-detected	#N/A
4	WS06	0.30	< 1.0	0.70	2.70	< 1.0	8.50	0.02	170.00	60.00	120.00	0.20	0.34	Not-detected	#N/A
Screening Criteria Value			34.0	-	-	440.0	-	-	-	-	-	-	-	-	0.001
Source of Screening Criteria Value			ATRISK	-	-	S4UL	-	-	-	-	-	-	-	-	ION

SUMMARY OF LABORATORY SOIL TEST RESULTS

POLYAROMATIC HYDROCARBONS (PAH)

Job No.: 14053
Site: Mount Surgery, Port Talbot
Soil Type: Made Ground
Soil Organic Matter: 1%

No.	Location	Depth (m)	Acenaphthene (mg/kg)	Acenaphthylene (mg/kg)	Anthracene (mg/kg)	Benzo(a)anthracene (mg/kg)	Benzo(a)pyrene (mg/kg)	Benzo(b)fluoranthene (mg/kg)	Benzo(g,h,i)perylene (mg/kg)	Benzo(k)fluoranthene (mg/kg)	Chrysene (mg/kg)	Dibenz(a,h)anthracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno(1,2,3-cd)pyrene (mg/kg)	Naphthalene (mg/kg)	Phenanthrene (mg/kg)	Pyrene (mg/kg)
1	WS01	0.50	< 0.05	< 0.05	2.8	16	16	16	9.1	9.6	12	2.6	28	0.67	7.8	< 0.05	11	25
2	WS02	0.30	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
3	WS03	1.20	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4	WS06	0.30	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Screening Criteria Value			64000.0	83000.0	570000.0	170.0	35.0	44.0	3900.0	1200.0	350.0	3.50	23000.0	63000.0	500.0	190.0	22000.0	54000.0
Source of Screening Criteria Value			S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL

FIGURES

Site Location

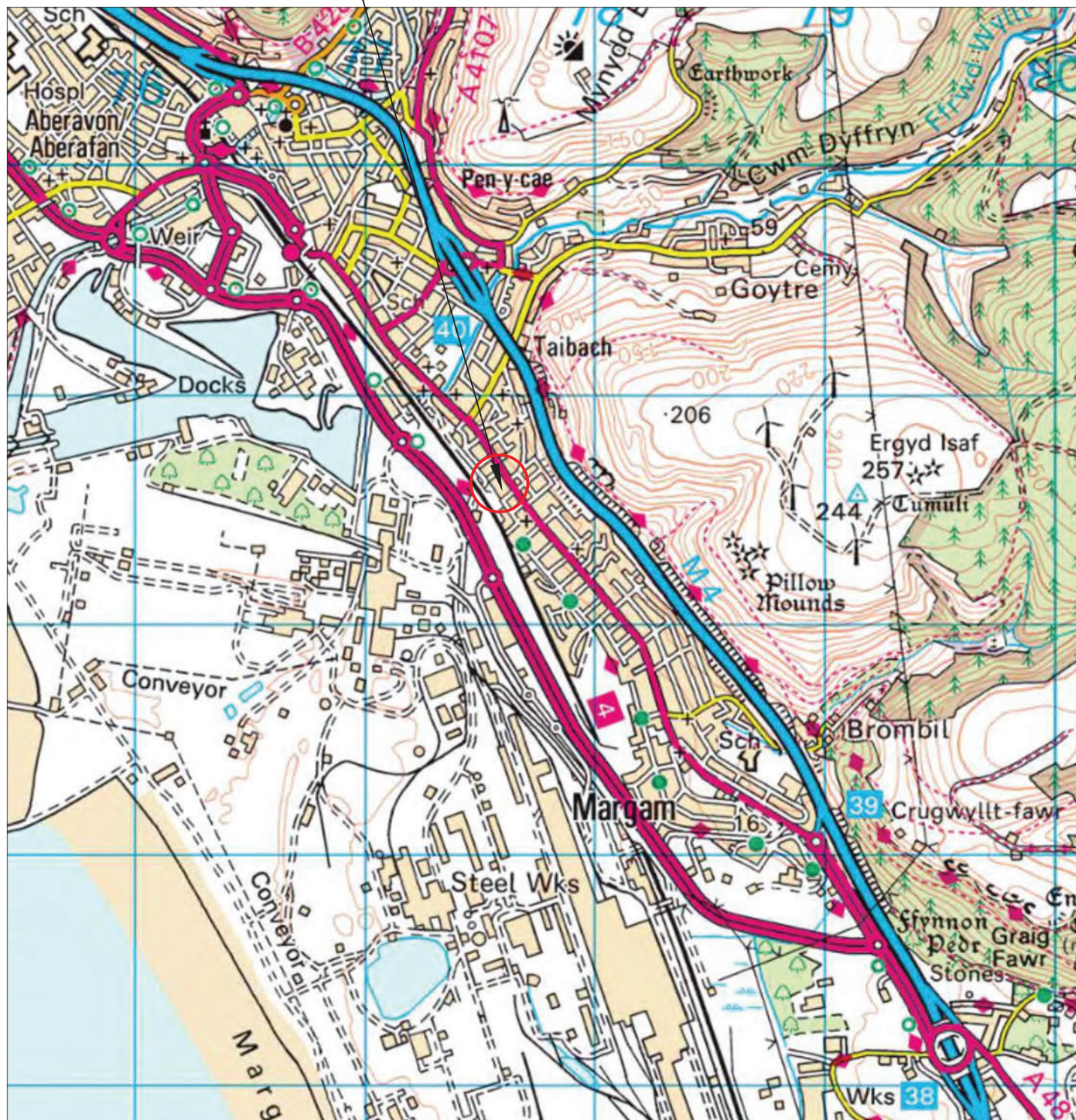


Figure 1: Site Location

Project: Mount Surgery, Port Talbot

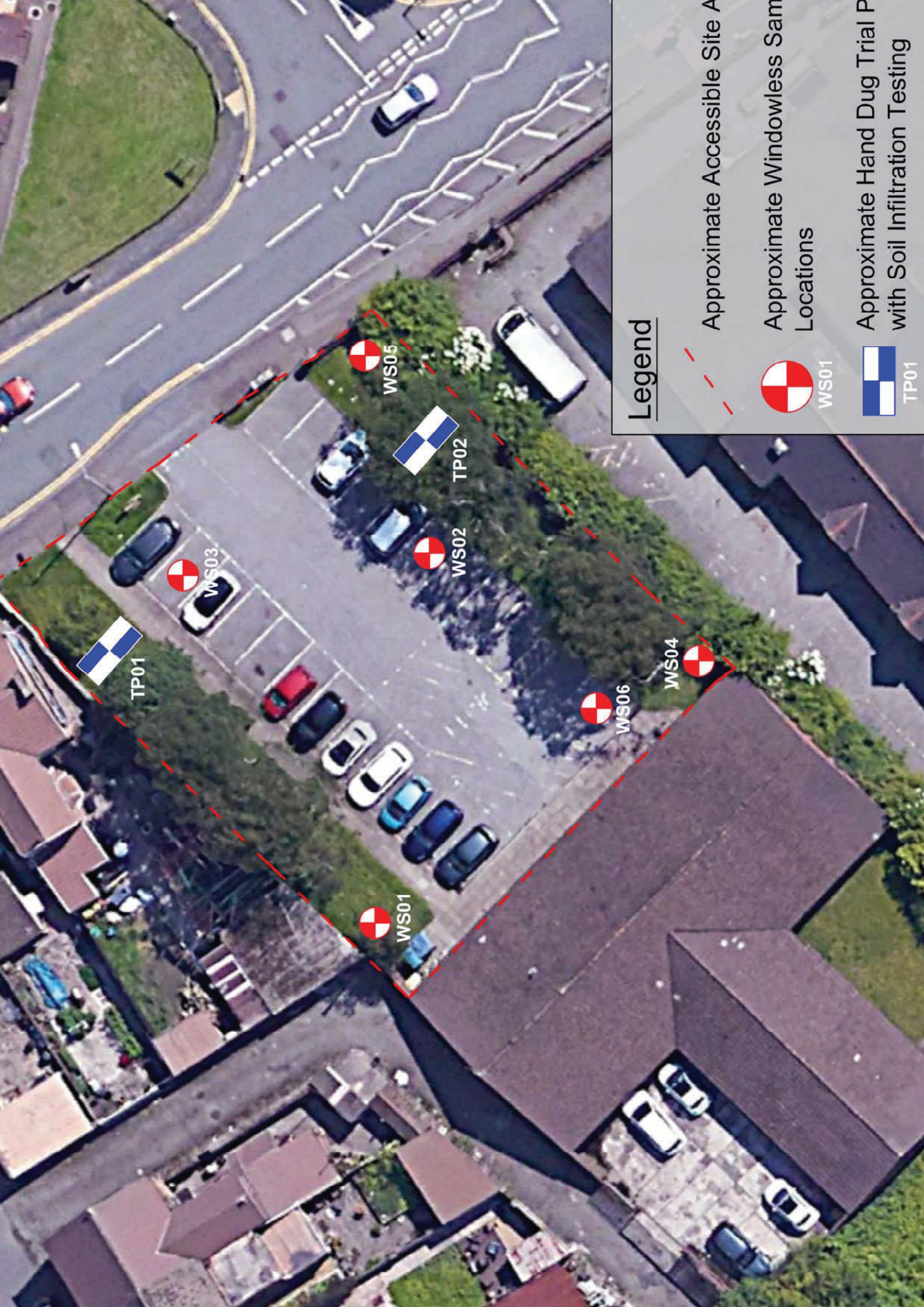
Job no.: 14053

Client: Swansea Bay UHB

Scale: 1:25,000 at A4

Intégral
Géotechnique

Integral House,
7 Beddau Way,
Castlegate Business Park,
Caerphilly,
CF83 2AX.
Tel: 029 2080 7991



Legend

Approximate Accessible Site Area



Approximate Windowless Sample Locations



Approximate Hand Dug Trial Points with Soil Infiltration Testing