

Appendix 07

Chemical Analysis Results



Certificate of Analysis

Certificate Number 21-01517

Issued: 08-Feb-21

Client Mason Evans Partnership
95 Morrison Street
Glasgow
G5 8BE

Our Reference 21-01517

Client Reference P20-344

Order No V SPENCE

Contract Title P20-344 Lethamhall Golf Course

Description 13 Soil samples, 2 Leachate samples.

Date Received 26-Jan-21

Date Started 26-Jan-21

Date Completed 08-Feb-21

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 21-01517
 Client Ref P20-344
 Contract Title P20-344 Lethamhall Golf Course

Lab No	1791957	1791958	1791959	1791960	1791964	1791965
Sample ID	TP01	TP02	TP03	TP08	TP13	TP05
Depth	0.30	0.60	0.25	0.30	0.30	0.40
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	18/01/2021	18/01/2021	18/01/2021	19/01/2021	19/01/2021	18/01/2021
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units	1791957	1791958	1791959	1791960	1791964	1791965
Preparation									
Moisture Content	DETSC 1004	0.1	%	32	16	29	21	26	17
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	6.9	5.0	7.6	19	6.1	4.0
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	2.9	0.6	0.6	1.6	1.2	0.7
Cadmium	DETSC 2301#	0.1	mg/kg	0.6	0.2	0.4	0.6	0.2	< 0.1
Chromium	DETSC 2301#	0.15	mg/kg	21	24	19	30	28	21
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	55	94	60	130	29	24
Lead	DETSC 2301#	0.3	mg/kg	130	75	190	580	53	18
Mercury	DETSC 2325#	0.05	mg/kg	0.17	0.09	0.45	0.35	0.14	< 0.05
Nickel	DETSC 2301#	1	mg/kg	28	84	25	70	19	14
Selenium	DETSC 2301#	0.5	mg/kg	0.7	< 0.5	< 0.5	0.6	0.6	< 0.5
Zinc	DETSC 2301#	1	mg/kg	110	100	130	230	84	38
Inorganics									
pH	DETSC 2008#		pH	6.7	8.3	6.1	6.2	5.0	5.1
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.4	0.2	0.4	1.2	0.6	0.3
Total Organic Carbon	DETSC 2084#	0.5	%	7.2	5.3	14	11	4.0	1.2
Organic Matter (by calculation) *		0.1	%	13	9.2	24	19	6.9	2.1
Sulphide	DETSC 2024*	10	mg/kg	28	88	24	56	24	< 10
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%	0.12	0.12	0.13	0.09	0.04	0.08
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C16-C35	DETSC 3072#	4.9	mg/kg	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	1.6	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	29	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	67	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	98	< 10	< 10	< 10	< 10
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	mg/kg	< 10	98	< 10	< 10	< 10	< 10
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1

Summary of Chemical Analysis

Soil Samples

Our Ref 21-01517

Client Ref P20-344

Contract Title P20-344 Lethamhall Golf Course

Lab No	1791957	1791958	1791959	1791960	1791964	1791965
Sample ID	TP01	TP02	TP03	TP08	TP13	TP05
Depth	0.30	0.60	0.25	0.30	0.30	0.40
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	18/01/2021	18/01/2021	18/01/2021	19/01/2021	19/01/2021	18/01/2021
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units	1791957	1791958	1791959	1791960	1791964	1791965
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	1.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	0.1	0.5	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	0.1	2.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	0.6	12	0.4	0.3	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	0.2	3.2	0.2	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.7	16	0.5	0.8	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	0.7	15	0.5	0.7	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	0.3	8.8	0.3	0.3	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	0.4	9.5	0.3	0.4	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	0.3	6.2	0.2	0.4	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	0.1	3.5	< 0.1	0.2	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	0.3	8.5	0.2	0.5	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	0.4	4.3	0.4	0.9	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	0.2	1.7	0.1	0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	0.2	4.5	0.1	0.2	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	4.6	97	3.4	4.8	< 1.6	< 1.6
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	0.3	< 0.3	< 0.3	< 0.3	< 0.3

Summary of Chemical Analysis

Soil Samples

Our Ref 21-01517

Client Ref P20-344

Contract Title P20-344 Lethamhall Golf Course

Lab No	1791967	1791969
Sample ID	TPC	TPG
Depth	0.30	0.40
Other ID		
Sample Type	SOIL	SOIL
Sampling Date	19/01/2021	20/01/2021
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Preparation					
Moisture Content	DETSC 1004	0.1	%	19	20
Metals					
Arsenic	DETSC 2301#	0.2	mg/kg	2.4	3.9
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	1.2	0.4
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1	< 0.1
Chromium	DETSC 2301#	0.15	mg/kg	20	22
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	15	21
Lead	DETSC 2301#	0.3	mg/kg	14	25
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05
Nickel	DETSC 2301#	1	mg/kg	22	13
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	50	48
Inorganics					
pH	DETSC 2008#		pH	6.2	6.8
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%	0.8	1.8
Organic Matter (by calculation)	*	0.1	%	1.4	3.1
Sulphide	DETSC 2024*	10	mg/kg	< 10	< 10
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%	0.03	0.03
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C16-C35	DETSC 3072#	4.9	mg/kg	< 4.9	< 4.9
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
PAHs					
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1

Summary of Chemical Analysis

Soil Samples

Our Ref 21-01517

Client Ref P20-344

Contract Title P20-344 Lethamhall Golf Course

Lab No	1791967	1791969
Sample ID	TPC	TPG
Depth	0.30	0.40
Other ID		
Sample Type	SOIL	SOIL
Sampling Date	19/01/2021	20/01/2021
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3

Summary of Chemical Analysis

Leachate Samples

Our Ref 21-01517

Client Ref P20-344

Contract Title P20-344 Lethamhall Golf Course

Lab No	1791970	1791971
.Sample ID	TP02	TP08
Depth	0.60	0.30
Other ID		
Sample Type	LEACHATE	LEACHATE
Sampling Date	18/01/2021	19/01/2021
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Preparation					
Leachate 2:1 250g Non-WAC	DETSC 1009*			Y	Y
Metals					
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.41	0.22
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03
Calcium, Dissolved	DETSC 2306	0.09	mg/l	1.1	1.0
Chromium, Dissolved	DETSC 2306	0.25	ug/l	0.34	0.26
Copper, Dissolved	DETSC 2306	0.4	ug/l	1.0	0.9
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.87	0.73
Magnesium, Dissolved	DETSC 2306	0.02	mg/l	0.13	0.13
Mercury, Dissolved (Low Level)	DETSC 2324	0.001	ug/l	0.0034	0.0057
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	1.3	0.35
Zinc, Dissolved	DETSC 2306	1.3	ug/l	2.6	2.1
Inorganics					
Hardness	DETSC 2303	0.1	mg/l	3.27	3.05
Sulphate as SO4	DETSC 2055	0.1	mg/l	4.1	3.1
Sulphide	DETSC 2208	10	ug/l	< 10	< 10
Phenols					
Phenol	DETSC 3451*	0.5	ug/l	< 0.50	< 0.50

BS 3882:2015 Topsoil Analytical Report

Our Ref 21-01517

Client Ref P20-344

Contract Title P20-344 Lethamhall Golf Course

Lab No	1791961
Sample ID	TP04
Depth	0.10
Other ID	
Sample Type	SOIL
Sampling Date	18/01/2021
Sampling Time	n/s

Parameter	Method	Result	Compliant with multi purpose range?	Compliant with specific purpose range? (Y/N)					
			(Y/N)	Acid.	Calc	Low F.	Low F. acidic	Low F. calc.	
Texture									
Clay content %	\$	23	See Figure 1 on Textural class sheet						
Silt content %	\$	27							
Sand content %	\$	50							
Soil texture – (see figure 1)	\$	Sandy Clay Loam							
Soil organic matter content % (varying with clay content)									
Clay 5-20%	DETSC 2002#		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Clay 20-35%	DETSC 2002#	6.3	Y	Y	Y	Y	Y	Y	Y
Maximum coarse fragment - Content % m/m									
>2 mm	\$	17	Y	Y	Y	Y	Y	Y	Y
>20 mm	\$	0	Y	Y	Y	Y	Y	Y	Y
>50 mm	\$	0	Y	Y	Y	Y	Y	Y	Y
Soil pH value	DETSC 2008#	5	N	Y	N	Y	Y	Y	N
Carbonate (Calcareous only) %	DETSC 2005	0	N/A	N/A	N	N/A	N/A	N/A	N
Available plant nutrient content									
Total Nitrogen %	DETSC 2121*	0.19	Y	Y	Y	N/A	N/A	N/A	N/A
Extractable phosphorous mg/l	DETSC 2310*	88	Y	Y	Y	N	N	N	N
Extractable potassium mg/l	DETSC 2309*	94	N	N	N	N/A	N/A	N/A	N/A
Extractable magnesium mg/l	DETSC 2309*	86	Y	Y	Y	N/A	N/A	N/A	N/A
Carbon: Nitrogen ratio		19.23	Y	Y	Y	Y	Y	Y	Y
Electrical Conductivity	DETSC 2009	1700	Y	N/A	N/A	N/A	N/A	N/A	N/A
Phytotoxic contaminants (by soil pH) mg/kgDS									
Zinc (Nitric acid extract)	DETSC 2308*	84	Y	Y	Y	Y	Y	Y	Y
Copper (Nitric acid extract)	DETSC 2308*	46	Y	Y	Y	Y	Y	Y	Y
Nickel (Nitric acid extract)	DETSC 2308*	18	Y	Y	Y	Y	Y	Y	Y
Visible contaminants % m/m									
>2 mm	*	0	Y	Y	Y	Y	Y	Y	Y
...of which plastics	*	0	Y	Y	Y	Y	Y	Y	Y
...man made sharps	*	0	Y	Y	Y	Y	Y	Y	Y

Additional analytical certificate(s) for particle size distribution analysis are appended.

- MCERTS (accred. only implied if report carries the MCERTS logo). * - unaccredited test. \$ - completed by approved subcontractor.

DECLARATION: I certify that this sample of soil has been analysed in accordance with BS3882:2015

Signature:



BS 3882: Textural Class

Our Ref 21-01517

Client Ref P20-344

Contract Title P20-344 Lethamhall Golf Course

Results: Proportion in class (%)			Help messages
Clay	Silt	Sand	
23	27	50	

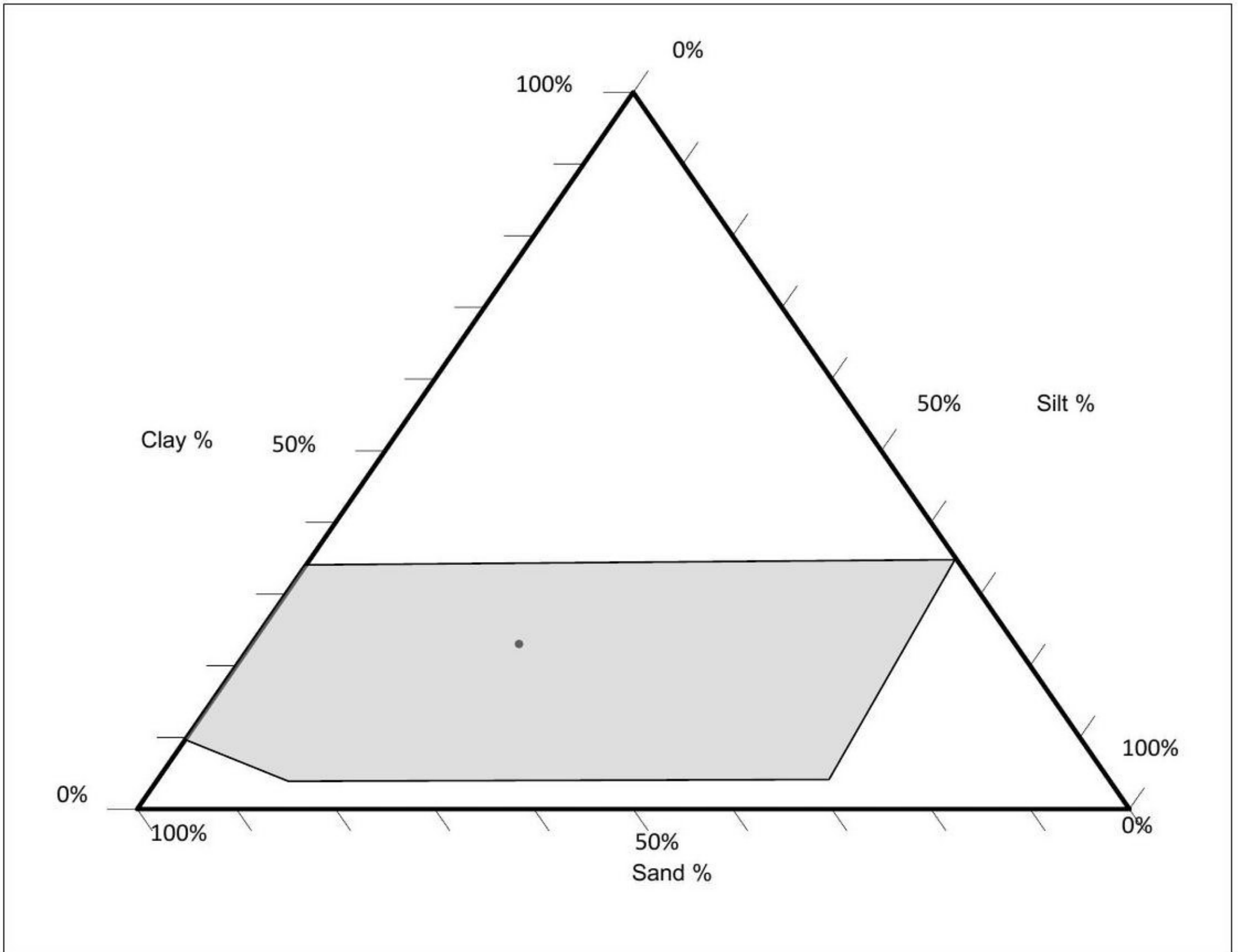


Figure 1

The textural class is required to be in the shaded area to be compliant with BS3882:2015
Results are shown by the grey point in the chart

Plotting parameters		Help messages
Printer correction:	1.1	
Tick interval (0 - 0.5):	0.1	
Tick length (0 - 0.2):	0.03	
Plot lines? (Y or N):	n	

BS 3882:2015 Topsoil Analytical Report

Our Ref 21-01517

Client Ref P20-344

Contract Title P20-344 Lethamhall Golf Course

Lab No	1791962
Sample ID	TP09
Depth	0.10
Other ID	
Sample Type	SOIL
Sampling Date	19/01/2021
Sampling Time	n/s

Parameter	Method	Result	Compliant with multi purpose range?	Compliant with specific purpose range? (Y/N)					
			(Y/N)	Acid.	Calc	Low F.	Low F. acidic	Low F. calc.	
Texture									
Clay content %	\$	11	See Figure 1 on Textural class sheet						
Silt content %	\$	13							
Sand content %	\$	76							
Soil texture – (see figure 1)	\$	Sandy Loam							
Soil organic matter content % (varying with clay content)									
Clay 5-20%	DETSC 2002#	7.5	Y	Y	Y	Y	Y	Y	
Clay 20-35%	DETSC 2002#		N/A	N/A	N/A	N/A	N/A	N/A	
Maximum coarse fragment - Content % m/m									
>2 mm	\$	18	Y	Y	Y	Y	Y	Y	
>20 mm	\$	5	Y	Y	Y	Y	Y	Y	
>50 mm	\$	0	Y	Y	Y	Y	Y	Y	
Soil pH value	DETSC 2008#	6.5	Y	N	N	Y	N	N	
Carbonate (Calcareous only) %	DETSC 2005	0	N/A	N/A	N	N/A	N/A	N	
Available plant nutrient content									
Total Nitrogen %	DETSC 2121*	0.21	Y	Y	Y	N/A	N/A	N/A	
Extractable phosphorous mg/l	DETSC 2310*	87	Y	Y	Y	N	N	N	
Extractable potassium mg/l	DETSC 2309*	120	N	N	N	N/A	N/A	N/A	
Extractable magnesium mg/l	DETSC 2309*	130	Y	Y	Y	N/A	N/A	N/A	
Carbon: Nitrogen ratio		20.71	N	N	N	Y	Y	Y	
Electrical Conductivity	DETSC 2009	1800	Y	N/A	N/A	N/A	N/A	N/A	
Phytotoxic contaminants (by soil pH) mg/kgDS									
Zinc (Nitric acid extract)	DETSC 2308*	110	Y	Y	Y	Y	Y	Y	
Copper (Nitric acid extract)	DETSC 2308*	58	Y	Y	Y	Y	Y	Y	
Nickel (Nitric acid extract)	DETSC 2308*	24	Y	Y	Y	Y	Y	Y	
Visible contaminants % m/m									
>2 mm	*	0	Y	Y	Y	Y	Y	Y	
...of which plastics	*	0	Y	Y	Y	Y	Y	Y	
...man made sharps	*	0	Y	Y	Y	Y	Y	Y	

Additional analytical certificate(s) for particle size distribution analysis are appended.

- MCERTS (accred. only implied if report carries the MCERTS logo). * - unaccredited test. \$ - completed by approved subcontractor.

DECLARATION: I certify that this sample of soil has been analysed in accordance with BS3882:2015

Signature:



BS 3882: Textural Class

Our Ref 21-01517

Client Ref P20-344

Contract Title P20-344 Lethamhall Golf Course

Results: Proportion in class (%)			Help messages
Clay	Silt	Sand	
11	13	76	

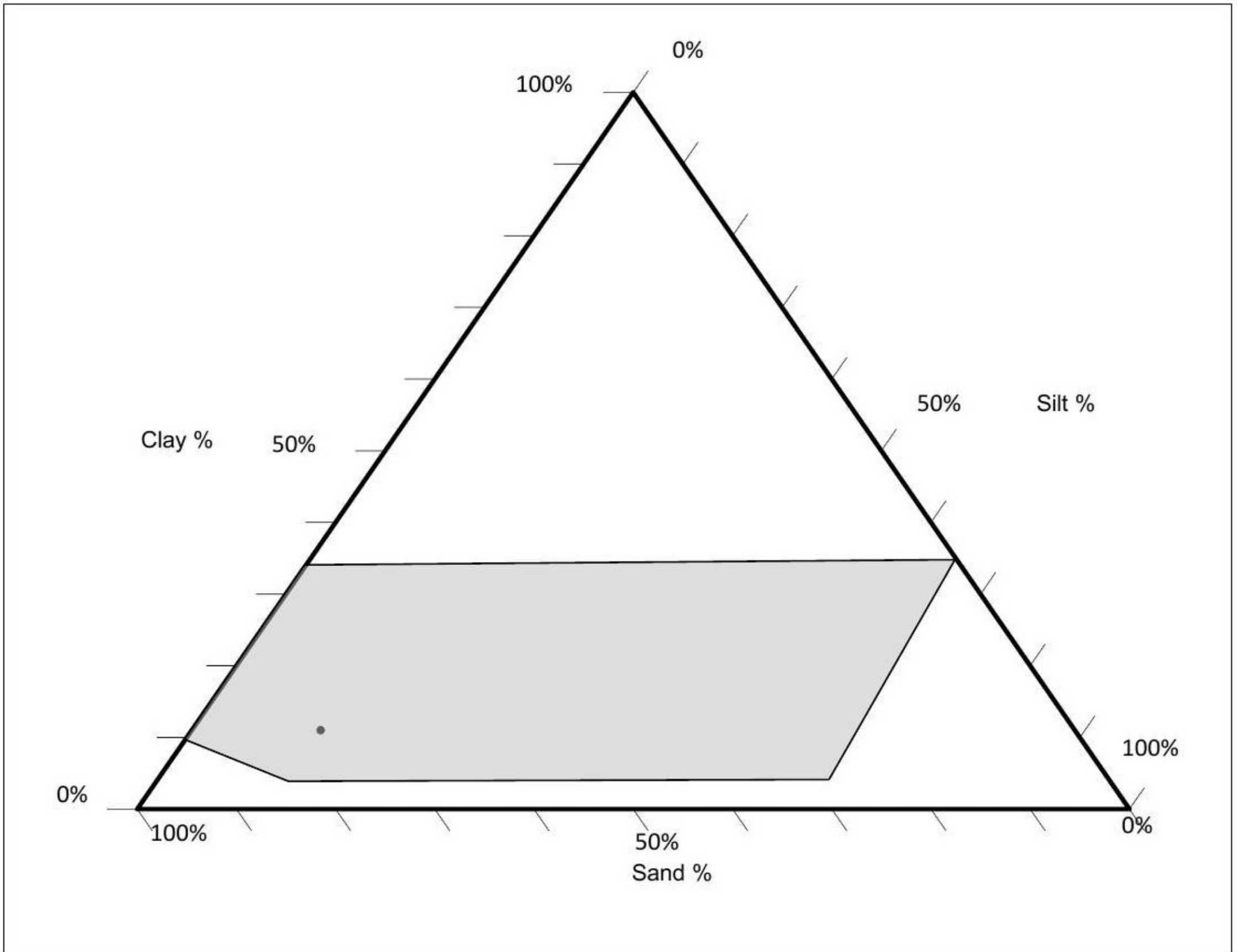


Figure 1

The textural class is required to be in the shaded area to be compliant with BS3882:2015
Results are shown by the grey point in the chart

Plotting parameters		Help messages
Printer correction:	1.1	
Tick interval (0 - 0.5):	0.1	
Tick length (0 - 0.2):	0.03	
Plot lines? (Y or N):	n	

BS 3882:2015 Topsoil Analytical Report

Our Ref 21-01517

Client Ref P20-344

Contract Title P20-344 Lethamhall Golf Course

Lab No	1791963
Sample ID	TP15
Depth	0.10
Other ID	
Sample Type	SOIL
Sampling Date	19/01/2021
Sampling Time	n/s

Parameter	Method	Result	Compliant with multi purpose range?	Compliant with specific purpose range? (Y/N)					
			(Y/N)	Acid.	Calc	Low F.	Low F. acidic	Low F. calc.	
Texture									
Clay content %	\$	14	See Figure 1 on Textural class sheet						
Silt content %	\$	18							
Sand content %	\$	68							
Soil texture – (see figure 1)	\$	Sandy Loam							
Soil organic matter content % (varying with clay content)									
Clay 5-20%	DETSC 2002#	6.5	Y	Y	Y	Y	Y	Y	
Clay 20-35%	DETSC 2002#		N/A	N/A	N/A	N/A	N/A	N/A	
Maximum coarse fragment - Content % m/m									
>2 mm	\$	35	N	N	N	N	N	N	
>20 mm	\$	5	Y	Y	Y	Y	Y	Y	
>50 mm	\$	0	Y	Y	Y	Y	Y	Y	
Soil pH value	DETSC 2008#	4.7	N	Y	N	Y	Y	N	
Carbonate (Calcareous only) %	DETSC 2005	0	N/A	N/A	N	N/A	N/A	N	
Available plant nutrient content									
Total Nitrogen %	DETSC 2121*	0.37	Y	Y	Y	N/A	N/A	N/A	
Extractable phosphorous mg/l	DETSC 2310*	63	Y	Y	Y	N	N	N	
Extractable potassium mg/l	DETSC 2309*	81	N	N	N	N/A	N/A	N/A	
Extractable magnesium mg/l	DETSC 2309*	64	Y	Y	Y	N/A	N/A	N/A	
Carbon: Nitrogen ratio		10.19	Y	Y	Y	Y	Y	Y	
Electrical Conductivity	DETSC 2009	1500	Y	N/A	N/A	N/A	N/A	N/A	
Phytotoxic contaminants (by soil pH) mg/kgDS									
Zinc (Nitric acid extract)	DETSC 2308*	93	Y	Y	Y	Y	Y	Y	
Copper (Nitric acid extract)	DETSC 2308*	58	Y	Y	Y	Y	Y	Y	
Nickel (Nitric acid extract)	DETSC 2308*	18	Y	Y	Y	Y	Y	Y	
Visible contaminants % m/m									
>2 mm	*	0	Y	Y	Y	Y	Y	Y	
...of which plastics	*	0	Y	Y	Y	Y	Y	Y	
...man made sharps	*	0	Y	Y	Y	Y	Y	Y	

Additional analytical certificate(s) for particle size distribution analysis are appended.

- MCERTS (accred. only implied if report carries the MCERTS logo). * - unaccredited test. \$ - completed by approved subcontractor.

DECLARATION: I certify that this sample of soil has been analysed in accordance with BS3882:2015

Signature:



BS 3882: Textural Class

Our Ref 21-01517

Client Ref P20-344

Contract Title P20-344 Lethamhall Golf Course

Results: Proportion in class (%)			Help messages
Clay	Silt	Sand	
14	18	68	

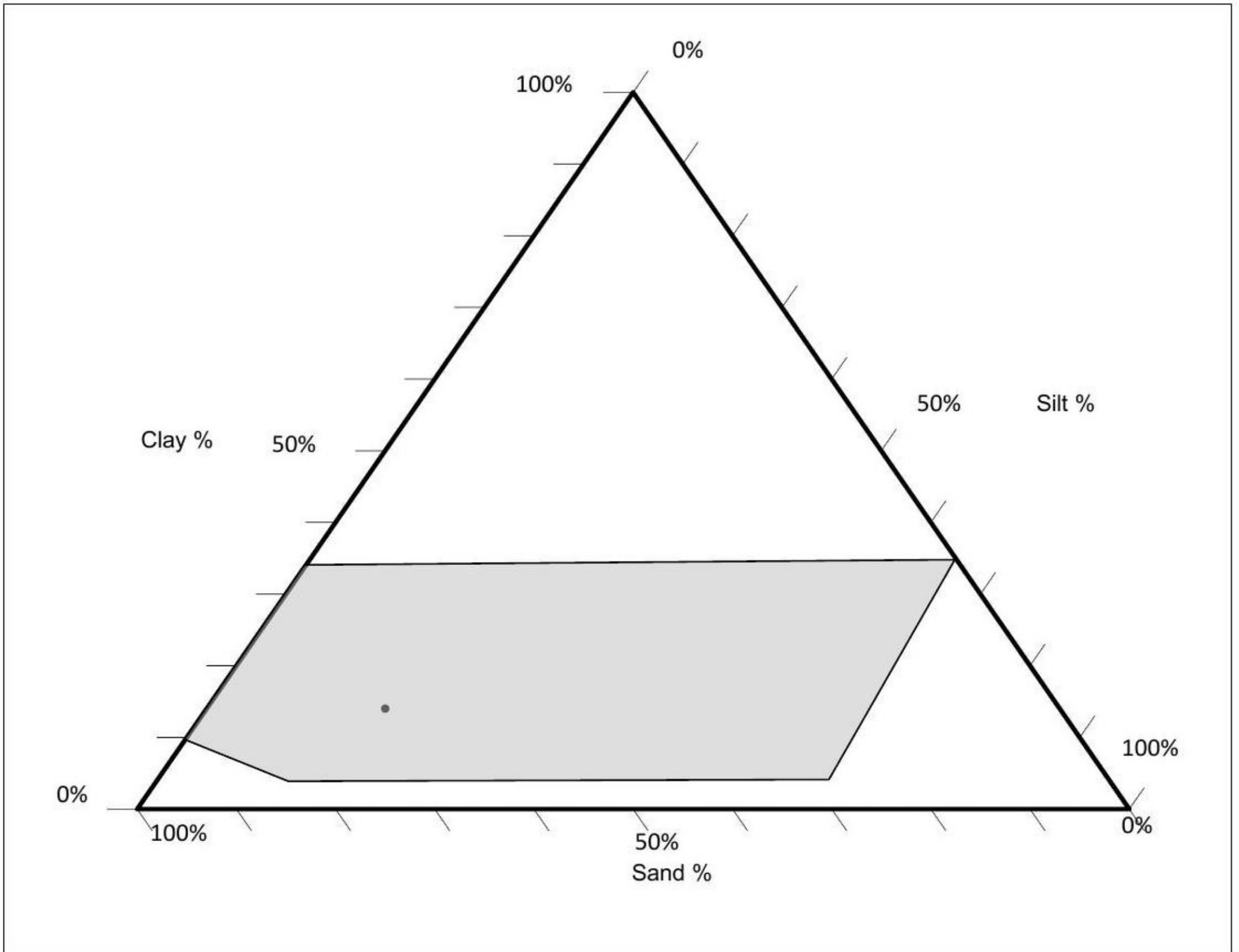


Figure 1

The textural class is required to be in the shaded area to be compliant with BS3882:2015
Results are shown by the grey point in the chart

Plotting parameters		Help messages
Printer correction:	1.1	
Tick interval (0 - 0.5):	0.1	
Tick length (0 - 0.2):	0.03	
Plot lines? (Y or N):	n	

BS 3882:2015 Topsoil Analytical Report

Our Ref 21-01517

Client Ref P20-344

Contract Title P20-344 Lethamhall Golf Course

Lab No	1791966
Sample ID	TPA
Depth	0.10
Other ID	
Sample Type	SOIL
Sampling Date	19/01/2021
Sampling Time	n/s

Parameter	Method	Result	Compliant with multi purpose range?	Compliant with specific purpose range? (Y/N)					
			(Y/N)	Acid.	Calc	Low F.	Low F. acidic	Low F. calc.	
Texture									
Clay content %	\$	25	See Figure 1 on Textural class sheet						
Silt content %	\$	31							
Sand content %	\$	44							
Soil texture – (see figure 1)	\$	Clay Loam							
Soil organic matter content % (varying with clay content)									
Clay 5-20%	DETSC 2002#		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Clay 20-35%	DETSC 2002#	5.9	Y	Y	Y	Y	Y	Y	Y
Maximum coarse fragment - Content % m/m									
>2 mm	\$	48	N	N	N	N	N	N	N
>20 mm	\$	21	N	N	N	N	N	N	N
>50 mm	\$	0	Y	Y	Y	Y	Y	Y	Y
Soil pH value	DETSC 2008#	6.8	Y	N	N	Y	N	N	N
Carbonate (Calcareous only) %	DETSC 2005	2.6	N/A	N/A	Y	N/A	N/A	N/A	Y
Available plant nutrient content									
Total Nitrogen %	DETSC 2121*	0.16	Y	Y	Y	N/A	N/A	N/A	N/A
Extractable phosphorous mg/l	DETSC 2310*	15	N	N	N	Y	Y	Y	Y
Extractable potassium mg/l	DETSC 2309*	160	Y	Y	Y	N/A	N/A	N/A	N/A
Extractable magnesium mg/l	DETSC 2309*	150	Y	Y	Y	N/A	N/A	N/A	N/A
Carbon: Nitrogen ratio		21.39	N	N	N	Y	Y	Y	Y
Electrical Conductivity	DETSC 2009	2100	Y	N/A	N/A	N/A	N/A	N/A	N/A
Phytotoxic contaminants (by soil pH) mg/kgDS									
Zinc (Nitric acid extract)	DETSC 2308*	170	Y	Y	Y	Y	Y	Y	Y
Copper (Nitric acid extract)	DETSC 2308*	95	Y	Y	Y	Y	Y	Y	Y
Nickel (Nitric acid extract)	DETSC 2308*	33	Y	Y	Y	Y	Y	Y	Y
Visible contaminants % m/m									
>2 mm	*	0	Y	Y	Y	Y	Y	Y	Y
...of which plastics	*	0	Y	Y	Y	Y	Y	Y	Y
...man made sharps	*	0	Y	Y	Y	Y	Y	Y	Y

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DECLARATION: I certify that this sample of soil has been analysed in accordance with BS3882:2015

Signature:



BS 3882: Textural Class

Our Ref 21-01517

Client Ref P20-344

Contract Title P20-344 Lethamhall Golf Course

Results: Proportion in class (%)			Help messages
Clay	Silt	Sand	
25	31	44	

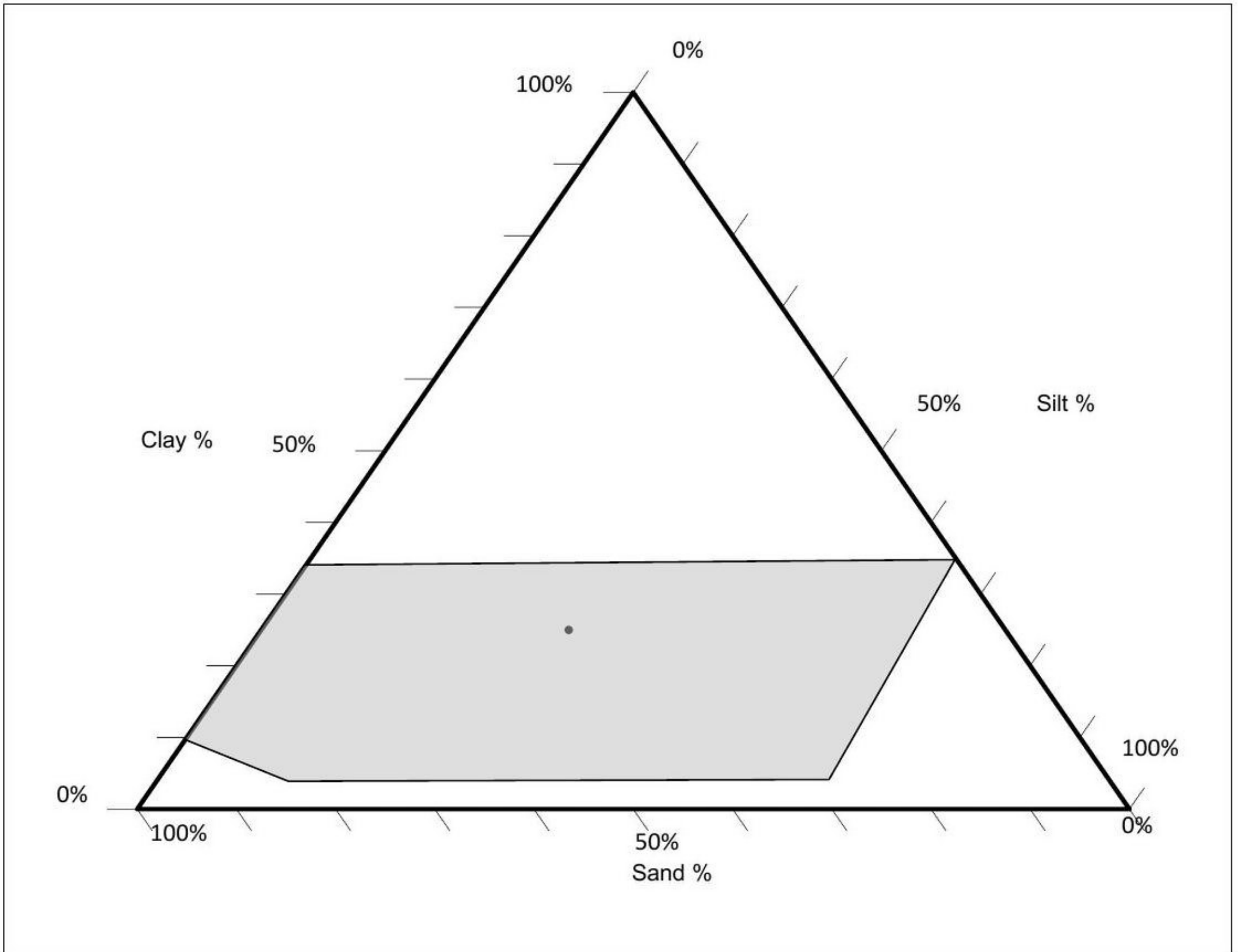


Figure 1

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Results are shown by the grey point in the chart

Plotting parameters		Help messages
Printer correction:	1.1	
Tick interval (0 - 0.5):	0.1	
Tick length (0 - 0.2):	0.03	
Plot lines? (Y or N):	n	

BS 3882:2015 Topsoil Analytical Report

Our Ref 21-01517

Client Ref P20-344

Contract Title P20-344 Lethamhall Golf Course

Lab No	1791968
Sample ID	TPF
Depth	0.10
Other ID	
Sample Type	SOIL
Sampling Date	20/01/2021
Sampling Time	n/s

Parameter	Method	Result	Compliant with multi purpose range?	Compliant with specific purpose range? (Y/N)					
			(Y/N)	Acid.	Calc	Low F.	Low F. acidic	Low F. calc.	
Texture									
Clay content %	\$	20	See Figure 1 on Textural class sheet						
Silt content %	\$	22							
Sand content %	\$	58							
Soil texture – (see figure 1)	\$	Sandy Clay Loam							
Soil organic matter content % (varying with clay content)									
Clay 5-20%	DETSC 2002#	5.7	Y	Y	Y	Y	Y	Y	
Clay 20-35%	DETSC 2002#		N/A	N/A	N/A	N/A	N/A	N/A	
Maximum coarse fragment - Content % m/m									
>2 mm	\$	10	Y	Y	Y	Y	Y	Y	
>20 mm	\$	0	Y	Y	Y	Y	Y	Y	
>50 mm	\$	0	Y	Y	Y	Y	Y	Y	
Soil pH value	DETSC 2008#	5.2	N	Y	N	Y	Y	N	
Carbonate (Calcareous only) %	DETSC 2005	0	N/A	N/A	N	N/A	N/A	N	
Available plant nutrient content									
Total Nitrogen %	DETSC 2121*	0.19	Y	Y	Y	N/A	N/A	N/A	
Extractable phosphorous mg/l	DETSC 2310*	72	Y	Y	Y	N	N	N	
Extractable potassium mg/l	DETSC 2309*	240	Y	Y	Y	N/A	N/A	N/A	
Extractable magnesium mg/l	DETSC 2309*	230	Y	Y	Y	N/A	N/A	N/A	
Carbon: Nitrogen ratio		17.4	Y	Y	Y	Y	Y	Y	
Electrical Conductivity	DETSC 2009	1800	Y	N/A	N/A	N/A	N/A	N/A	
Phytotoxic contaminants (by soil pH) mg/kgDS									
Zinc (Nitric acid extract)	DETSC 2308*	120	Y	Y	Y	Y	Y	Y	
Copper (Nitric acid extract)	DETSC 2308*	42	Y	Y	Y	Y	Y	Y	
Nickel (Nitric acid extract)	DETSC 2308*	22	Y	Y	Y	Y	Y	Y	
Visible contaminants % m/m									
>2 mm	*	0	Y	Y	Y	Y	Y	Y	
...of which plastics	*	0	Y	Y	Y	Y	Y	Y	
...man made sharps	*	0	Y	Y	Y	Y	Y	Y	

Additional analytical certificate(s) for particle size distribution analysis are appended.

- MCERTS (accred. only implied if report carries the MCERTS logo). * - unaccredited test. \$ - completed by approved subcontractor.

DECLARATION: I certify that this sample of soil has been analysed in accordance with BS3882:2015

Signature:



BS 3882: Textural Class

Our Ref 21-01517

Client Ref P20-344

Contract Title P20-344 Lethamhall Golf Course

Results: Proportion in class (%)			Help messages
Clay	Silt	Sand	
20	22	58	

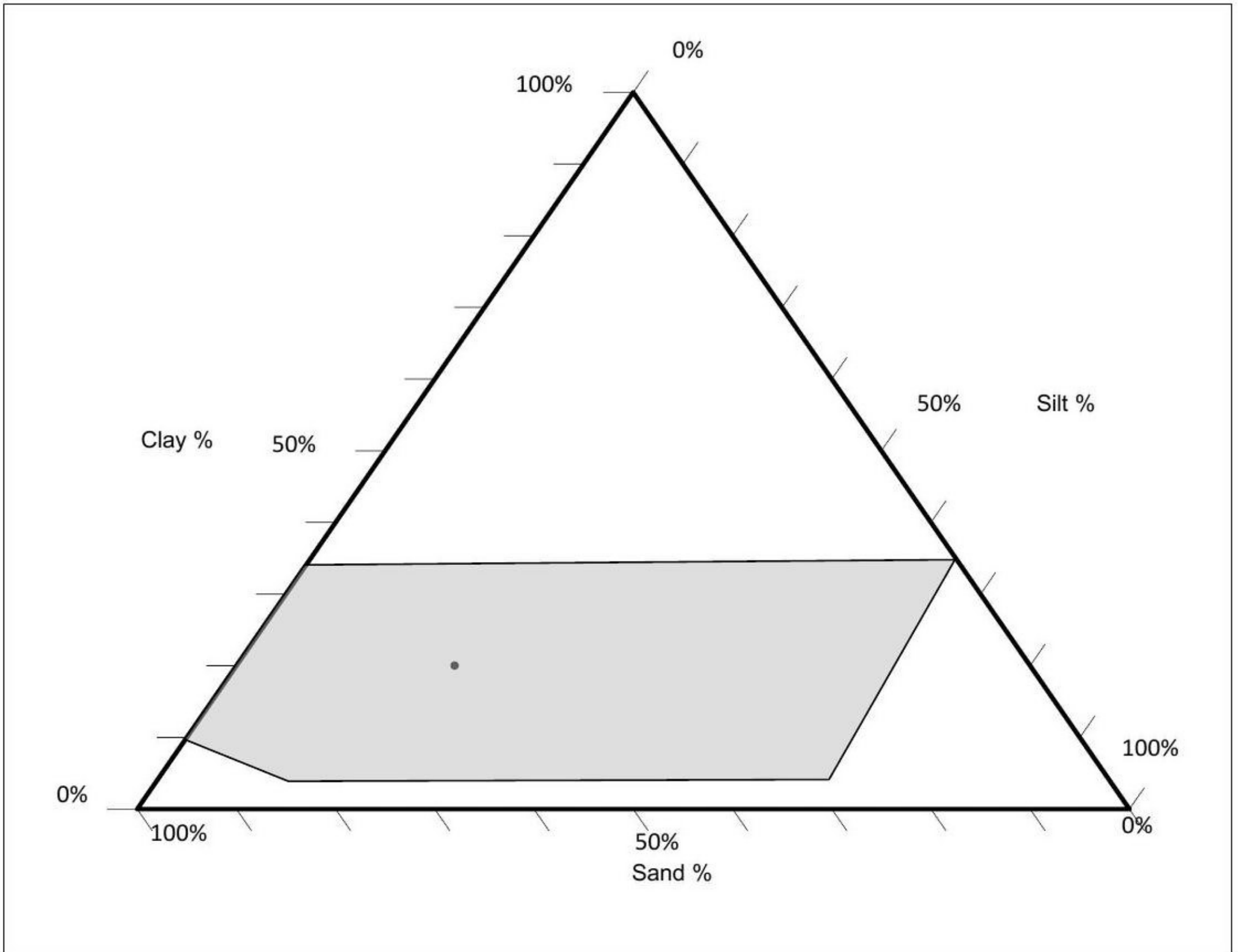


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Plotting parameters		Help messages
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Tick interval (0 - 0.5):	0.1	
Tick length (0 - 0.2):	0.03	
Plot lines? (Y or N):	n	

BS 3882:2015 Topsoil Threshold Values

Parameter	Multipurpose Topsoil	Specific purpose topsoil				
		Acidic	Calcareous	Low fertility	Low fertility acidic	Low fertility calcareous
Soil texture <2mm fraction % m/m						
Clay content %		10 to 35				
Silt content %		0 to 65				
Sand content %		35 to 85				
Maximum coarse fraction % m/m						
>2 mm		30				
>20mm		10				
>50mm		0				
Mass loss on Ignition %						
Clay 5% to 20%	3 to 20	3 to 30	3 to 20	2 to 20	2 to 30	2 to 20
Clay 20% to 35%	5 to 20	5 to 30	5 to 20	2 to 20	2 to 30	2 to 20
Soil pH	5.5 to 8.5	3.5 to 5.5	7.5 to 9.0	3.5 to 9.0	3.5 to 5.5	7.5 to 9.0
Carbonate % m/m			>1			>1
Plant nutrient content						
Total nitrogen % m/m	>0.15	>0.15	>0.15	-	-	-
Extractable phosphate mg/l	16 to 140	16 to 140	16 to 140	≤20	≤20	≤20
Extractable potassium mg/l	121 to 1500	121 to 1500	121 to 1500	-	-	-
Extractable magnesium mg/l	51 to 600	51 to 600	51 to 600	-	-	-
Carbon : Nitrogen ratio	<20:1	<20:1	<20:1	<35:1	<35:1	<20:1
Electrical conductivity μS.cm-1	If greater than 3 300, carry out exchangeable sodium					

Multi purpose and specific purpose topsoils			
Potentially Phytotoxic elements (mg/kg dry basis)	Soil pH		
	<6.0	6.0 to 7.0	>7.0
Zn	<200	<200	<300
Cu	<100	<135	<200
Ni	<60	<75	<110
Visible contaminants %m/m			
of which plastics	<0.5		
Sharps, number	<0.25		

Summary of Asbestos Analysis

Soil Samples

Our Ref 21-01517

Client Ref P20-344

Contract Title P20-344 Lethamhall Golf Course

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1791957	TP01 0.30	SOIL	NAD	none	Colin Patrick
1791958	TP02 0.60	SOIL	NAD	none	Colin Patrick
1791959	TP03 0.25	SOIL	NAD	none	Colin Patrick
1791960	TP08 0.30	SOIL	NAD	none	Colin Patrick
1791964	TP13 0.30	SOIL	NAD	none	Colin Patrick
1791965	TP05 0.40	SOIL	NAD	none	Colin Patrick
1791967	TPC 0.30	SOIL	NAD	none	Colin Patrick
1791969	TPG 0.40	SOIL	NAD	none	Colin Patrick

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 21-01517
 Client Ref P20-344
 Contract P20-344 Lethamhall Golf Course

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1791957	TP01 0.30 SOIL	18/01/21	GJ 250ml, PT 1L	pH + Conductivity (7 days)	
1791958	TP02 0.60 SOIL	18/01/21	GJ 250ml, PT 1L	pH + Conductivity (7 days)	
1791959	TP03 0.25 SOIL	18/01/21	GJ 250ml, PT 1L	pH + Conductivity (7 days)	
1791960	TP08 0.30 SOIL	19/01/21	GJ 250ml, PT 1L		
1791961	TP04 0.10 SOIL	18/01/21	GJ 250ml, PT 1L	pH + Conductivity (7 days)	
1791962	TP09 0.10 SOIL	19/01/21	GJ 250ml, PT 1L		
1791963	TP15 0.10 SOIL	19/01/21	GJ 250ml, PT 1L		
1791964	TP13 0.30 SOIL	19/01/21	GJ 250ml, PT 1L		
1791965	TP05 0.40 SOIL	18/01/21	GJ 250ml, PT 1L	pH + Conductivity (7 days)	
1791966	TPA 0.10 SOIL	19/01/21	GJ 250ml, PT 1L		
1791967	TPC 0.30 SOIL	19/01/21	GJ 250ml, PT 1L		
1791968	TPF 0.10 SOIL	20/01/21	GJ 250ml, PT 1L		
1791969	TPG 0.40 SOIL	20/01/21	GJ 250ml, PT 1L		
1791970	TP02 0.60 LEACHATE	18/01/21	GJ 250ml, PT 1L		
1791971	TP08 0.30 LEACHATE	19/01/21	GJ 250ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report



Certificate of Analysis

Certificate Number 21-06894-1

Issued: 22-Apr-21

Client Mason Evans Partnership
95 Morrison Street
Glasgow
G5 8BE

Our Reference 21-06894-1

Client Reference P20-344

Order No V SPENCE

Contract Title P20-344 Lethamhill, Glasgow

Description 19 Soil samples, 8 Leachate samples.

Date Received 01-Apr-21

Date Started 01-Apr-21

Date Completed 22-Apr-21

Test Procedures Identified by prefix DETSn (details on request).

Notes **This report supersedes 21-06894, extra testing added**

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



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Summary of Chemical Analysis

UKWIR Samples

Our Ref 21-06894-1

Client Ref P20-344

Contract Title P20-344 Lethamhill, Glasgow

Lab No	1826055	1826064
.Sample ID	TP23	TP28
Depth	1.30	1.50
Other ID		
Sample Type	SOIL	SOIL
Sampling Date	18/03/2021	18/03/2021
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Conductivity	DETSC 2009	1	uS/cm	76	160
pH	DETSC 2008#		pH	7.2	6.5
Redox Potential	DETSC 2016*	-500	mV	170	120
Mineral Oil(C11-C20)	DETSC 3311	10	mg/kg	< 10	< 10
Mineral Oil(C20-C40)	DETSC 3311	10	mg/kg	< 10	< 10
Total VOCs	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
BTEX + MTBE	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Total SVOCs	DETSC 3433*	0.1	mg/kg	0.4	< 0.1
Phenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1
Cresols and Chlorinated Phenols	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1
TICs (Ethers,Ketones,Aldehydes,Amines,Nitrobenzene)			mg/kg	None	None

Summary of Chemical Analysis

Soil Samples

Our Ref 21-06894-1

Client Ref P20-344

Contract Title P20-344 Lethamhill, Glasgow

Lab No	1826053	1826054	1826056	1826057	1826058	1826060
.Sample ID	TP22	TP23	TP24	TP24	TP25	TP26
Depth	1.00	0.30	0.50	1.00	0.50	0.30
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	18/03/2021	18/03/2021	18/03/2021	18/03/2021	18/03/2021	18/03/2021
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Asbestos Quantification	DETSC 1102	0.001	%					0.004	
Preparation									
Moisture Content	DETSC 1004	0.1	%	17	18	16	21	25	16
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	4.3	6.9	4.9	8.4	11	3.7
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.7	0.5	0.2	0.4	0.5	0.3
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1	0.2	0.1	0.3	0.5	< 0.1
Chromium	DETSC 2301#	0.15	mg/kg	27	17	19	21	26	20
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	24	54	26	74	92	25
Lead	DETSC 2301#	0.3	mg/kg	13	50	43	270	210	20
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	0.08	0.14	0.57	< 0.05
Nickel	DETSC 2301#	1	mg/kg	18	53	17	57	31	28
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	0.6	< 0.5	< 0.5	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	35	75	58	120	210	56
Inorganics									
pH	DETSC 2008#		pH	5.9	6.3	6.2	7.2	6.6	6.7
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	0.4	0.2	0.2	0.4	< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%	2.0	10	1.6	8.0	5.5	1.9
Organic Matter (by calculation)	*	0.1	%	3.4	17	2.8	14	9.5	3.2
Sulphide	DETSC 2024*	10	mg/kg	< 10	56	< 10	16	< 10	< 10
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%	0.03	0.05	0.04	0.04	0.05	0.02
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C16-C35	DETSC 3072#	4.9	mg/kg	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
PAHs									

Summary of Chemical Analysis

Soil Samples

Our Ref 21-06894-1
 Client Ref P20-344
 Contract Title P20-344 Lethamhill, Glasgow

Lab No	1826053	1826054	1826056	1826057	1826058	1826060
Sample ID	TP22	TP23	TP24	TP24	TP25	TP26
Depth	1.00	0.30	0.50	1.00	0.50	0.30
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	18/03/2021	18/03/2021	18/03/2021	18/03/2021	18/03/2021	18/03/2021
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units	1826053	1826054	1826056	1826057	1826058	1826060
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	0.1	< 0.1	< 0.1	0.3	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	0.4	< 0.1	0.2	1.4	0.3
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	0.2	< 0.1	< 0.1	0.3	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.8	0.2	0.6	1.7	0.8
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	0.9	< 0.1	0.6	1.5	0.8
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	0.5	< 0.1	0.3	0.8	0.6
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	0.6	< 0.1	0.3	0.8	0.7
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.4	< 0.1	0.3	0.6	0.7
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.3	< 0.1	0.2	0.4	0.4
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	0.5	< 0.1	0.3	0.7	0.6
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	0.4	< 0.1	0.3	0.5	0.6
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	0.4	< 0.1	0.2	0.4	1.0
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	5.8	< 1.6	3.5	10	6.7
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	0.5	0.5	< 0.3

Summary of Chemical Analysis

Soil Samples

Our Ref 21-06894-1
 Client Ref P20-344
 Contract Title P20-344 Lethamhill, Glasgow

Lab No	1826061	1826062	1826065	1826066	1826067	1826069
.Sample ID	TP26	TP27	TP29	TP29	TPH	TPJ
Depth	1.20	0.40	0.10	1.10	1.00	1.00
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	18/03/2021	18/03/2021	18/03/2021	18/03/2021	18/03/2021	18/03/2021
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Asbestos Quantification	DETSC 1102	0.001	%		0.005				
Preparation									
Moisture Content	DETSC 1004	0.1	%	14	20	24	19	13	16
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	3.4	32	9.4	4.4	2.7	2.7
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.3	0.5	0.6	0.4	0.3	0.4
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1	1.5	0.4	0.2	< 0.1	< 0.1
Chromium	DETSC 2301#	0.15	mg/kg	20	30	39	25	22	20
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	28	410	69	37	23	20
Lead	DETSC 2301#	0.3	mg/kg	36	1000	110	51	14	15
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	1.9	0.24	0.06	< 0.05	< 0.05
Nickel	DETSC 2301#	1	mg/kg	34	77	52	30	26	25
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	82	920	120	91	43	42
Inorganics									
pH	DETSC 2008#		pH	6.8	6.5	5.8	6.9	6.8	6.5
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	0.2	0.4	0.6	< 0.1	< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%	1.8	13	7.9	4.5	0.9	1.6
Organic Matter (by calculation)	*	0.1	%	3.2	22	14	7.7	1.5	2.7
Sulphide	DETSC 2024*	10	mg/kg	< 10	24	< 10	28	< 10	< 10
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.02	0.10	0.06	0.04	0.02	0.02
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C16-C35	DETSC 3072#	4.9	mg/kg	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
PAHs									

Summary of Chemical Analysis

Soil Samples

Our Ref 21-06894-1
 Client Ref P20-344
 Contract Title P20-344 Lethamhill, Glasgow

Lab No	1826061	1826062	1826065	1826066	1826067	1826069
.Sample ID	TP26	TP27	TP29	TP29	TPH	TPJ
Depth	1.20	0.40	0.10	1.10	1.00	1.00
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	18/03/2021	18/03/2021	18/03/2021	18/03/2021	18/03/2021	18/03/2021
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units	1826061	1826062	1826065	1826066	1826067	1826069
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	0.1	0.2	0.2	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.5	0.6	0.5	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	0.7	0.6	0.5	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	0.3	0.4	0.3	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	0.5	0.4	0.3	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.6	0.4	0.3	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.3	0.3	0.2	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	0.5	0.4	0.3	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	0.7	0.3	0.3	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	0.8	0.2	0.2	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	5.2	4.0	3.1	< 1.6	< 1.6
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	0.4	0.5	0.5	< 0.3	< 0.3

Summary of Chemical Analysis

Soil Samples

Our Ref 21-06894-1

Client Ref P20-344

Contract Title P20-344 Lethamhill, Glasgow

Lab No	1826070
.Sample ID	TPK
Depth	0.30
Other ID	
Sample Type	SOIL
Sampling Date	18/03/2021
Sampling Time	n/s

Test	Method	LOD	Units	
Asbestos Quantification	DETSC 1102	0.001	%	
Preparation				
Moisture Content	DETSC 1004	0.1	%	22
Metals				
Arsenic	DETSC 2301#	0.2	mg/kg	2.5
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.3
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1
Chromium	DETSC 2301#	0.15	mg/kg	15
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	2.0
Copper	DETSC 2301#	0.2	mg/kg	12
Lead	DETSC 2301#	0.3	mg/kg	15
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05
Nickel	DETSC 2301#	1	mg/kg	7.2
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5
Zinc	DETSC 2301#	1	mg/kg	32
Inorganics				
pH	DETSC 2008#		pH	5.8
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.1
Total Organic Carbon	DETSC 2084#	0.5	%	1.2
Organic Matter (by calculation)	*	0.1	%	2.1
Sulphide	DETSC 2024*	10	mg/kg	< 10
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%	0.03
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C16-C35	DETSC 3072#	4.9	mg/kg	< 4.9
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	mg/kg	< 10
PAHs				

Summary of Chemical Analysis

Soil Samples

Our Ref 21-06894-1

Client Ref P20-344

Contract Title P20-344 Lethamhill, Glasgow

Lab No	1826070
Sample ID	TPK
Depth	0.30
Other ID	
Sample Type	SOIL
Sampling Date	18/03/2021
Sampling Time	n/s

Test	Method	LOD	Units	
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6
Phenols				
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3

Summary of Chemical Analysis

Leachate Samples

Our Ref 21-06894-1
 Client Ref P20-344
 Contract Title P20-344 Lethamhill, Glasgow

Lab No	1826071	1826072	1826073	1826074
Sample ID	TP23	TP24	TP26	TPK
Depth	0.30	1.00	0.30	0.30
Other ID				
Sample Type	LEACHATE	LEACHATE	LEACHATE	LEACHATE
Sampling Date	18/03/2021	18/03/2021	18/03/2021	18/03/2021
Sampling Time	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
Preparation							
Leachate 2:1 250g Non-WAC	DETSC 1009*			Y	Y	Y	Y
Metals							
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	2.1	1.0	< 0.16	0.41
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	0.25	< 0.03	< 0.03	< 0.03
Calcium, Dissolved	DETSC 2306	0.09	mg/l	23	3.0	1.3	1.3
Chromium, Dissolved	DETSC 2306	0.25	ug/l	6.3	1.2	0.58	1.0
Copper, Dissolved	DETSC 2306	0.4	ug/l	4.1	2.4	0.5	1.1
Lead, Dissolved	DETSC 2306	0.09	ug/l	4.5	2.2	0.19	0.33
Magnesium, Dissolved	DETSC 2306	0.02	mg/l	2.0	0.29	0.20	0.22
Mercury, Dissolved (Low Level)	DETSC 2324	0.001	ug/l	0.0026	0.013	0.0018	< 0.0010
Nickel, Dissolved	DETSC 2306	0.5	ug/l	1.2	0.8	0.7	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	1.2	0.63	< 0.25	0.28
Zinc, Dissolved	DETSC 2306	1.3	ug/l	28	4.2	< 1.3	6.4
Inorganics							
Total Hardness as CaCO3	DETSC 2303	0.1	mg/l	65.2	8.79	4.09	4.07
Sulphate as SO4	DETSC 2055	0.1	mg/l	4.4	3.3	4.9	4.2
Sulphide	DETSC 2208	10	ug/l	< 10	< 10	< 10	< 10
Phenols							
Phenol	DETSC 3451*	0.5	ug/l	< 0.50	< 0.50	< 0.50	< 0.50

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 21-06894-1

Client Ref P20-344

Contract Title P20-344 Lethamhill, Glasgow

Sample Id TP25 1.00

Sample Numbers 1826059 1826075 1826076

Date Analysed 09/04/2021

Test Results On Waste		
Determinand and Method Reference	Units	Result
DETSC 2084# Total Organic Carbon	%	5.8
DETSC 2003# Loss On Ignition	%	9.7
DETSC 3321# BTEX	mg/kg	< 0.04
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01
#REF!	mg/kg	130.0
DETSC 3301 PAHs	mg/kg	15.0
DETSC 2008# pH	pH Units	6.7
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0

WAC Limit Values		
Inert Waste	SNRHW	Hazardous Waste
3	5	6
n/a	n/a	10
6	n/a	n/a
1	n/a	n/a
500	n/a	n/a
100	n/a	n/a
n/a	>6	n/a
n/a	TBE	TBE
n/a	TBE	TBE

Test Results On Leachate				
Determinand and Method Reference	Conc in Eluate ug/l		Amount Leached* mg/kg	
	2:1	8:1	LS2	LS10
DETSC 2306 Arsenic as As	0.55	0.34	< 0.002	< 0.01
DETSC 2306 Barium as Ba	1.6	0.81	< 0.02	< 0.1
DETSC 2306 Cadmium as Cd	< 0.030	< 0.030	< 0.004	< 0.02
DETSC 2306 Chromium as Cr	< 0.25	< 0.25	< 0.02	< 0.1
DETSC 2306 Copper as Cu	1.1	0.44	< 0.004	< 0.02
DETSC 2306 Mercury as Hg	< 0.010	< 0.010	< 0.0004	< 0.002
DETSC 2306 Molybdenum as Mo	< 1.1	< 1.1	< 0.02	< 0.1
DETSC 2306 Nickel as Ni	< 0.50	< 0.50	< 0.02	< 0.1
DETSC 2306 Lead as Pb	0.62	0.24	< 0.01	< 0.05
DETSC 2306 Antimony as Sb	0.64	0.22	< 0.01	< 0.05
DETSC 2306 Selenium as Se	< 0.25	< 0.25	< 0.006	< 0.03
DETSC 2306 Zinc as Zn	3	< 1.3	0.006	< 0.01
DETSC 2055 Chloride as Cl	1600	860	< 20	< 100
DETSC 2055* Fluoride as F	360	120	0.72	1.43
DETSC 2055 Sulphate as SO4	1600	930	< 20	< 100
DETSC 2009* Total Dissolved Solids	11000	5900	22	63.8
DETSC 2130 Phenol Index	< 100	< 100	< 0.2	< 1
DETSC 2085 Dissolved Organic Carbon	< 2000	< 2000	< 10	< 50

WAC Limit Values		
Limit values for LS10 Leachate		
Inert Waste	SNRHW	Hazardous Waste
0.5	2	25
20	100	300
0.04	1	5
0.5	10	70
2	50	100
0.01	0.2	2
0.5	10	30
0.4	10	40
0.5	10	50
0.06	0.7	5
0.1	0.5	7
4	50	200
800	15,000	25,000
10	150	500
1000	20,000	50,000
4000	60,000	100,000
1	n/a	n/a
500	800	1000

Additional Information

DETSC 2008 pH	6.8	6.4
DETSC 2009 Conductivity uS/cm	15.2	8.5
* Temperature*	18.0	17.0

Mass of Sample Kg*	0.140
Mass of dry Sample Kg*	0.106

Stage 1

Volume of Leachant L2*	0.177
Volume of Eluate VE1*	0.1

Stage 2

Volume of Leachant L8*	0.846
Volume of Eluate VE2*	0.81

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive
Hazardous Waste

Disclaimer: The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.

V.2.06

* DETS are accredited for the testing of leachates and not the leachate preparation stage which is unaccredited.

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 21-06894-1

Client Ref P20-344

Contract Title P20-344 Lethamhill, Glasgow

Sample Id TP28 0.50

Sample Numbers 1826063 1826077 1826078

Date Analysed 09/04/2021

Test Results On Waste		
Determinand and Method Reference	Units	Result
DETSC 2084# Total Organic Carbon	%	5.5
DETSC 2003# Loss On Ignition	%	9.2
DETSC 3321# BTEX	mg/kg	< 0.04
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01
DETSC 3311# TPH (C10 - C40)	mg/kg	110.0
DETSC 3301 PAHs	mg/kg	9.9
DETSC 2008# pH	pH Units	6.6
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0

WAC Limit Values		
Inert Waste	SNRHW	Hazardous Waste
3	5	6
n/a	n/a	10
6	n/a	n/a
1	n/a	n/a
500	n/a	n/a
100	n/a	n/a
n/a	>6	n/a
n/a	TBE	TBE
n/a	TBE	TBE

Test Results On Leachate				
Determinand and Method Reference	Conc in Eluate ug/l		Amount Leached* mg/kg	
	2:1	8:1	LS2	LS10
DETSC 2306 Arsenic as As	0.26	0.19	< 0.002	< 0.01
DETSC 2306 Barium as Ba	3.1	1.4	< 0.02	< 0.1
DETSC 2306 Cadmium as Cd	< 0.030	< 0.030	< 0.004	< 0.02
DETSC 2306 Chromium as Cr	0.37	< 0.25	< 0.02	< 0.1
DETSC 2306 Copper as Cu	1.1	0.63	< 0.004	< 0.02
DETSC 2306 Mercury as Hg	< 0.010	< 0.010	< 0.0004	< 0.002
DETSC 2306 Molybdenum as Mo	< 1.1	< 1.1	< 0.02	< 0.1
DETSC 2306 Nickel as Ni	< 0.50	< 0.50	< 0.02	< 0.1
DETSC 2306 Lead as Pb	0.53	0.44	< 0.01	< 0.05
DETSC 2306 Antimony as Sb	0.31	< 0.17	< 0.01	< 0.05
DETSC 2306 Selenium as Se	< 0.25	< 0.25	< 0.006	< 0.03
DETSC 2306 Zinc as Zn	1.7	< 1.3	0.003	< 0.01
DETSC 2055 Chloride as Cl	1600	1000	< 20	< 100
DETSC 2055* Fluoride as F	190	< 100	0.38	0.18
DETSC 2055 Sulphate as SO4	1900	1200	< 20	< 100
DETSC 2009* Total Dissolved Solids	16000	7000	32	78.5
DETSC 2130 Phenol Index	< 100	< 100	< 0.2	< 1
DETSC 2085 Dissolved Organic Carbon	< 2000	< 2000	< 10	< 50

WAC Limit Values		
Limit values for LS10 Leachate		
Inert Waste	SNRHW	Hazardous Waste
0.5	2	25
20	100	300
0.04	1	5
0.5	10	70
2	50	100
0.01	0.2	2
0.5	10	30
0.4	10	40
0.5	10	50
0.06	0.7	5
0.1	0.5	7
4	50	200
800	15,000	25,000
10	150	500
1000	20,000	50,000
4000	60,000	100,000
1	n/a	n/a
500	800	1000

Additional Information

DETSC 2008 pH	6.5	6.5
DETSC 2009 Conductivity uS/cm	22.4	10.1
* Temperature*	18.0	19.0

Mass of Sample Kg*	0.140
Mass of dry Sample Kg*	0.106

Stage 1

Volume of Leachant L2*	0.179
Volume of Eluate VE1*	0.1

Stage 2

Volume of Leachant L8*	0.851
Volume of Eluate VE2*	0.81

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive
Hazardous Waste

Disclaimer: The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.

V.2.06

* DETS are accredited for the testing of leachates and not the leachate preparation stage which is unaccredited.

BS 3882:2015 Topsoil Analytical Report

Our Ref 21-06894-1

Client Ref P20-344

Contract Title P20-344 Lethamhill, Glasgow

Lab No	1826052
Sample ID	TP22
Depth	0.10
Other ID	
Sample Type	SOIL
Sampling Date	18/03/2021
Sampling Time	n/s

Parameter	Method	Result	Compliant with multi purpose range?	Compliant with specific purpose range? (Y/N)					
			(Y/N)	Acid.	Calc	Low F.	Low F. acidic	Low F. calc.	
Texture									
Clay content %	\$	18	See Figure 1 on Textural class sheet						
Silt content %	\$	35							
Sand content %	\$	47							
Soil texture – (see figure 1)	\$	Sandy Loam							
Soil organic matter content % (varying with clay content)									
Clay 5-20%	DETSC 2002#	6	Y	Y	Y	Y	Y	Y	
Clay 20-35%	DETSC 2002#		N/A	N/A	N/A	N/A	N/A	N/A	
Maximum coarse fragment - Content % m/m									
>2 mm	\$	15	Y	Y	Y	Y	Y	Y	
>20 mm	\$	3	Y	Y	Y	Y	Y	Y	
>50 mm	\$	0	Y	Y	Y	Y	Y	Y	
Soil pH value	DETSC 2008#	5.5	Y	Y	N	Y	Y	N	
Carbonate (Calcareous only) %	DETSC 2005	0	N/A	N/A	N	N/A	N/A	N	
Available plant nutrient content									
Total Nitrogen %	DETSC 2121*	0.22	Y	Y	Y	N/A	N/A	N/A	
Extractable phosphorous mg/l	DETSC 2310*	25	Y	Y	Y	N	N	N	
Extractable potassium mg/l	DETSC 2309*	54	N	N	N	N/A	N/A	N/A	
Extractable magnesium mg/l	DETSC 2309*	110	Y	Y	Y	N/A	N/A	N/A	
Carbon: Nitrogen ratio		15.82	Y	Y	Y	Y	Y	Y	
Electrical Conductivity	DETSC 2009	1500	Y	N/A	N/A	N/A	N/A	N/A	
Phytotoxic contaminants (by soil pH) mg/kgDS									
Zinc (Nitric acid extract)	DETSC 2308*	110	Y	Y	Y	Y	Y	Y	
Copper (Nitric acid extract)	DETSC 2308*	36	Y	Y	Y	Y	Y	Y	
Nickel (Nitric acid extract)	DETSC 2308*	20	Y	Y	Y	Y	Y	Y	
Visible contaminants % m/m									
>2 mm	*	0	Y	Y	Y	Y	Y	Y	
...of which plastics	*	0	Y	Y	Y	Y	Y	Y	
...man made sharps	*	0	Y	Y	Y	Y	Y	Y	

Additional analytical certificate(s) for particle size distribution analysis are appended.

- MCERTS (accred. only implied if report carries the MCERTS logo). * - unaccredited test. \$ - completed by approved subcontractor.

DECLARATION: I certify that this sample of soil has been analysed in accordance with BS3882:2015

Signature:



BS 3882: Textural Class

Our Ref 21-06894-1

Client Ref P20-344

Contract Title P20-344 Lethamhill, Glasgow

Results: Proportion in class (%)			Help messages
Clay	Silt	Sand	
18	35	47	

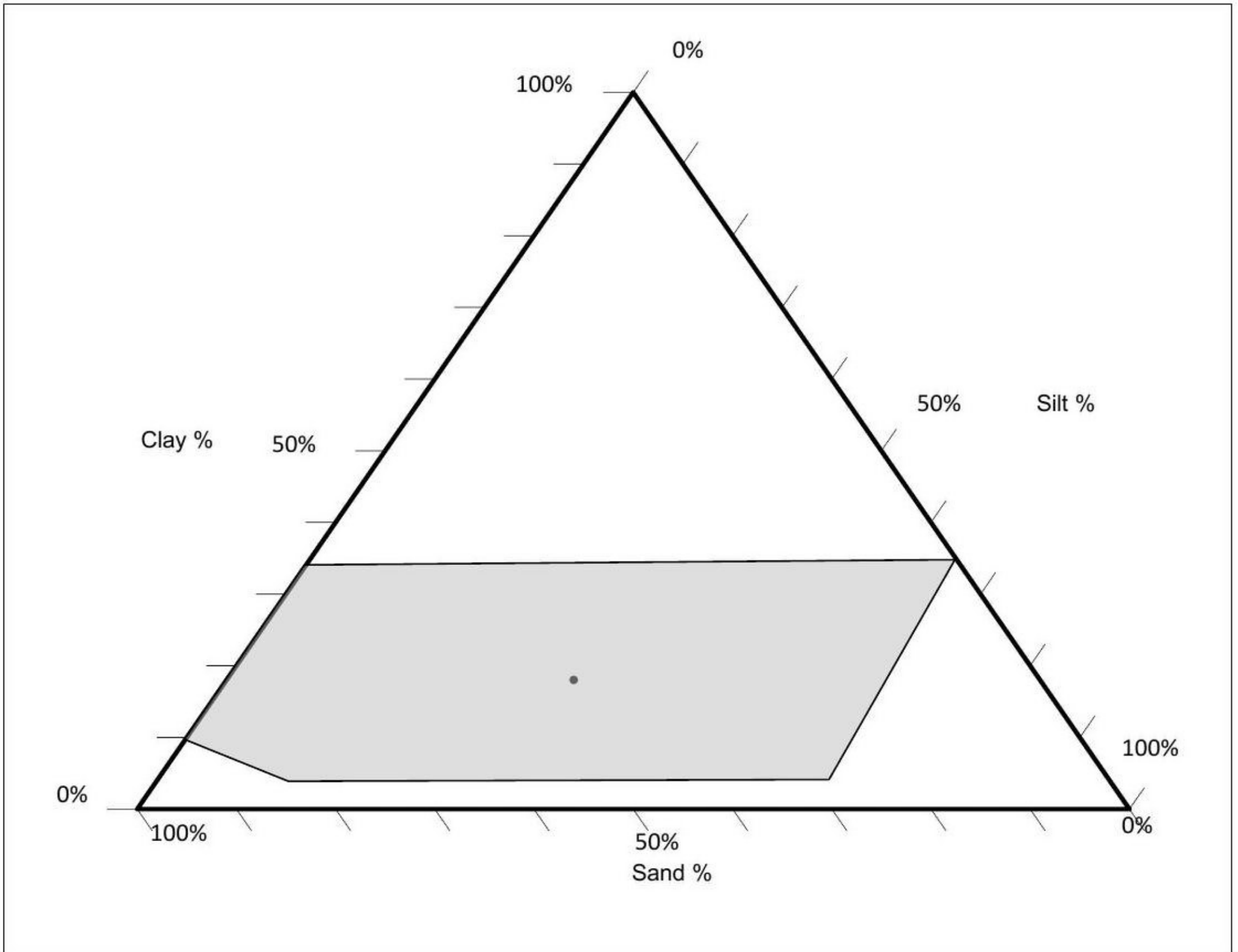


Figure 1

The textural class is required to be in the shaded area to be compliant with BS3882:2015
Results are shown by the grey point in the chart

Plotting parameters		Help messages
Printer correction:	1.1	
Tick interval (0 - 0.5):	0.1	
Tick length (0 - 0.2):	0.03	
Plot lines? (Y or N):	n	

BS 3882:2015 Topsoil Analytical Report

Our Ref 21-06894-1

Client Ref P20-344

Contract Title P20-344 Lethamhill, Glasgow

Lab No	1826068
Sample ID	TPJ
Depth	0.10
Other ID	
Sample Type	SOIL
Sampling Date	18/03/2021
Sampling Time	n/s

Parameter	Method	Result	Compliant with multi purpose range?	Compliant with specific purpose range? (Y/N)					
			(Y/N)	Acid.	Calc	Low F.	Low F. acidic	Low F. calc.	
Texture									
Clay content %	\$	23	See Figure 1 on Textural class sheet						
Silt content %	\$	44							
Sand content %	\$	33							
Soil texture – (see figure 1)	\$	Clay Loam							
Soil organic matter content % (varying with clay content)									
Clay 5-20%	DETSC 2002#		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Clay 20-35%	DETSC 2002#	7.9	Y	Y	Y	Y	Y	Y	Y
Maximum coarse fragment - Content % m/m									
>2 mm	\$	6	Y	Y	Y	Y	Y	Y	Y
>20 mm	\$	0	Y	Y	Y	Y	Y	Y	Y
>50 mm	\$	0	Y	Y	Y	Y	Y	Y	Y
Soil pH value	DETSC 2008#	6.4	Y	N	N	Y	N	N	N
Carbonate (Calcareous only) %	DETSC 2005	0	N/A	N/A	N	N/A	N/A	N/A	N
Available plant nutrient content									
Total Nitrogen %	DETSC 2121*	0.26	Y	Y	Y	N/A	N/A	N/A	N/A
Extractable phosphorous mg/l	DETSC 2310*	37	Y	Y	Y	N	N	N	N
Extractable potassium mg/l	DETSC 2309*	81	N	N	N	N/A	N/A	N/A	N/A
Extractable magnesium mg/l	DETSC 2309*	100	Y	Y	Y	N/A	N/A	N/A	N/A
Carbon: Nitrogen ratio		17.62	Y	Y	Y	Y	Y	Y	Y
Electrical Conductivity	DETSC 2009	1900	Y	N/A	N/A	N/A	N/A	N/A	N/A
Phytotoxic contaminants (by soil pH) mg/kgDS									
Zinc (Nitric acid extract)	DETSC 2308*	290	N	N	N	N	N	N	N
Copper (Nitric acid extract)	DETSC 2308*	120	Y	Y	Y	Y	Y	Y	Y
Nickel (Nitric acid extract)	DETSC 2308*	35	Y	Y	Y	Y	Y	Y	Y
Visible contaminants % m/m									
>2 mm	*	0	Y	Y	Y	Y	Y	Y	Y
...of which plastics	*	0	Y	Y	Y	Y	Y	Y	Y
...man made sharps	*	0	Y	Y	Y	Y	Y	Y	Y

Additional analytical certificate(s) for particle size distribution analysis are appended.

- MCERTS (accred. only implied if report carries the MCERTS logo). * - unaccredited test. \$ - completed by approved subcontractor.

DECLARATION: I certify that this sample of soil has been analysed in accordance with BS3882:2015

Signature:



BS 3882: Textural Class

Our Ref 21-06894-1

Client Ref P20-344

Contract Title P20-344 Lethamhill, Glasgow

Results: Proportion in class (%)			Help messages
Clay	Silt	Sand	
23	44	33	

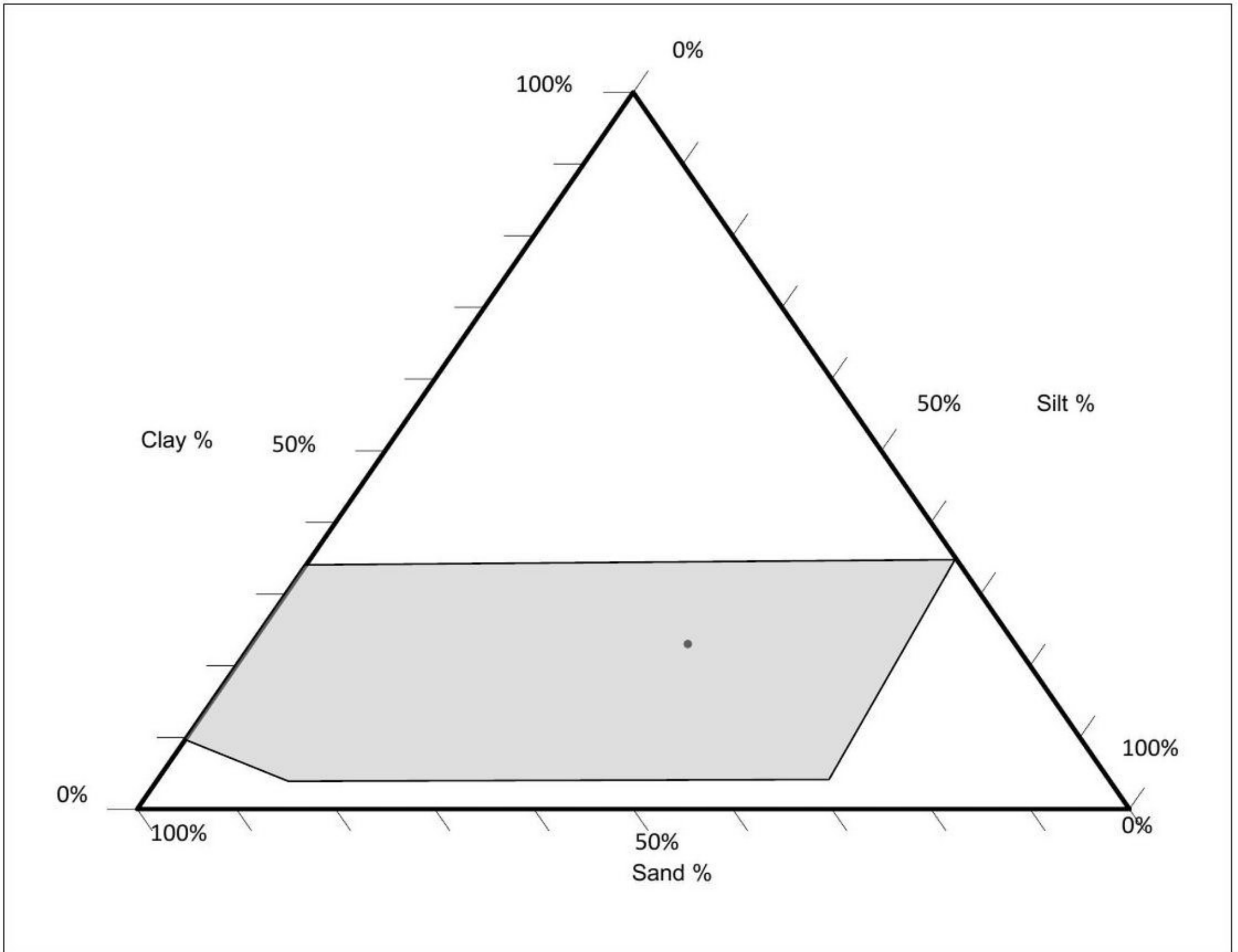


Figure 1

The textural class is required to be in the shaded area to be compliant with BS3882:2015
Results are shown by the grey point in the chart

Plotting parameters		Help messages
Printer correction:	1.1	
Tick interval (0 - 0.5):	0.1	
Tick length (0 - 0.2):	0.03	
Plot lines? (Y or N):	n	

BS 3882:2015 Topsoil Threshold Values

Parameter	Multipurpose Topsoil	Specific purpose topsoil				
		Acidic	Calcareous	Low fertility	Low fertility acidic	Low fertility calcareous
Soil texture <2mm fraction % m/m						
Clay content %		10 to 35				
Silt content %		0 to 65				
Sand content %		35 to 85				
Maximum coarse fraction % m/m						
>2 mm		30				
>20mm		10				
>50mm		0				
Mass loss on Ignition %						
Clay 5% to 20%	3 to 20	3 to 30	3 to 20	2 to 20	2 to 30	2 to 20
Clay 20% to 35%	5 to 20	5 to 30	5 to 20	2 to 20	2 to 30	2 to 20
Soil pH	5.5 to 8.5	3.5 to 5.5	7.5 to 9.0	3.5 to 9.0	3.5 to 5.5	7.5 to 9.0
Carbonate % m/m			>1			>1
Plant nutrient content						
Total nitrogen % m/m	>0.15	>0.15	>0.15	-	-	-
Extractable phosphate mg/l	16 to 140	16 to 140	16 to 140	≤20	≤20	≤20
Extractable potassium mg/l	121 to 1500	121 to 1500	121 to 1500	-	-	-
Extractable magnesium mg/l	51 to 600	51 to 600	51 to 600	-	-	-
Carbon : Nitrogen ratio	<20:1	<20:1	<20:1	<35:1	<35:1	<20:1
Electrical conductivity μS.cm-1	If greater than 3 300, carry out exchangeable sodium					

Multi purpose and specific purpose topsoils			
Potentially Phytotoxic elements (mg/kg dry basis)	Soil pH		
	<6.0	6.0 to 7.0	>7.0
Zn	<200	<200	<300
Cu	<100	<135	<200
Ni	<60	<75	<110
Visible contaminants %m/m			
of which plastics	<0.5		
Sharps, number	<0.25		

Summary of Asbestos Analysis

Soil Samples

Our Ref 21-06894-1

Client Ref P20-344

Contract Title P20-344 Lethamhill, Glasgow

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1826053	TP22 1.00	SOIL	NAD	none	Colin Patrick
1826054	TP23 0.30	SOIL	NAD	none	Colin Patrick
1826056	TP24 0.50	SOIL	NAD	none	Colin Patrick
1826057	TP24 1.00	SOIL	NAD	none	Colin Patrick
1826058	TP25 0.50	SOIL	Chrysotile	bundle of Chrysotile fibres	Colin Patrick
1826060	TP26 0.30	SOIL	NAD	none	Colin Patrick
1826061	TP26 1.20	SOIL	NAD	none	Colin Patrick
1826062	TP27 0.40	SOIL	Chrysotile	bundle of Chrysotile fibres	Colin Patrick
1826065	TP29 0.10	SOIL	NAD	none	Colin Patrick
1826066	TP29 1.10	SOIL	NAD	none	Colin Patrick
1826067	TPH 1.00	SOIL	NAD	none	Colin Patrick
1826069	TPJ 1.00	SOIL	NAD	none	Colin Patrick
1826070	TPK 0.30	SOIL	NAD	none	Colin Patrick

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -not included in laboratory scope of accreditation.

Summary of Asbestos Quantification Analysis

Soil Samples

Our Ref 21-06894-1

Client Ref P20-344

Contract Title P20-344 Lethamhill, Glasgow

Lab No	1826058	1826062
Sample ID	TP25	TP27
Depth	0.50	0.40
Other ID		
Sample Type	SOIL	SOIL
Sampling Date	18/03/2021	18/03/2021
Sampling Time		

Test	Method	Units		
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	0.004	0.005
Gravimetric Quantification (a)	DETSC 1102	Mass %	na	0.004
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	0.004	0.002
Quantification by PCOM (c)	DETSC 1102	Mass %	na	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na	na
Breakdown of Gravimetric Analysis (a)				
Mass of Sample		g	470.75	309.07
ACMs present*		type		LFAD
Mass of ACM in sample		g		0.01
% ACM by mass		%		0.00
% asbestos in ACM		%		85
% asbestos in sample		%		0.004
Breakdown of Detailed Gravimetric Analysis (b)				
% Amphibole bundles in sample		Mass %	na	na
% Chrysotile bundles in sample		Mass %	0.004	0.002
Breakdown of PCOM Analysis (c)				
% Amphibole fibres in sample		Mass %	na	na
% Chrysotile fibres in sample		Mass %	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)				
Amphibole fibres		Fibres/g	na	na
Chrysotile fibres		Fibres/g	na	na

* Denotes test or material description outside of UKAS accreditation.
 % asbestos in Asbestos Containing Materials (ACMs) is determined by
 by reference to HSG 264.
 Recommended sample size for quantification is approximately 1kg
 # denotes deviating sample

Appendix 08
CBR Results



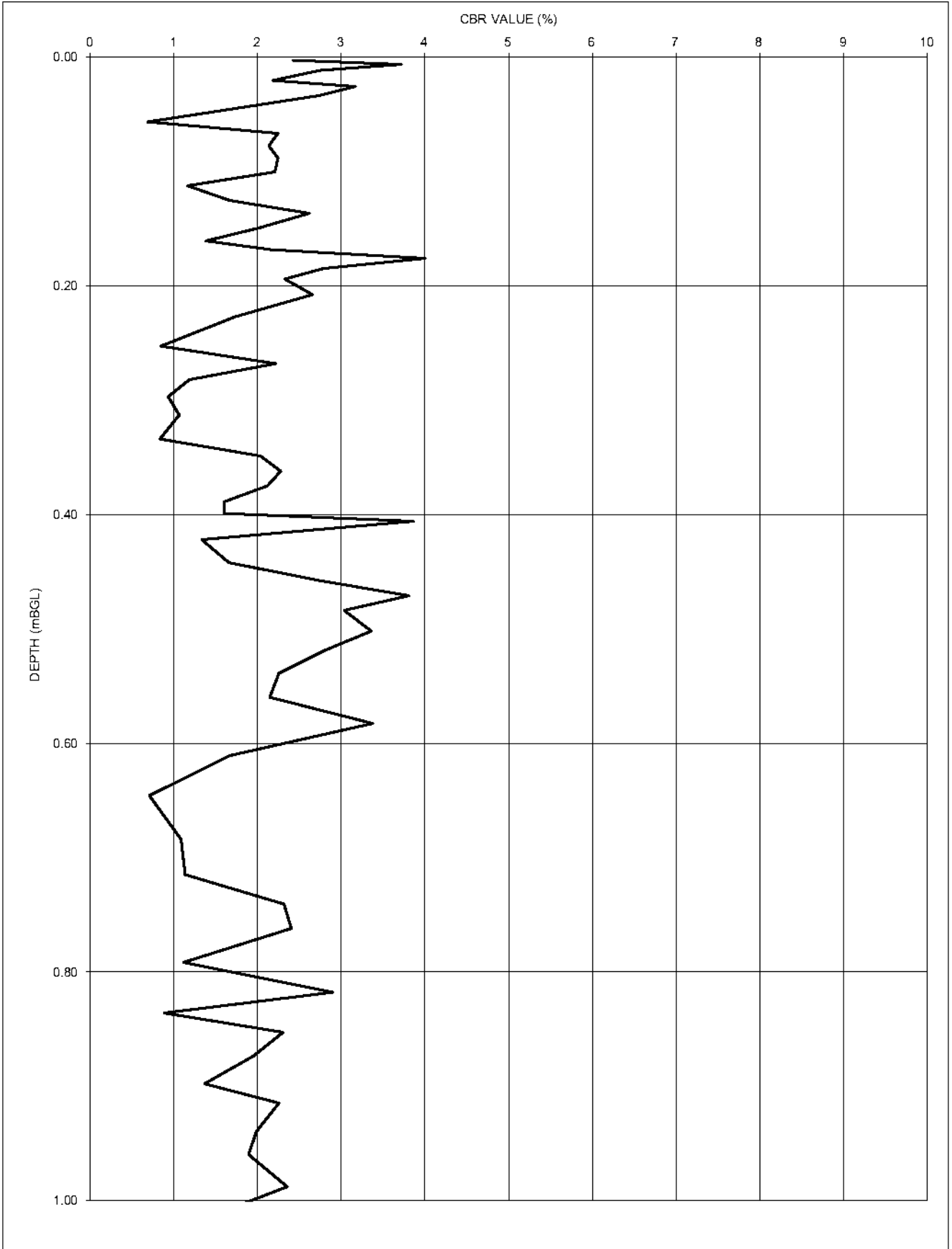
SKF LTD, Constablewood Estate, Brisbane Glen, Largs
Tel: 07795 493892 Email: SKFLTD@BTINTERNET.COM

PROBE NO. CBR01

PANDA2 VARIABLE ENERGY DCP PLOT

CONTRACT: LETHAMHILL GOLF COURSE
CLIENT: MASON EVANS PARTNERSHIP
DATE: 20/01/2021

CONTRACT NO: 6090
OPERATOR: EM
NOTES: E - 263804.74 N - 667139.40 L - 83.04





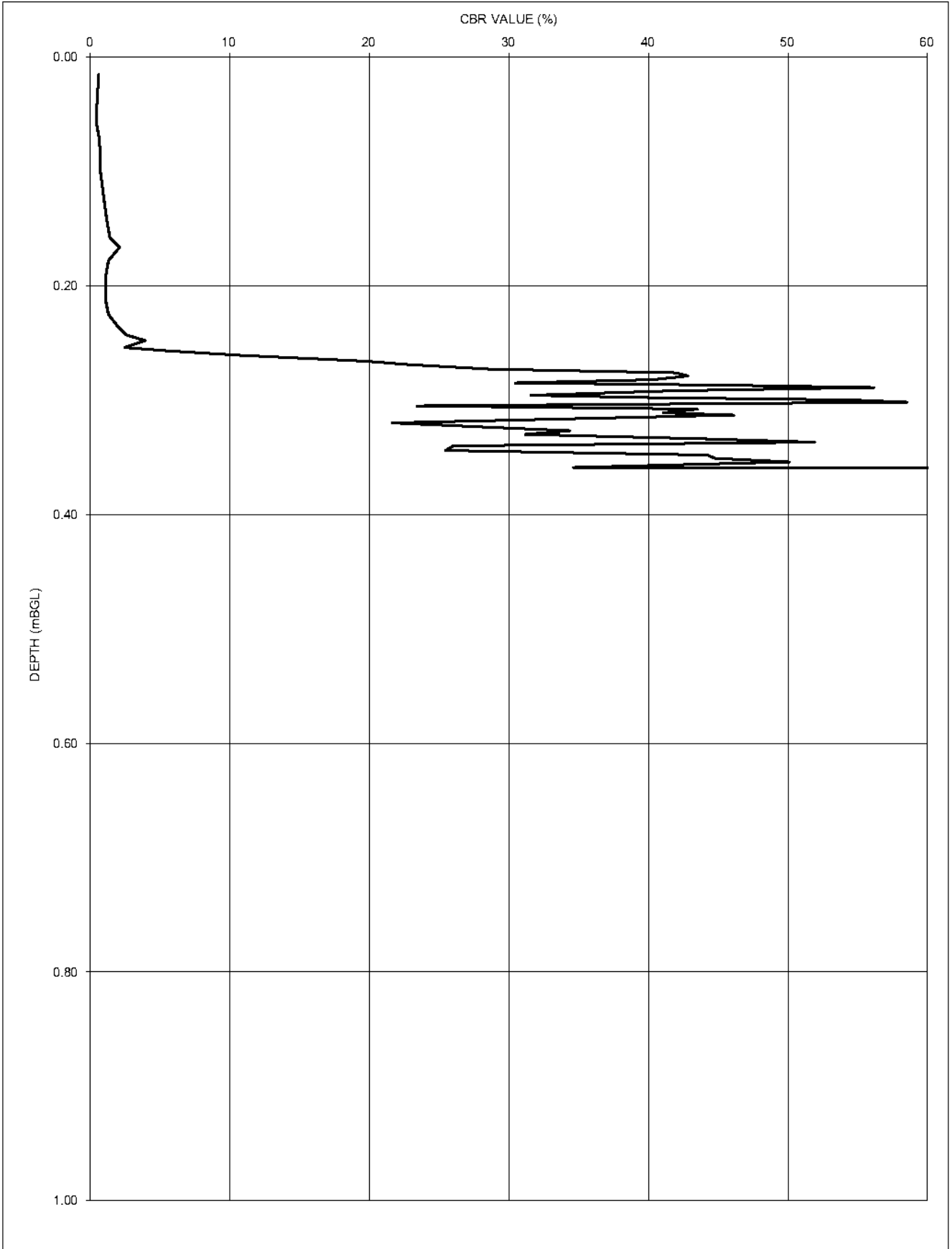
SKF LTD, Constablewood Estate, Brisbane Glen, Largs
Tel: 07795 493892 Email: SKFLTD@BTINTERNET.COM

PROBE NO. CBR02

PANDA2 VARIABLE ENERGY DCP PLOT

CONTRACT: LETHAMHILL GOLF COURSE
CLIENT: MASON EVANS PARTNERSHIP
DATE: 20/01/2021

CONTRACT NO: 6090
OPERATOR: EM
NOTES: E - 263829.71 N - 667123.64 L - 83.56





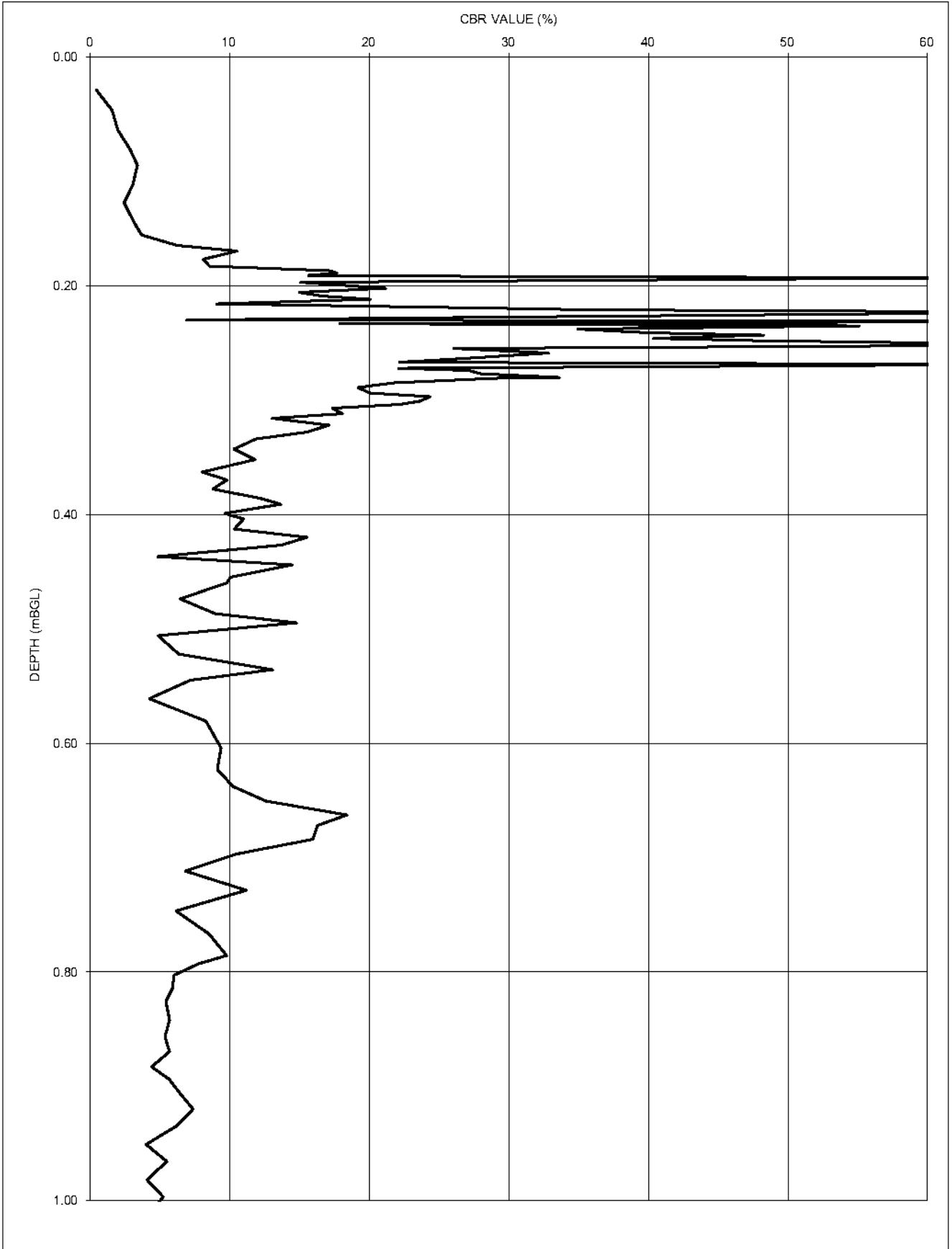
SKF LTD, Constablewood Estate, Brisbane Glen, Largs
Tel: 07795 493892 Email: SKFLTD@BTINTERNET.COM

PROBE NO. CBR02A

PANDA2 VARIABLE ENERGY DCP PLOT

CONTRACT: LETHAMHILL GOLF COURSE
CLIENT: MASON EVANS PARTNERSHIP
DATE: 20/01/2021

CONTRACT NO: 6090
OPERATOR: EM
NOTES: E - 263829.41 N - 667123.64 L - 83.56





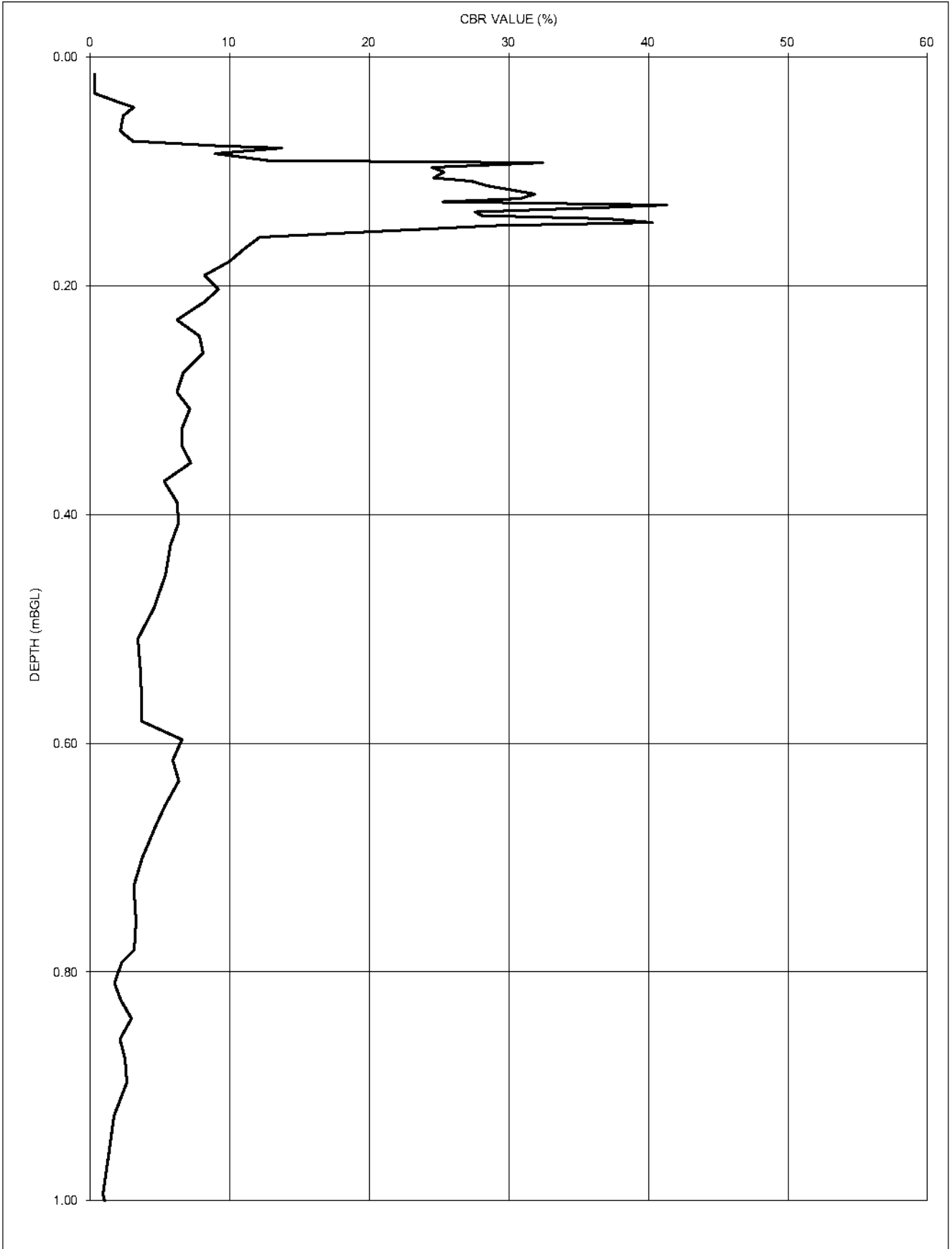
SKF LTD, Constablewood Estate, Brisbane Glen, Largs
Tel: 07795 493892 Email: SKFLTD@BTINTERNET.COM

PROBE NO. CBR03

PANDA2 VARIABLE ENERGY DCP PLOT

CONTRACT: LETHAMHILL GOLF COURSE
CLIENT: MASON EVANS PARTNERSHIP
DATE: 20/01/2021

CONTRACT NO: 6090
OPERATOR: EM
NOTES: E - 263867.67 N - 667082.14 L - 84.36





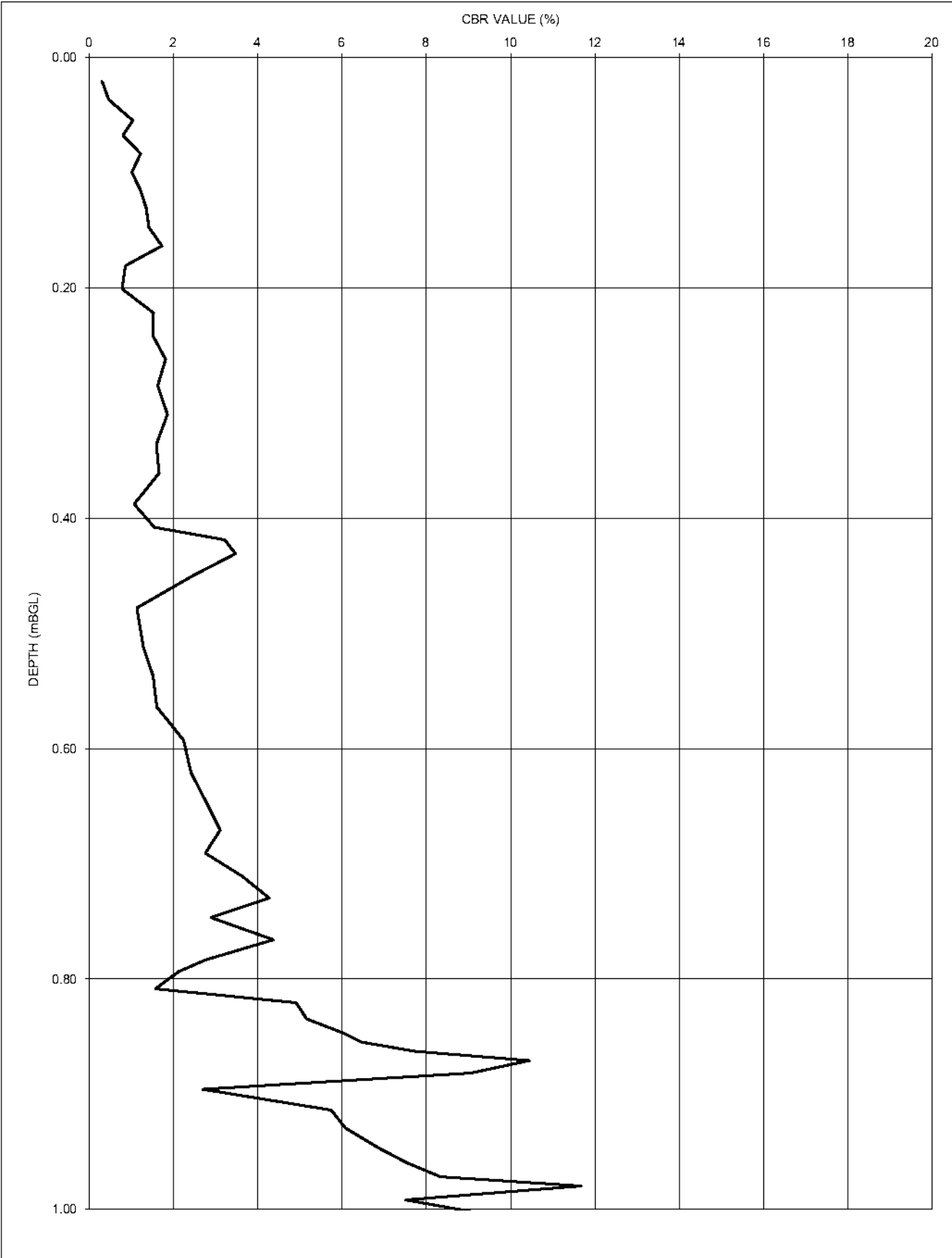
SKF LTD, Constablewood Estate, Brisbane Glen, Largs
Tel: 07795 493892 Email: SKFLTD@BTINTERNET.COM

PROBE NO. CBR04

PANDA2 VARIABLE ENERGY DCP PLOT

CONTRACT: LETHAMHILL GOLF COURSE
CLIENT: MASON EVANS PARTNERSHIP
DATE: 20/01/2021

CONTRACT NO: 6090
OPERATOR: EM
NOTES: E - 263872.66 N - 667059.86 L - 86.97





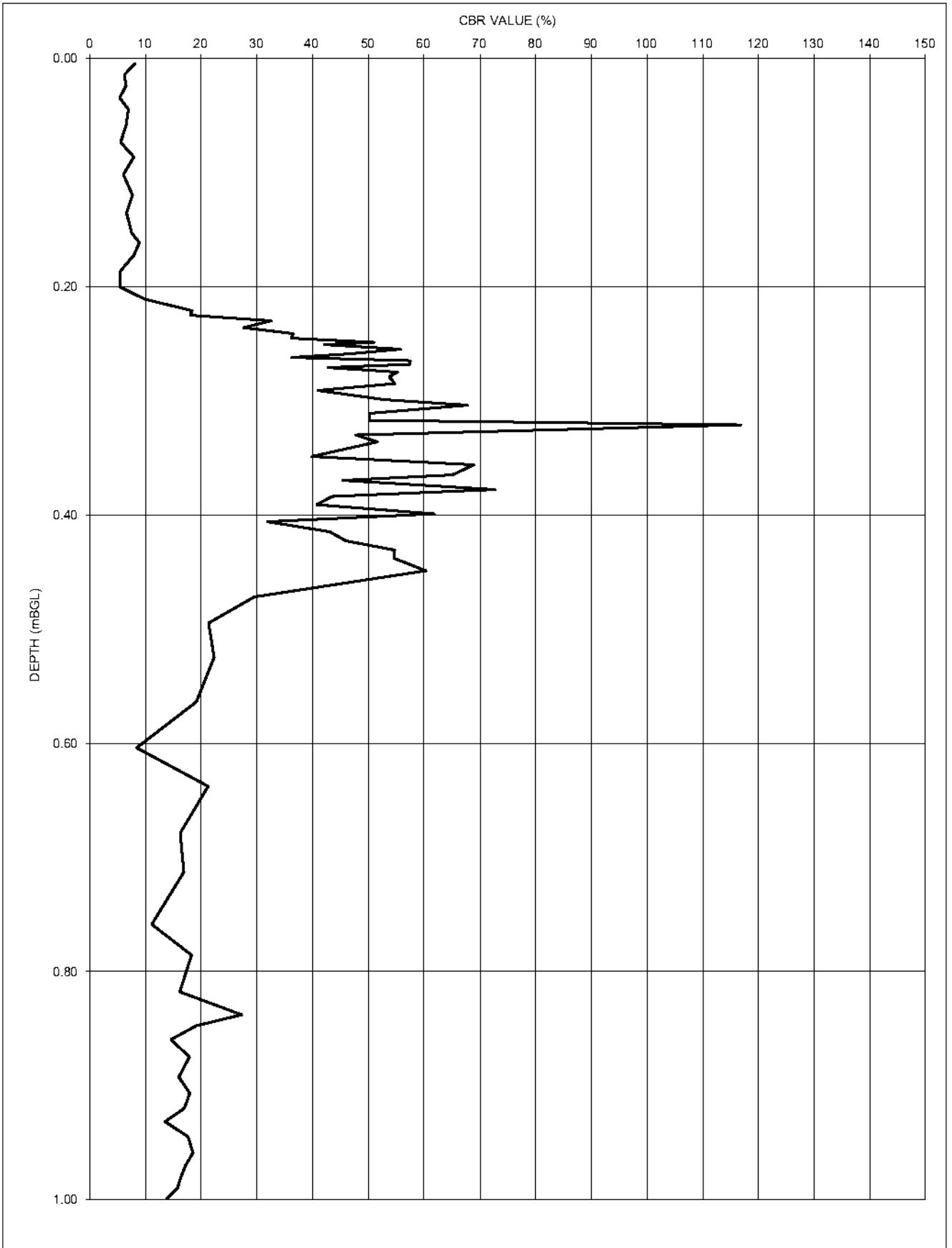
SKF LTD, Constablewood Estate, Brisbane Glen, Largs
Tel: 07795 493892 Email: SKFLTD@BTINTERNET.COM

PROBE NO. CBR 5

PANDA2 VARIABLE ENERGY DCP PLOT

CONTRACT: LETHAMHILL GOLF COURSE
CLIENT: MASON EVANS PARTNERSHIP
DATE: 20/03/2021

CONTRACT NO: 6090
OPERATOR: KB
NOTES: E - 263886.31 N - 667083.52 L - 86.46





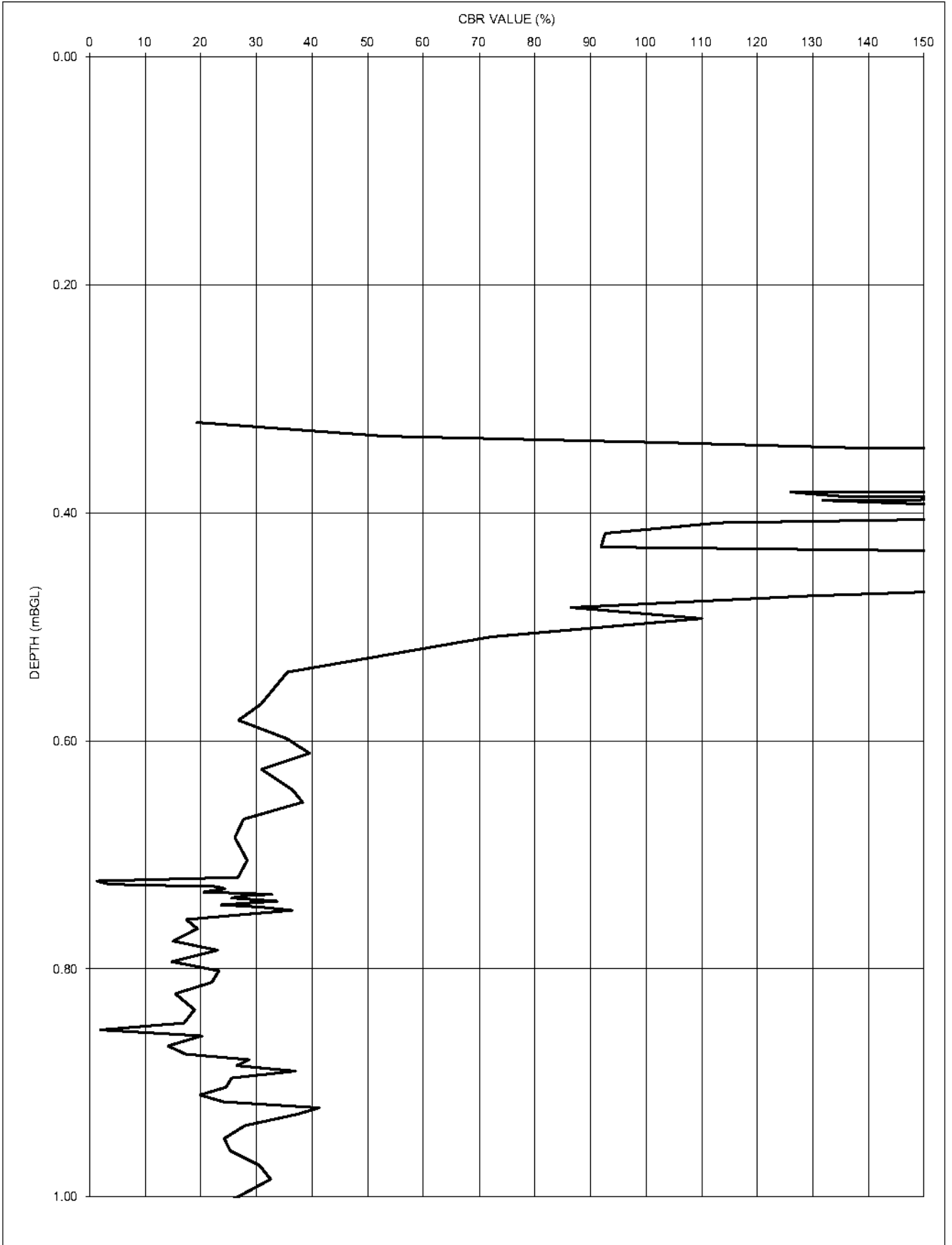
SKF LTD, Constablewood Estate, Brisbane Glen, Largs
Tel: 07795 493892 Email: SKFLTD@BTINTERNET.COM

PROBE NO. CBR 6

PANDA2 VARIABLE ENERGY DCP PLOT

CONTRACT: LETHAMHILL GOLF COURSE
CLIENT: MASON EVANS PARTNERSHIP
DATE: 20/03/2021

CONTRACT NO: 6090
OPERATOR: KB
NOTES: E - 263776.29 N - 667111.28 L - 82.11





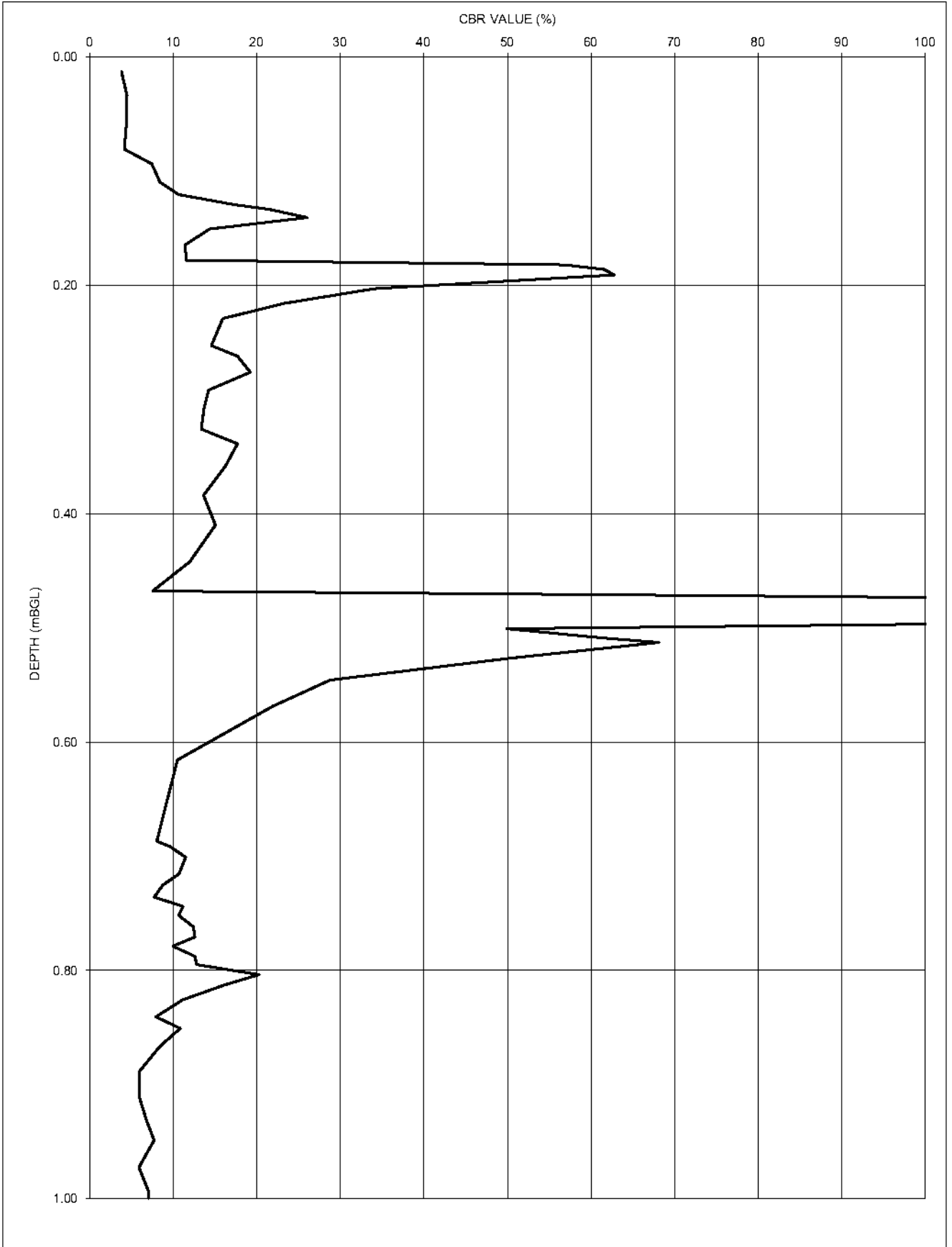
SKF LTD, Constablewood Estate, Brisbane Glen, Largs
Tel: 07795 493892 Email: SKFLTD@BTINTERNET.COM

PROBE NO. CBR 7

PANDA2 VARIABLE ENERGY DCP PLOT

CONTRACT: LETHAMHILL GOLF COURSE
CLIENT: MASON EVANS PARTNERSHIP
DATE: 20/03/2021

CONTRACT NO: 6090
OPERATOR: KB
NOTES: E - 263776.56 N - 667078.79 L - 81.98





SKF LTD, Constablewood Estate, Brisbane Glen, Largs
Tel: 07795 493892 Email: SKFLTD@BTINTERNET.COM

PROBE NO. CBR 8

PANDA2 VARIABLE ENERGY DCP PLOT

CONTRACT: LETHAMHILL GOLF COURSE

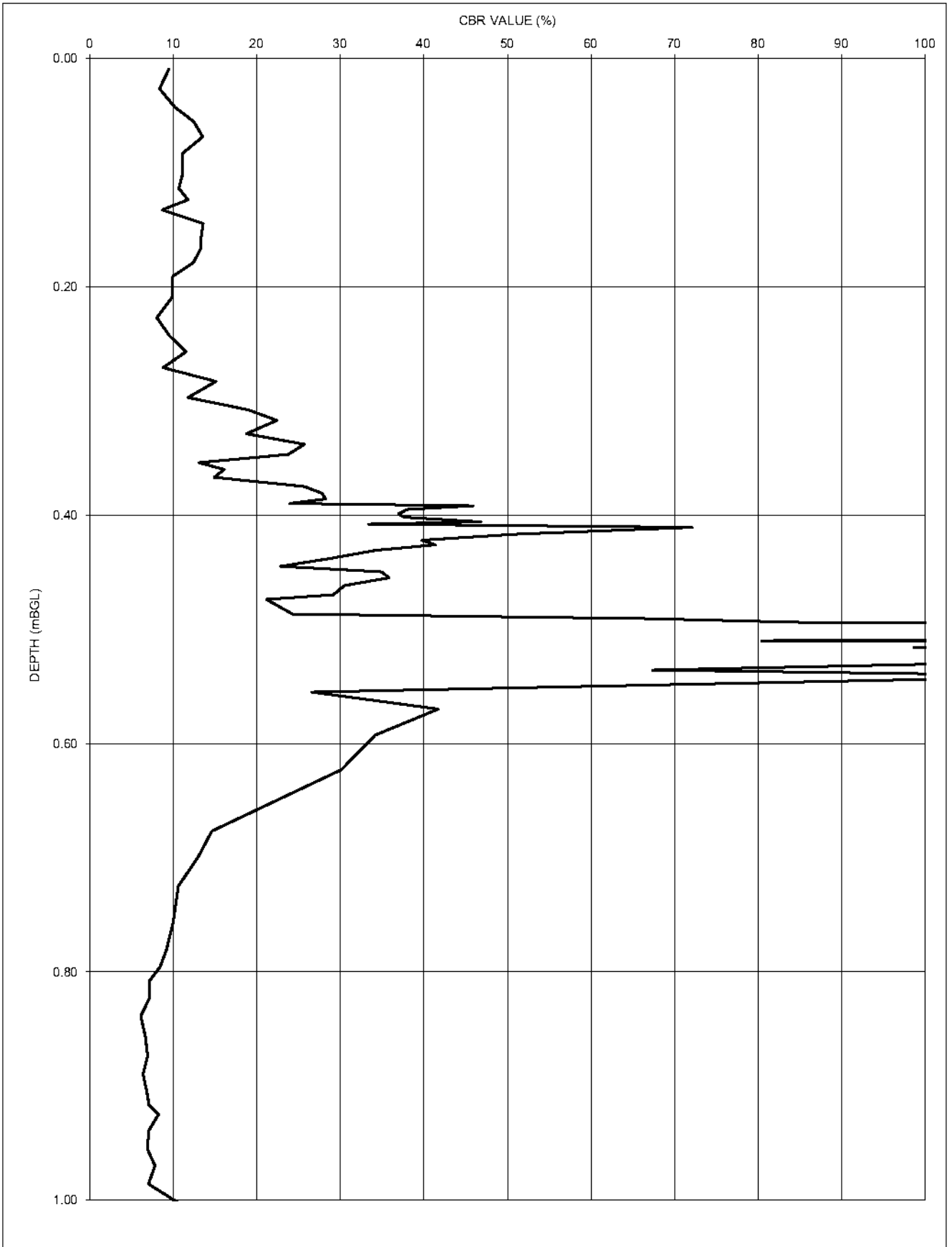
CONTRACT NO: 6090

CLIENT: MASON EVANS PARTNERSHIP

OPERATOR: KB

DATE: 20/03/2021

NOTES: E - 263758.54 N - 667065.47 L - 82.14



Appendix 09
Soakaway Logs and Results

RESULTS OF SOAKAGE TEST



TEST PIT NO.	SA01
---------------------	-------------

Contract Name: LETHAMHILL G.C.
 Contract No.: 6090
 Date: 20/01/2021
 Weather: RAIN
 Time to fill pit: 40SEC
 Ground Level (mAOD) 93.61
 Dimensions (m) From graph (seconds)
 Length: 0.70 tp75-25 = 28620
 Width: 0.30
 Depth: 1.00

Using formula $f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$ from BRE Digest 365

f = soil infiltration rate

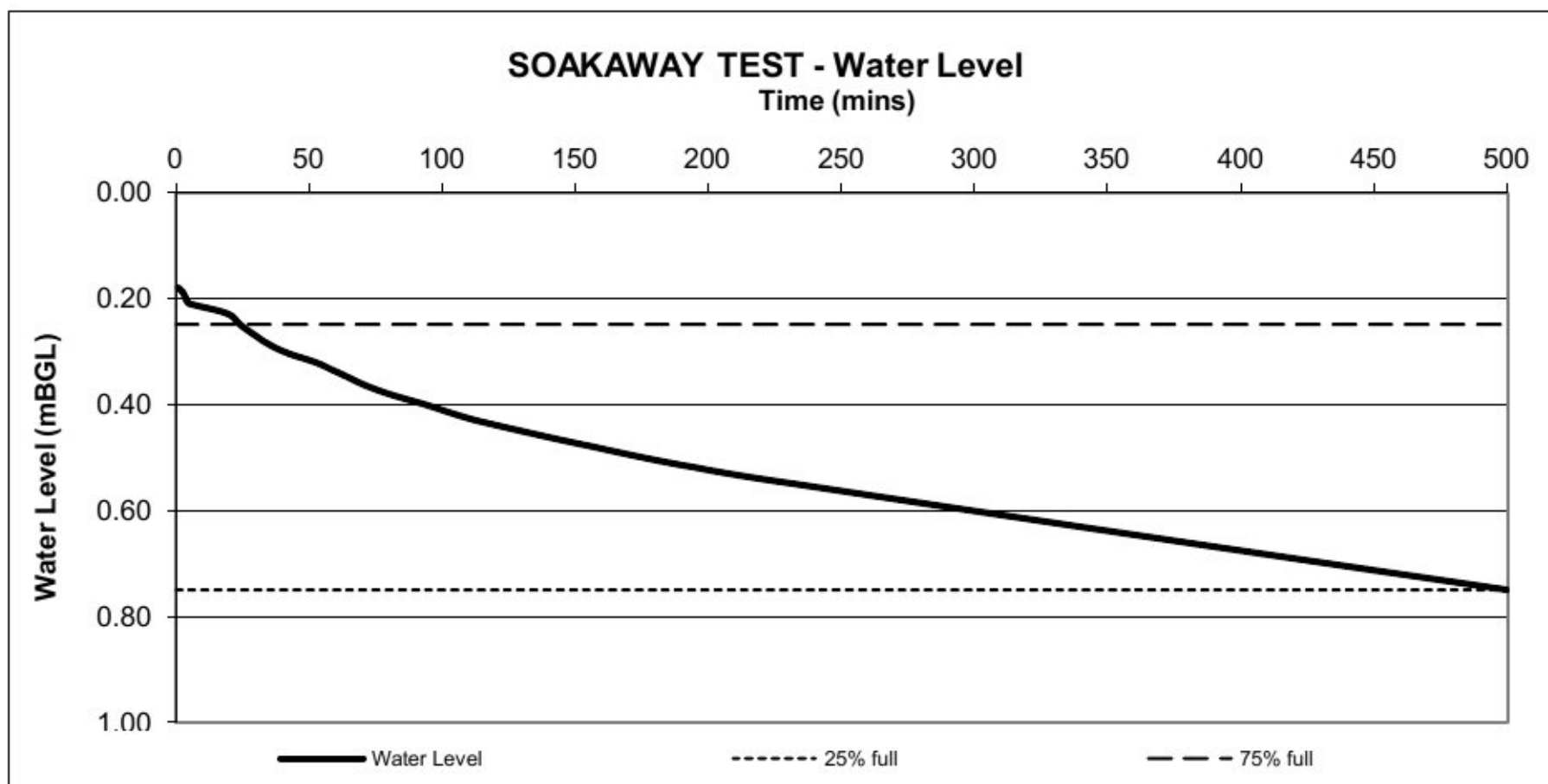
Vp75-25 = volume of outflow between 75% and 25% eff. depth

ap50 = mean surface area (pit sides to 50% eff. depth + base)

tp75-25 = time for outflow between 75% and 25% eff. depth

Time (mins)	Water Level (mBGL)	Water Level (mAOD)
1.00	0.18	93.43
3.00	0.19	93.42
4.00	0.20	93.41
5.00	0.21	93.40
20.00	0.23	93.38
24.00	0.25	93.36
33.00	0.28	93.33
40.00	0.30	93.31
52.00	0.32	93.29
61.00	0.34	93.27
74.00	0.37	93.24
93.00	0.40	93.21
113.00	0.43	93.18
156.00	0.48	93.13
196.00	0.52	93.09
232.00	0.55	93.06
500.00	0.75	INTERPOLATED

INFILTRATION RATE (m/s) f = 0.00000292



RESULTS OF SOAKAGE TEST



TEST PIT NO.	SA02
---------------------	-------------

Contract Name: LETHAMHILL G.C.
 Contract No.: 6090
 Date: 20/01/2021
 Weather: RAIN
 Time to fill pit: 40SEC
 Ground Level (mAOD) 83.39
 Dimensions (m) From graph (seconds)
 Length: 0.80 tp75-25 =
 Width: 0.30
 Depth: 1.00

Using formula $f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$ from BRE Digest 365

f = soil infiltration rate

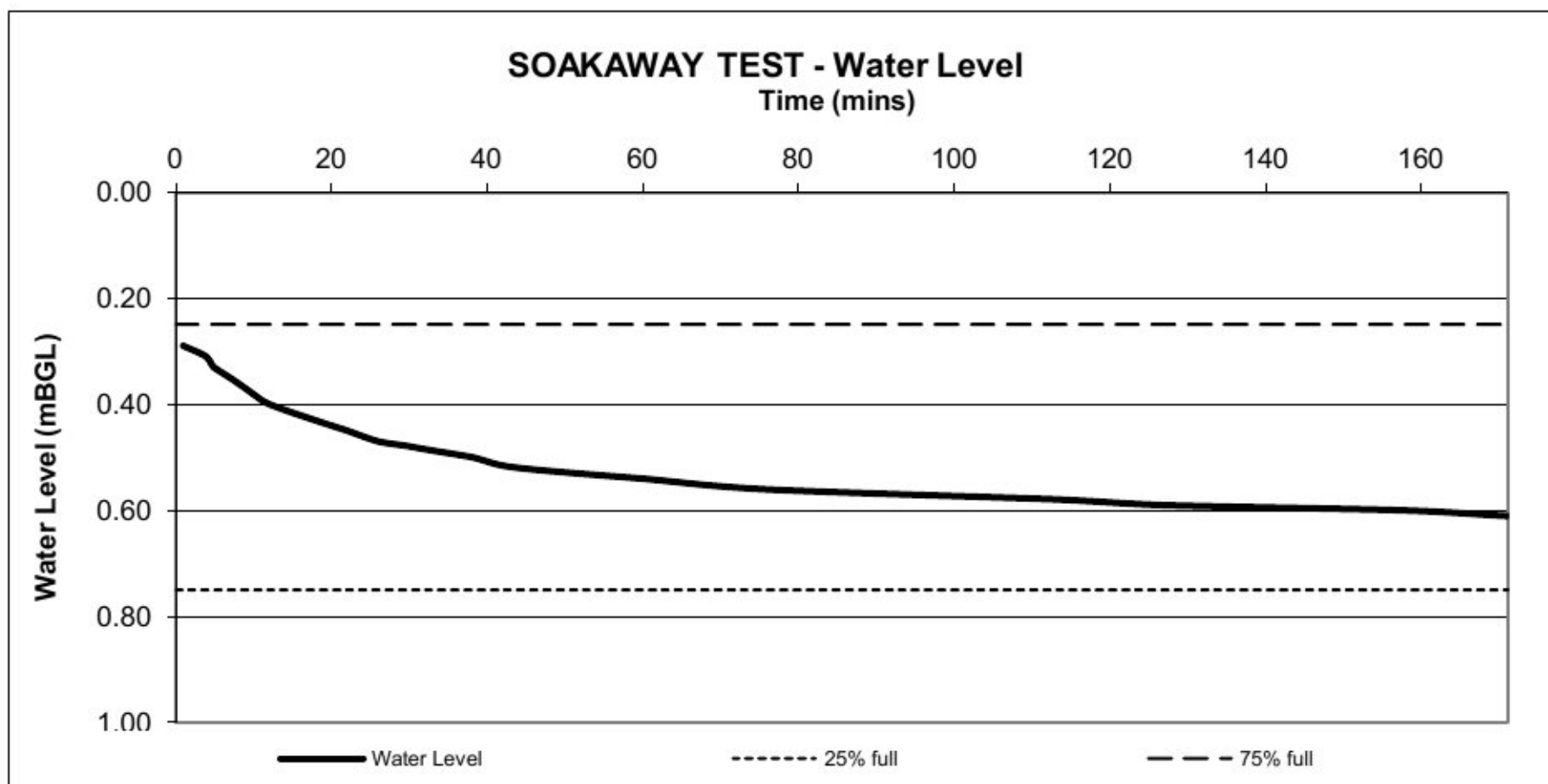
Vp75-25 = volume of outflow between 75% and 25% eff. depth

ap50 = mean surface area (pit sides to 50% eff. depth + base)

tp75-25 = time for outflow between 75% and 25% eff. depth

Time (mins)	Water Level (mBGL)	Water Level (mAOD)
1.00	0.29	83.10
4.00	0.31	83.08
5.00	0.33	83.06
8.00	0.36	83.03
10.00	0.38	83.01
12.00	0.40	82.99
22.00	0.45	82.94
26.00	0.47	82.92
30.00	0.48	82.91
38.00	0.50	82.89
44.00	0.52	82.87
60.00	0.54	82.85
76.00	0.56	82.83
113.00	0.58	82.81
127.00	0.59	82.80
157.00	0.60	82.79
171.00	0.61	82.76

INFILTRATION RATE (m/s) f = N/A



RESULTS OF SOAKAWAY TEST



TEST PIT NO.	SA02
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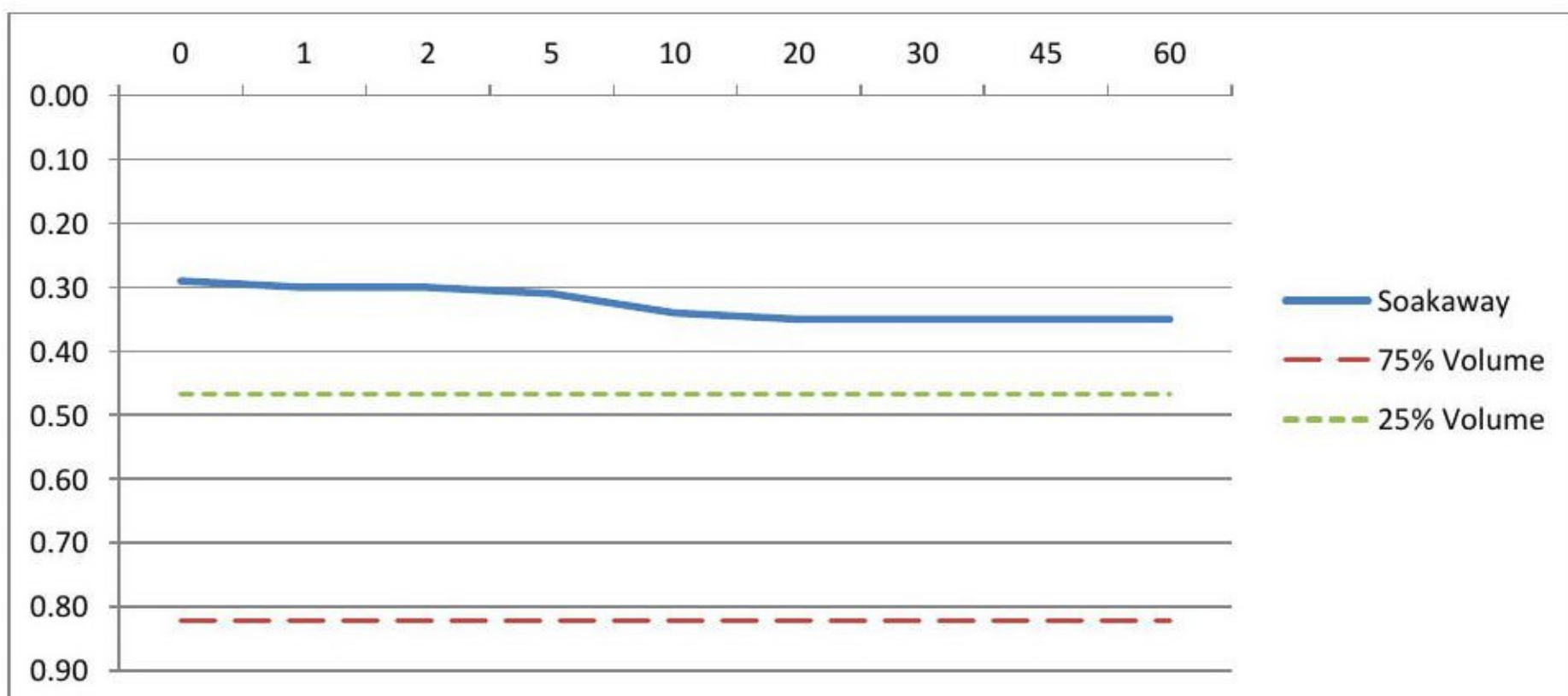
Contract Name: Lethamhill, Glasgow
 Contract No: P20-344
 Date: 19/03/2021
 Weather: Dry, sunny spells
 Time to fill pit: 45 Seconds
 Ground Level (mAOD) -
 Dimensions (m)
 Length (m): 2.00
 Width(m): 0.60
 Depth(m): 1.00

Time (mins)	Water Level (mBGL)
0.00	0.29
1.00	0.30
2.00	0.30
5.00	0.31
10.00	0.34
20.00	0.35
30.00	0.35
45.00	0.35
60.00	0.35

Using formula
$$f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$
 from BRE Digest 365

f = sil infiltration rate
 Vp75-25 = volume of outflow between 75% and 25% eff. depth
 ap50 = mean surface area (pit sides to 50% eff. depth + base)
 tp75-25 = time for outflow between 75% and 25% eff. depth

INFILTRATION RATE (m/s) F= N/A



Appendix 10
Geo-technical Results

LABORATORY TEST CERTIFICATE

Certificate No : 21/478 - 01
To : Victoria Spence
Client : Mason Evans Partnership
The Piazza
95 Morrison Street
Glasgow
G5 8BE

Dear Sirs,

LABORATORY TESTING OF ROCK

Introduction

We refer to samples taken from Lethamhill and delivered to our laboratory on 16th April 2021.

Material & Source

Sample Reference : See Report Plates
Sampled By : Client
Sampling Certificate : Not Supplied
Location : See Report Plates
Description : Rock Cores
Date Sampled : Not Supplied
Date Tested : 16th April 2021 Onwards
Source : P20/344 - Lethamhill

Test Results;

As Detailed On Page 2 to Page 5 inclusive

Comments;

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Remarks;

Approved for Issue



Date 21/04/2021



BOREHOLE		R20	SAMPLE FAILURE SHAPES
SAMPLE		C	
DEPTH	m	0.50	
SAMPLE DIAMETER	mm	67.51	
SAMPLE HEIGHT	mm	163.24	
TEST CONDITION		As Received	
RATE OF LOADING	kN/s	0.4	External
TEST DURATION	min.sec	6.10	
DATE OF TESTING		20/04/2021	Internal
LOAD FRAME USED		2000kN	
LOAD DIRECTION WITH RESPECT TO LITHOLOGY		Unknown	
FAILURE LOAD	kN	146.5	
UNCONFINED COMPRESSIVE STRENGTH	MPa	40.9	
WATER CONTENT (ISRM Suggested Methods)	%	2.0	
BULK DENSITY (ISRM Suggested Methods)	Mg/m ³	2.71	
DRY DENSITY (ISRM Suggested Methods)	Mg/m ³	2.65	

BOREHOLE			SAMPLE FAILURE SHAPES
SAMPLE			
DEPTH	m		
SAMPLE DIAMETER	mm		
SAMPLE HEIGHT	mm		
TEST CONDITION			
RATE OF LOADING	kN/s		External
TEST DURATION	min.sec		
DATE OF TESTING			Internal
LOAD FRAME USED			
LOAD DIRECTION WITH RESPECT TO LITHOLOGY			
FAILURE LOAD	kN		
UNCONFINED COMPRESSIVE STRENGTH	MPa		
WATER CONTENT (ISRM Suggested Methods)	%		
BULK DENSITY (ISRM Suggested Methods)	Mg/m ³		
DRY DENSITY (ISRM Suggested Methods)	Mg/m ³		

BOREHOLE			SAMPLE FAILURE SHAPES
SAMPLE			
DEPTH	m		
SAMPLE DIAMETER	mm		
SAMPLE HEIGHT	mm		
TEST CONDITION			
RATE OF LOADING	kN/s		External
TEST DURATION	min.sec		
DATE OF TESTING			Internal
LOAD FRAME USED			
LOAD DIRECTION WITH RESPECT TO LITHOLOGY			
FAILURE LOAD	kN		
UNCONFINED COMPRESSIVE STRENGTH	MPa		
WATER CONTENT (ISRM Suggested Methods)	%		
BULK DENSITY (ISRM Suggested Methods)	Mg/m ³		
DRY DENSITY (ISRM Suggested Methods)	Mg/m ³		

Tested in accordance with ASTM D7012 - 14

SUMMARY OF UNCONFINED COMPRESSIVE STRENGTH

BOREHOLE	SAMPLE	DEPTH (m)	MOISTURE CONTENT (%)	TYPE OF TEST * (see below)	CORE DIAMETER (mm)	EQUIVALENT DIAMETER (mm)	PLATEN SEPARATION (mm)	FAILURE LOAD (kN)	Is (MPa)	Is(50) (MPa)
R16	C	0.60-2.00	As Received	I	63.76	57.85	41.23	0.78	0.23	0.25
				I	75.51	49.97	25.97	2.47	0.99	0.99
				I	59.05	51.31	35.01	0.62	0.24	0.24

NOTE: N/M - Not measured

NOTE: A dash (-) signifies that scale did not register a reading

* I = IRREGULAR TEST
D = DIAMETRICAL TEST
A = AXIAL TEST

Mean Is(50) - Axial tests	-
Mean Is(50) - Diametrical tests	-
la(50)	-

Tested in accordance with ISRM (2007)

SUMMARY OF POINT LOAD TEST RESULTS

BOREHOLE	SAMPLE	DEPTH (m)	MOISTURE CONTENT (%)	TYPE OF TEST * (see below)	CORE DIAMETER (mm)	EQUIVALENT DIAMETER (mm)	PLATEN SEPARATION (mm)	FAILURE LOAD (kN)	Is (MPa)	Is(50) (MPa)
R18	C	0.30-1.60	As Received	I	62.25	51.14	32.99	7.67	2.93	2.96
				I	60.92	55.18	39.26	1.31	0.43	0.45
				I	52.11	48.27	35.12	1.72	0.74	0.73

NOTE: N/M - Not measured

NOTE: A dash (-) signifies that scale did not register a reading

* I = IRREGULAR TEST
D = DIAMETRICAL TEST
A = AXIAL TEST

Mean Is(50) - Axial tests	-
Mean Is(50) - Diametrical tests	-
la(50)	-

Tested in accordance with ISRM (2007)

SUMMARY OF POINT LOAD TEST RESULTS

BOREHOLE	SAMPLE	DEPTH (m)	MOISTURE CONTENT (%)	TYPE OF TEST * (see below)	CORE DIAMETER (mm)	EQUIVALENT DIAMETER (mm)	PLATEN SEPARATION (mm)	FAILURE LOAD (kN)	Is (MPa)	Is(50) (MPa)
R20	C	0.40-1.50	As Received	I	49.10	51.41	42.28	4.00	1.51	1.53
				I	35.91	45.41	45.10	2.11	1.02	0.98
				I	42.05	51.82	50.15	3.07	1.14	1.16

NOTE: N/M - Not measured

NOTE: A dash (-) signifies that scale did not register a reading

* I = IRREGULAR TEST
D = DIAMETRICAL TEST
A = AXIAL TEST

Mean Is(50) - Axial tests	-
Mean Is(50) - Diametrical tests	-
la(50)	-

Tested in accordance with ISRM (2007)

SUMMARY OF POINT LOAD TEST RESULTS