DATRYS

TABOR HILL, COEDPOETH

Geotechnical Design Report, Rev A
June 2018

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Geotechnical Design Report, Rev A
June 2018

Prepared for::	Grwp Cynefin 54 Stryd Y Dyffryn, Dinbych, LL16 3BW	
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Date:	June 2018	
Job No:	15101	

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1. INTRODUCTION

The proposed development entails the construction of residential houses on a plot of land that previously served as a school outbuilding located in the historic mining town Coedpoeth at grid reference SJ 28399 50995. It is envisaged that the development will comprise of three houses each being 2 storeys and of traditional load bearing masonry and timber construction. A private road will be created to provide access to the properties and private car parking and will connected to Tabor Hill.

This report discusses the findings of the second stage in the site investigation process which was the intrusive investigation with laboratory testing for contaminants. The investigation and this report have been prepared in accordance with the recommendations of the Desk Study and Site Walkover report.

The report details and discusses the results of these investigations and recommends the most appropriate foundations to use for the structures. The final report will also utilises the findings of the investigation within a 'CLEA' conceptual model in order to quantify the risk posed by the ground conditions.

Reference should also be made to the Desk Study and the factual Geotechnical Investigation Report.

2. SITE INVESTIGATION

The intrusive site investigation was carried out on the 24th of February 2016 and comprised of the following:

- 4x trial pits
- 2 x soakaway tests to BRE 365
- Laboratory testing of Soils for geotechnical properties and chemical composition

The intrusive site investigation was designed based on the findings of the Desk Study and was in particular aimed at gathering information regarding the following:

- Locating the different soil strata and classification
- Soils strength for foundation design
- The permeability of the ground and its suitability for the use of soakaways to dispose of surface water
- Potential contaminants including Asbestos

3. GROUND CONDITIONS

The site investigation revealed the following ground conditions:

Made Ground	Encountered only in two trial pit and was found to a depth of 0.5m. Generally consisted of a loose black material (clay and gravels with some sand) and is assumed to be material left on site from the previous building being demolished. There were no visual, olfactory signs of contamination within the fill.
Glacial Till	All Trial pits encountered a strata of clay. The encountered strata was a firm CLAY that varied in colour from orange to brown depending on location. In all trial pits the clay matrix showed a significant amount of sand at shallow depths which quantity and size increased with depth. The secondary material became larger varying from well graded sands to gravel and cobbles. The Clay strata was proven to have a termination of between 0.6m-1.0m. The third strata to be encountered varied as TP2-TP4 encountered a medium dense silty sandy GRAVEL with cobbles. The cobbles quantity increased with depth suggesting that fractured rock was near towards the end of excavations. TP1 encountered a medium dense very silty slightly gravely SAND, fractured rock was exposed at the end of excavation at 2.1m.
Rock	The rock surface exposed and excavated implied the ground comprised of fractured rock most likely sandstone in origin. The sandstone is present underneath the gravel/sand stratums and was present in the form of cobbles until a smooth fractured rock surface was exposed.

The Desk Study revealed that the site had historically only been used as an outbuilding for an educational facility and the initial conceptual model demonstrated that there was a low risk of contamination being present. As such, it was decided that samples at shallow depths (above the shallow bedrock) would be taken for testing in order to quantify the findings of the conceptual model.

The trial pit locations were chosen evenly around the footprint of the proposed building while maintain sufficient distance from the adjacent buildings/structures to ensure their stability during the intrusive investigation. Contamination testing was undertaken in the laboratory using samples taken from trial pits 1-3 at depths between 0.9-1.4mbgl. These locations were chosen as the results would provide sufficient information to deduce if and where the site is contaminated, if any samples where above the trigger levels further sampling would be undertaken within its vicinity to determine its full extent. Asbestos testing was carried out where the former building was demolished.

4. DISCUSSION

Foundation assessment

The ground investigation revealed that the site showed a uniform sequence of strata. The site mainly comprised of surface fill comprising either of blacktop or/and black loose fill with a varying depth of 100mm-500mm followed by firm CLAY that is present until sand or gravels (assumed fractured bedrock). The trail pits where located and excavated near to the proposed footprint and was limited onsite as the nearby buildings (nursery and school) were still active and proposed a potential health and safety risk. Near the existing Health Centre the trial pits exhibited signs of fill over the natural strata. The Clay varied from a firm yellow clay to a firm orange clay at varying depths across the site (0.1m – 1.0m below ground level).

The next strata comprised mainly of sand and gravel. The two measured stratums after the clay strata were wither a medium dense very silty slightly gravely SAND or a medium dense silty sandy GRAVEL with cobbles. The gravel matrix was present until the termination of the trial pit (2.0m) and also increase in cobbles quantity with depth. The sand matrix had a termination at 2.1m when rock was encountered.

The trial pit logs show that rock is present at 2.1m in TP1 and also the increase in angular cobbles would suggest that rock was near to the termination depth in the remain three trial pits (TP2-TP4).

All trial pits had no sign of water which suggest that the site has a low water table. All trial pits had stable sides with no signs of collapse, this would indicate that there is enough silts in all stratum to provide stability during excavations.

The medium dense sand/gravel indicate that a safe bearing capacity of 100 kN/m^2 may be assumed where found at a depth of at least 1.00m.

Permeability

Permeability tests were carried out in 2nr trial pits in accordance with BRE Digest 365. The Excavated pits where stable and no water was present showing that the water table is below 2.1m. The results indicated that the site is suitable for soakaways due to the porous sand/gravel present. If soakaways are not suitable for site geometry then connection to the combination sewer in tabor hill could be an option with DCWW approval.

Contaminants

During the site investigation there were no signs (visual or olfactory) of contamination. Therefore contamination samples were taken from vary depths and locations.

The contamination results were carried out by the external company DETS which holds MCERTS accreditation. The results from the CLEA contamination suite where compared and plotted against the SIRIUS GAC published trigger levels and Soil Guideline Values (SGV's). The comparison revealed that the trigger levels for residential use are below the chemical quantities found on site and thus there is no risk of contamination within the site.

As the results indicated that the strata tested were below the trigger values for contamination for residential use and there were no signs of contamination during the undertaking of the site investigation it is concluded that the site has no sources of contamination and that no external contamination has a pathway to the site. Therefore the site is not a risk of contamination and no remediation works are required. It is deemed that a site specific risk assessment is not required.

Gas

The Desk study revealed that the land is in a Radon affected area as between 3%-5% of properties are above the action level. Therefore basic radon protection methods are required.

The mining report indicates that the site is not affected from gas's linked with the historical mine and quarry workings near the site.

6. RECOMMENDATIONS

1. Due to the nature of the fractured rock the percolation results reflected that the site is suitable for the use of soakaways, however there is a combined sewer running through Tabor Hill that can be connected too with DCWW permission.

2. All material arising from the site should be disposed of to a suitably licenced tip or reused on site.

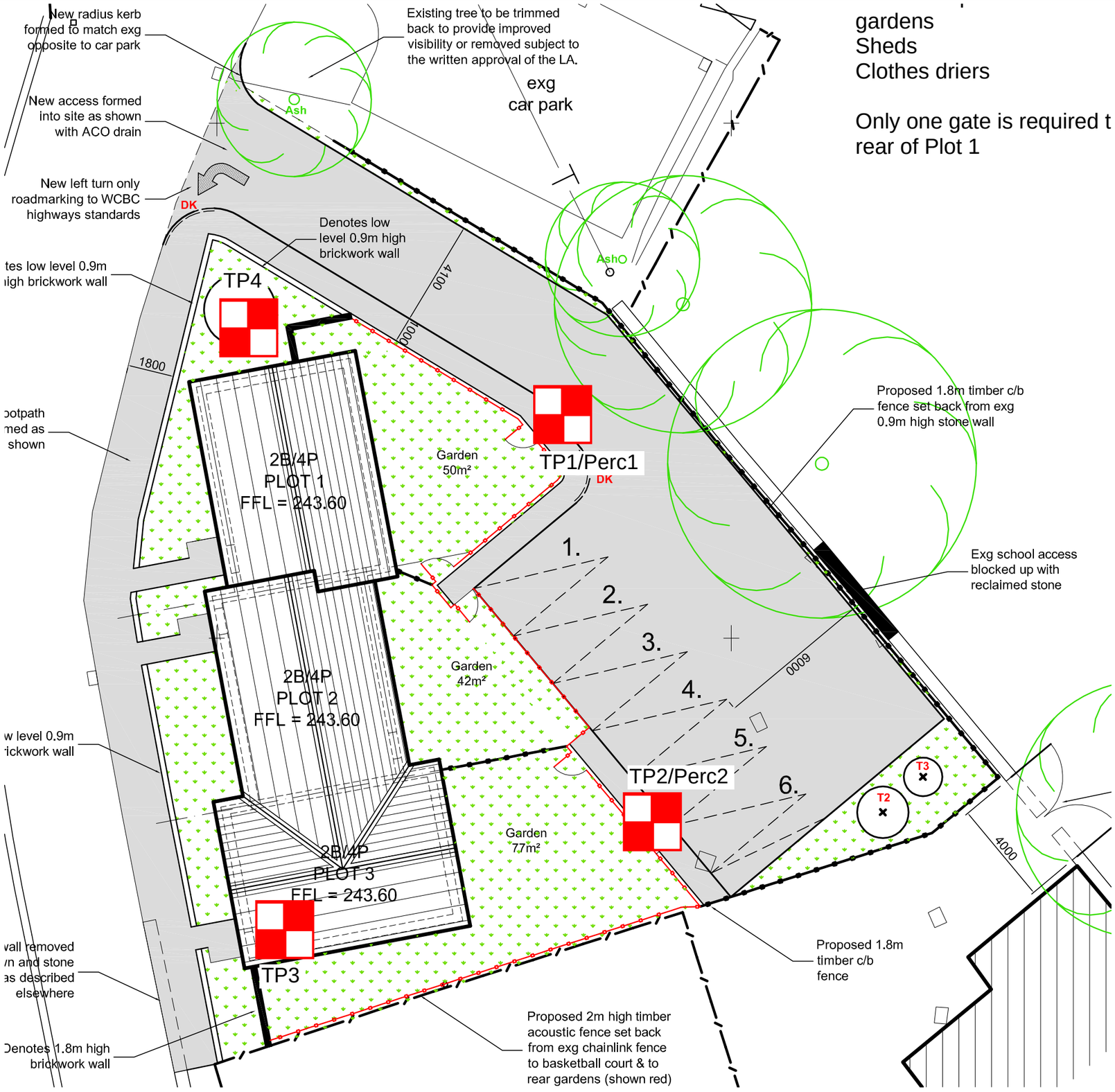
3. The use of a strip foundation or trench fill will be suitable when founded on the medium dense sand/gravel. A safe bearing capacity of 100 kN/m^2 may be assumed where found at a depth of at least 1.00m.

4. The design of the foundations of the slab (when founded on the clay strata) should consider the shrinkage of the clay and any impact from proposed trees or hedgerow.

5. The site is located in a Radon affected area as between 3%-5% of properties are above the action level. Therefore basic radon protection methods are required.

APPENDIX A

SITE INVESTIGATION PLAN



gardens
Sheds
Clothes driers

Only one gate is required t
rear of Plot 1

This drawing is Copyright ©

TITLE	PROJECT				
Site Investigation Plan	Tabor Hill, Coedpoeth	DATRYS MODELU DYLUNIO PEIRIANNEG MODEL DESIGN ENGINEERING	Job No. 15101	DATE 22.02.15	SCALE NOT TO SCALE
			ACAD Ref. -	CHECKED	PASSED
			DRAWN JA	DRG No.	REV

APPENDIX B

CELTEST RESULTS

celtest
INDEPENDENT MATERIALS TESTING I DIAMOND DRILLING & SAWING

Datrys
3 - 5 Church Street

Caernarfon
Gwynedd
LL55 1SW

Date: 31 March 2016
Test Report Ref: STR 456067

Contract: Tabor Hill

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Particle Size Distribution (PSD) of a soil sample- washing and sieving method in accordance with **BS EN 933-1: 2012.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S57374**
Client Ref. No:	**TP1@1.4**
Date and Time of Sampling:	**Unknown**
Date of Receipt at Lab:	**08/03/2016**
Date of Start of Test:	**22/03/2016**
Sampling Location:	**Unknown**
Name of Source:	**Unknown**
Method of Sampling:	**Unknown**
Sampled By:	**Client**
Material Description:	**Stoney Soily Clay**
Target Specification:	**N/A**

RESULTS:

SEE ATTACHED

Comments
None

Certificate Prepared by:-
Neil Hughes
Job Coordinator

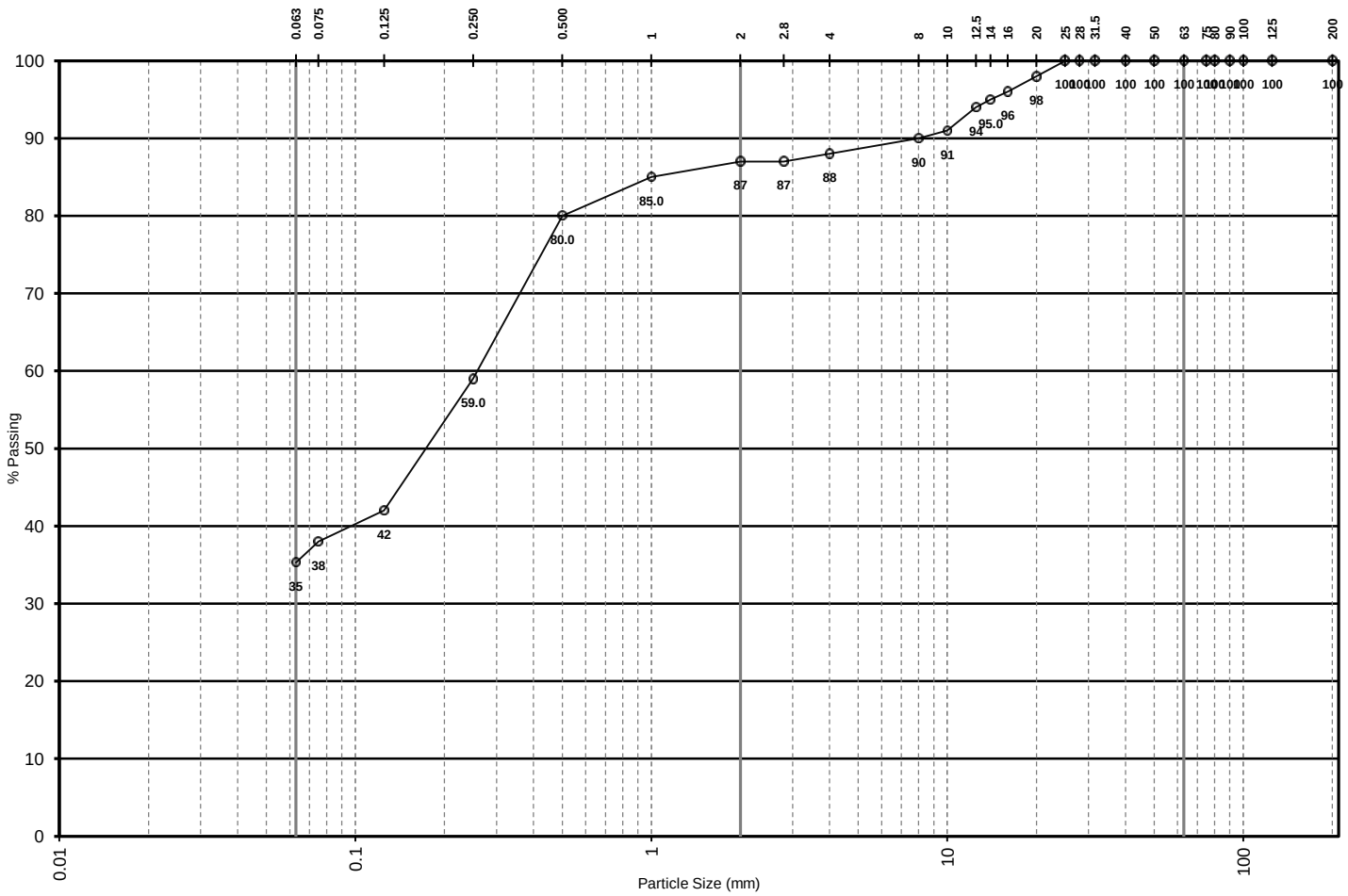
Approved by: -
Eric Goulden
Technical Manager

Test Report Ref: STR 456067: Page 2 of 2

MATERIAL DESCRIPTION

Stoney Soily Clay

Sieve Size mm	% Passing	Sieve Size mm	% Passing
200	100	14	95
125	100	12.5	94
100	100	10.0	91
90	100	8.0	90
80	100	4.0	88
75	100	2.8	87
63	100	2.0	87
50	100	1.0	85
40	100	0.500	80
31.5	100	0.250	59
28	100	0.125	42
25	100	0.075	38
20	98	0.063	35.3
16	96		



celtest
INDEPENDENT MATERIALS TESTING I DIAMOND DRILLING & SAWING

Datrys
3 - 5 Church Street

Caernarfon
Gwynedd
LL55 1SW

Contract: Tabor Hill

Date: 31 March 2016
Test Report Ref: STR 456072

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Plastic Limit, Liquid Limit, and Plasticity Index of sample in accordance with **BS 1377:Part 2:1990 Clause 5.3, Clause 4.3, and Clause 5.4.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S57374**
Client Ref. :	**TP4@0.9**
Date and Time of Sampling:	**Unknown**
Date of Receipt at Lab:	**08/03/2016**
Date of Start of Test:	**30/03/2016**
Sampling Location:	**Unknown**
Name of Source:	**Unknown**
Method of Sampling:	**Unknown**
Sampled By:	**Client**
Soil Description:	**Stoney Sandy Soily Clay**
Target Specification:	**N/A**

RESULTS:

History of sample:	**:**	**After wet sieving**
% Materials passing 425µm	**=**	**35**
Plastic Limit	**=**	**Non Plastic**
Liquid Limit	**=**	**N/A**
Plasticity Index	**=**	**N/A**

Comments
None

Certificate Prepared by:-
Neil Hughes
Job Coordinator

Approved by:
Eric Goulden
Technical Manager

celtest
INDEPENDENT MATERIALS TESTING I DIAMOND DRILLING & SAWING

Datrys
3 - 5 Church Street

Caernarfon
Gwynedd
LL55 1SW

Contract: Tabor Hill

Date: 31 March 2016
Test Report Ref: STR 456071

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Plastic Limit, Liquid Limit, and Plasticity Index of sample in accordance with **BS 1377:Part 2:1990 Clause 5.3, Clause 4.3, and Clause 5.4.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S57374**
Client Ref. :	**TP2@0.9**
Date and Time of Sampling:	**Unknown**
Date of Receipt at Lab:	**08/03/2016**
Date of Start of Test:	**30/03/2016**
Sampling Location:	**Unknown**
Name of Source:	**Unknown**
Method of Sampling:	**Unknown**
Sampled By:	**Client**
Soil Description:	**Stoney Brown Clay**
Target Specification:	**N/A**

RESULTS:

History of sample:	**:**	**After wet sieving**
% Materials passing 425µm	**=**	**27**
Plastic Limit	**=**	**17**
Liquid Limit	**=**	**27**
Plasticity Index	**=**	**10**

Comments
None

Certificate Prepared by:-
Neil Hughes
Job Coordinator

Approved by:
Eric Goulden
Technical Manager

celtest
INDEPENDENT MATERIALS TESTING I DIAMOND DRILLING & SAWING

Datrys
3 - 5 Church Street

Caernarfon
Gwynedd
LL55 1SW

Date: 31 March 2016
Test Report Ref: STR 456069

Contract: Tabor Hill

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Particle Size Distribution (PSD) of a soil sample- washing and sieving method in accordance with **BS EN 933-1: 2012.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S57374**
Client Ref. No:	**TP4@0.9**
Date and Time of Sampling:	**Unknown**
Date of Receipt at Lab:	**08/03/2016**
Date of Start of Test:	**22/03/2016**
Sampling Location:	**Unknown**
Name of Source:	**Unknown**
Method of Sampling:	**Unknown**
Sampled By:	**Client**
Material Description:	**Stoney Sandy Soily Clay**
Target Specification:	**N/A**

RESULTS:

SEE ATTACHED

Comments
None

Certificate Prepared by:-
Neil Hughes
Job Coordinator

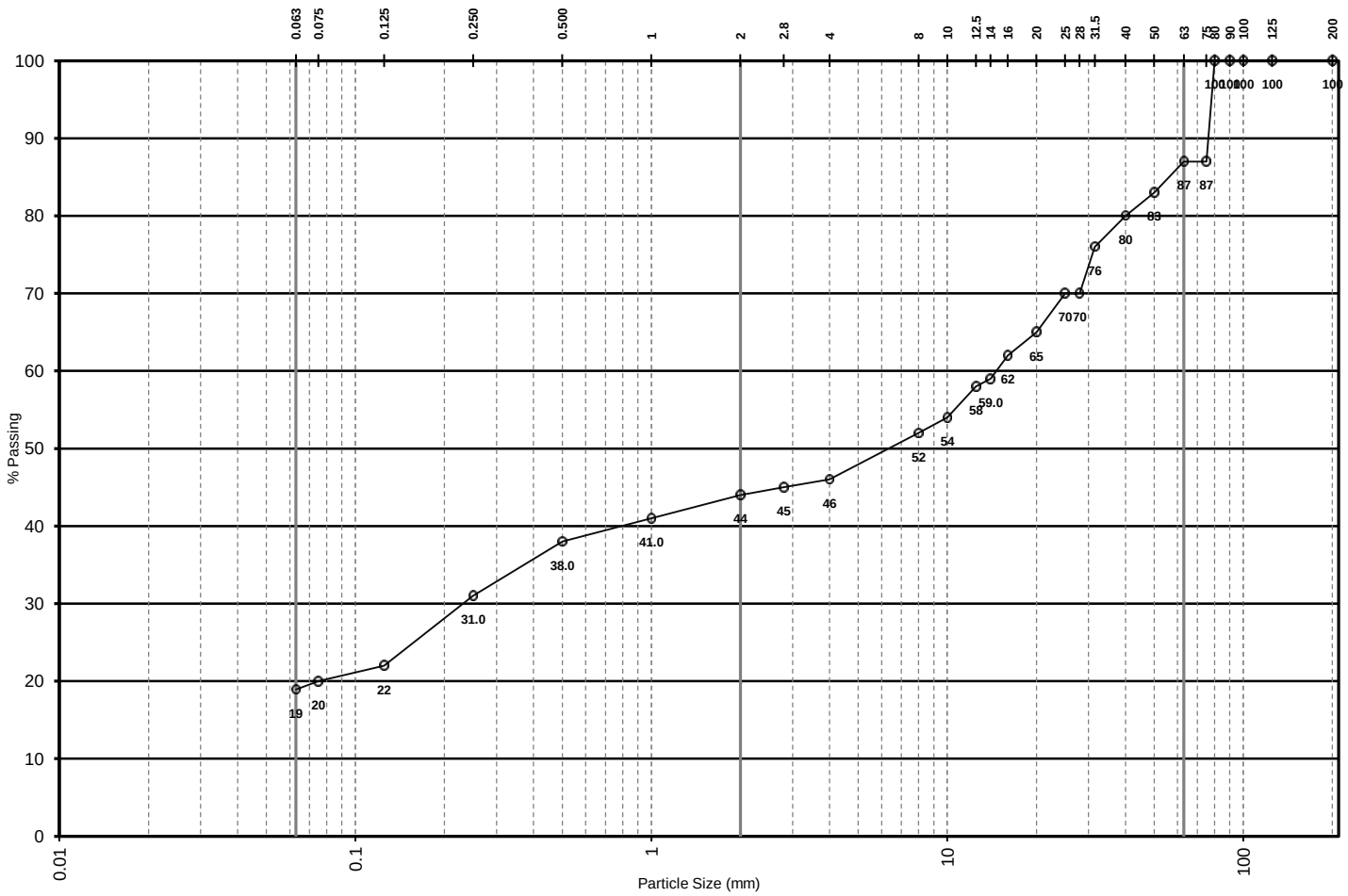
Approved by: -
Eric Goulden
Technical Manager

Test Report Ref: STR 456069: Page 2 of 2

MATERIAL DESCRIPTION

Stoney Sandy Soily Clay

Sieve Size mm	% Passing	Sieve Size mm	% Passing
200	100	14	59
125	100	12.5	58
100	100	10.0	54
90	100	8.0	52
80	100	4.0	46
75	87	2.8	45
63	87	2.0	44
50	83	1.0	41
40	80	0.500	38
31.5	76	0.250	31
28	70	0.125	22
25	70	0.075	20
20	65	0.063	18.9
16	62		



celtest
INDEPENDENT MATERIALS TESTING I DIAMOND DRILLING & SAWING

Datrys
3 - 5 Church Street

Caernarfon
Gwynedd
LL55 1SW

Date: 31 March 2016
Test Report Ref: STR 456068

Contract: Tabor Hill

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Particle Size Distribution (PSD) of a soil sample- washing and sieving method in accordance with **BS EN 933-1: 2012.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S57374**
Client Ref. No:	**TP2@0.9**
Date and Time of Sampling:	**Unknown**
Date of Receipt at Lab:	**08/03/2016**
Date of Start of Test:	**22/03/2016**
Sampling Location:	**Unknown**
Name of Source:	**Unknown**
Method of Sampling:	**Unknown**
Sampled By:	**Client**
Material Description:	**Stoney Brown Clay**
Target Specification:	**N/A**

RESULTS:

SEE ATTACHED

Comments
None

Certificate Prepared by:-
Neil Hughes
Job Coordinator

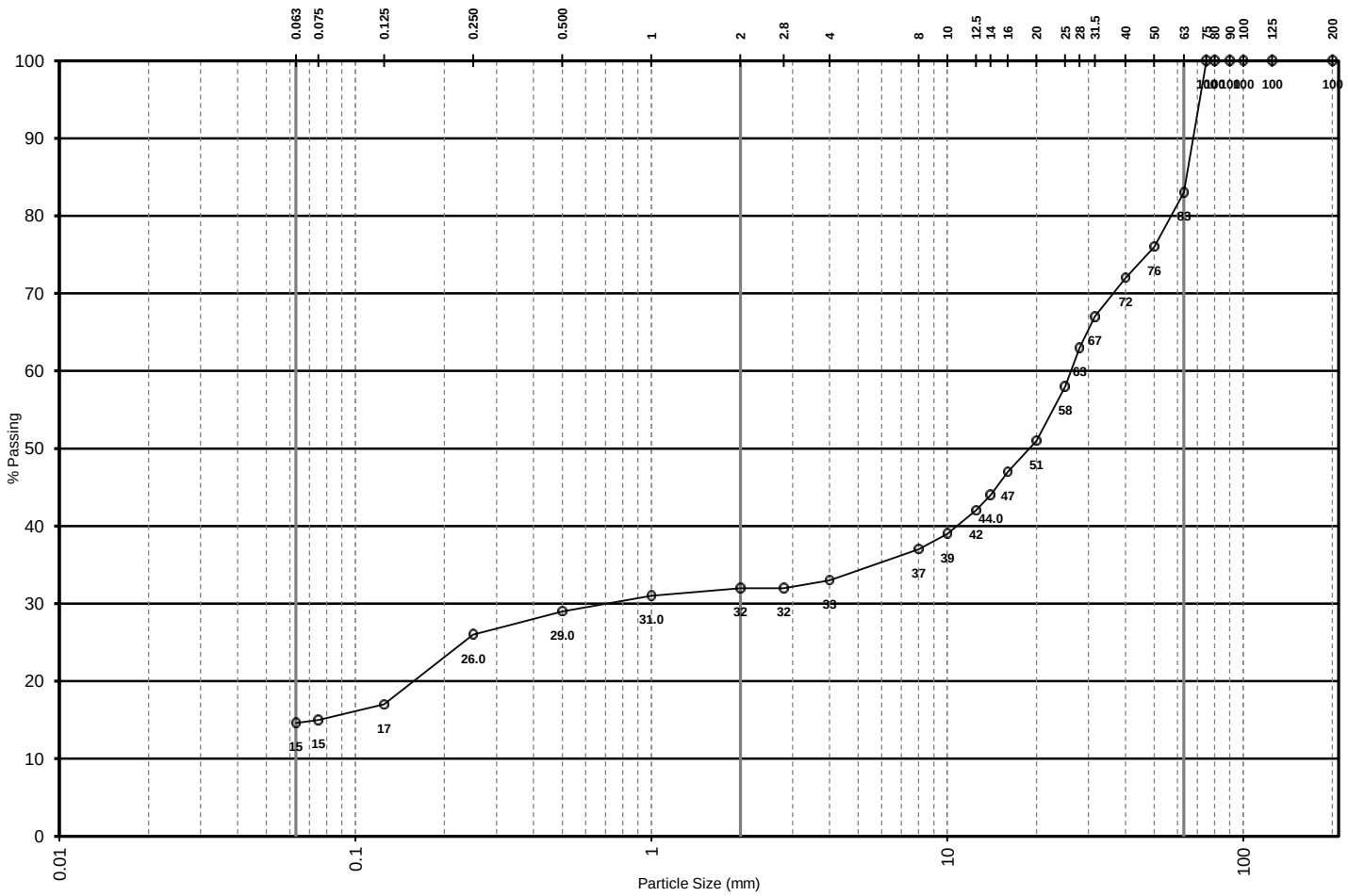
Approved by: -
Eric Goulden
Technical Manager

Test Report Ref: STR 456068: Page 2 of 2

MATERIAL DESCRIPTION

Stoney Brown Clay

Sieve Size mm	% Passing	Sieve Size mm	% Passing
200	100	14	44
125	100	12.5	42
100	100	10.0	39
90	100	8.0	37
80	100	4.0	33
75	100	2.8	32
63	83	2.0	32
50	76	1.0	31
40	72	0.500	29
31.5	67	0.250	26
28	63	0.125	17
25	58	0.075	15
20	51	0.063	14.6
16	47		



APPENDIX C

DETS CONTAMINATION RESULTS

Certificate of Analysis

Certificate Number 16-60631

17-Mar-16

Client	Datrys Consulting Engineers Limited Yr Aelwyd 3-5 Church Street Caernarfon Gwynedd LL55 1SW
Our Reference	16-60631
Client Reference	15101-15103
Order No	15101/JA
Contract Title	(not supplied)
Description	6 Soil samples.
Date Received	10-Mar-16
Date Started	10-Mar-16
Date Completed	17-Mar-16
Test Procedures	Identified by prefix DETSn (details on request).
Notes	Opinions and interpretations are outside the scope of UKAS 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. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

2139

Summary of Chemical Analysis
Soil Samples

Our Ref 16-60631
Client Ref 15101-15103
Contract Title

			Lab No	956012	956013	956014
			Sample ID	Gwalia - TP4	Gwalia - TP1	Coedpoeth - TP1
			Depth	1.00	0.50	1.40
			Other ID			
			Sample Type	SOIL	SOIL	SOIL
			Sampling Date	24/02/16	24/02/16	24/02/16
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Metals						
Arsenic	DETSC 2301#	0.2	mg/kg	23	26	6.2
Barium	DETSC 2301#	1.5	mg/kg	300	240	59
Beryllium	DETSC 2301#	0.2	mg/kg	1.1	0.7	0.6
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	1.9	0.5	0.7
Cadmium	DETSC 2301#	0.1	mg/kg	1.8	0.6	0.4
Chromium	DETSC 2301#	0.15	mg/kg	26	17	15
Copper	DETSC 2301#	0.2	mg/kg	500	28	29
Lead	DETSC 2301#	0.3	mg/kg	130	61	54
Mercury	DETSC 2325#	0.05	mg/kg	0.11	0.13	< 0.05
Nickel	DETSC 2301#	1	mg/kg	76	20	21
Selenium	DETSC 2301#	0.5	mg/kg	0.7	< 0.5	< 0.5
Vanadium	DETSC 2301	0.8	mg/kg	29	19	15
Zinc	DETSC 2301#	1	mg/kg	400	93	71
Inorganics						
pH	DETSC 2008#			9.8	7.6	8.1
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.2	0.4	< 0.1
Thiocyanate	DETSC 2130#	0.6	mg/kg	1.9	2.3	< 0.6
Organic matter	DETSC 2002#	0.1	%	6.9	5.7	0.6
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	440	1000	93
Sulphide	DETSC 2024#	10	mg/kg	< 10	< 10	< 10
Sulphur as S, Total	DETSC 2320	0.01	%	0.16	0.15	0.01

Key: # -MCERTS (accreditation only implied if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 16-60631
Client Ref 15101-15103
Contract Title

			Lab No	956012	956013	956014
			Sample ID	Gwalia - TP4	Gwalia - TP1	Coedpoeth - TP1
			Depth	1.00	0.50	1.40
			Other ID			
			Sample Type	SOIL	SOIL	SOIL
			Sampling Date	24/02/16	24/02/16	24/02/16
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
PAHs						
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	0.4	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	0.5	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	4.1	0.3	0.3
Anthracene	DETSC 3301	0.1	mg/kg	1.1	0.2	0.2
Fluoranthene	DETSC 3301	0.1	mg/kg	6.0	0.6	0.9
Pyrene	DETSC 3301	0.1	mg/kg	5.2	0.6	0.9
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	2.6	0.3	0.5
Chrysene	DETSC 3301	0.1	mg/kg	2.8	0.4	0.6
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	2.1	0.6	0.5
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	1.4	0.3	0.4
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	2.7	0.4	0.7
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	1.8	< 0.1	0.3
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	0.3	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	1.6	< 0.1	0.3
PAH Total	DETSC 3301	1.6	mg/kg	33	3.6	5.5
Phenols						
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3

Key: # -MCERTS (accreditation only implied if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 16-60631
Client Ref 15101-15103
Contract Title

			Lab No	956015	956016	956017
			Sample ID	Coedpoeth - TP2	Coedpoeth - TP3	Parsonage - TP1
			Depth	0.90	0.90	1.80
			Other ID			
			Sample Type	SOIL	SOIL	SOIL
			Sampling Date	24/02/16	24/02/16	24/02/16
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Metals						
Arsenic	DETSC 2301#	0.2	mg/kg	9.0	7.4	6.4
Barium	DETSC 2301#	1.5	mg/kg	99	55	56
Beryllium	DETSC 2301#	0.2	mg/kg	0.6	0.6	0.5
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	1.0	1.0	1.1
Cadmium	DETSC 2301#	0.1	mg/kg	0.4	0.3	0.4
Chromium	DETSC 2301#	0.15	mg/kg	16	17	16
Copper	DETSC 2301#	0.2	mg/kg	14	15	11
Lead	DETSC 2301#	0.3	mg/kg	57	19	19
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Nickel	DETSC 2301#	1	mg/kg	19	16	18
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Vanadium	DETSC 2301	0.8	mg/kg	16	21	16
Zinc	DETSC 2301#	1	mg/kg	72	44	39
Inorganics						
pH	DETSC 2008#			7.8	7.3	7.8
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Thiocyanate	DETSC 2130#	0.6	mg/kg	< 0.6	< 0.6	1.1
Organic matter	DETSC 2002#	0.1	%	1.2	0.3	0.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	150	24	29
Sulphide	DETSC 2024#	10	mg/kg	< 10	16	20
Sulphur as S, Total	DETSC 2320	0.01	%	0.03	< 0.01	< 0.01

Key: # -MCERTS (accreditation only implied if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 16-60631
Client Ref 15101-15103
Contract Title

			Lab No	956015	956016	956017
			Sample ID	Coedpoeth - TP2	Coedpoeth - TP3	Parsonage - TP1
			Depth	0.90	0.90	1.80
			Other ID			
			Sample Type	SOIL	SOIL	SOIL
			Sampling Date	24/02/16	24/02/16	24/02/16
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
PAHs						
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	0.3	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.9	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	0.9	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	0.4	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	0.4	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	0.6	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	0.3	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	0.4	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	4.4	< 1.6	< 1.6
Phenols						
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3

Key: # -MCERTS (accreditation only implied if report carries the MCERTS logo). n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 16-60631
Client Ref 15101-15103
Contract Title

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
956012	Gwalia - TP4 1.00	SOIL	NAD	none	Colin Patrick
956015	Coedpoeth - TP2 0.90	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 16-60631
Client Ref 15101-15103
Contract

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
956012	Gwalia - TP4 1.00 SOIL	24/02/16	GJ 250ml, PT 1L x2	Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days)	
956013	Gwalia - TP1 0.50 SOIL	24/02/16	GJ 250ml, PT 1L	Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days)	
956014	Coedpoeth - TP1 1.40 SOIL	24/02/16	GJ 250ml, PT 1L	Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days)	
956015	Coedpoeth - TP2 0.90 SOIL	24/02/16	GJ 250ml, PT 1L x2	Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days)	
956016	Coedpoeth - TP3 0.90 SOIL	24/02/16	GJ 250ml, PT 1L	Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days)	
956017	Parsonage - TP1 1.80 SOIL	24/02/16	GJ 250ml, PT 1L	Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days)	

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 and/or inappropriate containers 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

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