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TM



GROUND INVESTIGATION NEWTON STEWART FLOOD PROTECTION SCHEME



Prepared By	F Murray	Assistant Contracts Manager	Date	14 th August 2018
Approved By	C Rodger	Technical Manager	Date	14 th August 2018
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GEOTECHNICAL • SITE INVESTIGATION • WELL DRILLING

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**GROUND INVESTIGATION
NEWTON STEWART FLOOD PROTECTION
SCHEME**

**Ground Investigation Fieldwork
& Laboratory Testing**

& Report No:- S/NSFPS/0418/Fact.

Project:-

**GROUND INVESTIGATION
NEWTON STEWART FLOOD PROTECTION SCHEME**

**Ground Investigation Fieldwork
& Laboratory Testing**

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1:0 INTRODUCTION

Messrs Holequest Limited were commissioned by SWECO to undertake a ground investigation, for the proposed Newton Stewart Flood Protection Scheme.

1:1 The ground investigation works consisted of excavation of 16No. Boreholes by Light Cable Percussion, Rotary Open and Core Drilling techniques, 35No. machine excavated Trial Pits, and 16No. Hand Excavated Trial Pits all at predetermined locations to instructed depths. The various strata penetrated were recorded and sampled, and laboratory testing was undertaken as required.

The results of the investigation are presented in the form of a factual report, covering the Ground Investigation Fieldwork and Laboratory Testing.

The terminology adopted (Code of practice for site investigations B.S. 5930: 1999, BSEN ISO 14688 and BSEN ISO 14689) in the preparation of the descriptions for the soils and rocks encountered during this investigation is detailed in Appendix I of this report.

1:2 The site works were undertaken during the period 13th to 23rd December 2017 and 15th January to 23rd February 2018.

1:3 The weather during the site works was principally overcast with occasional to many heavy showers of rain, periods of frost through to dry and with rare sunny periods. However, was in general consistent for the time of year.

2:0 THE SITE LOCATION

The works are located either immediately adjacent to, or in close proximity to the River Cree, which flows from north to south through the town.

Drawings detailing the works location, split as per each design Option, are presented in Appendix II, these drawings were prepared by SWECO based on the as drilled survey provided by Holequest Ltd.

Generally, the works areas can be described as follows:

Option 6: The works are located within public soft landscaping / managed grassed areas and streetscapes within Newton Stewart, and on narrow access paths (core paths) along the banks of the River Cree.

Option 7: The works are located in farmland and narrow core paths along the banks of the River Cree, together with works in proximity to the abutments of the A75 bridge.

Option 24: The works are located on farmland adjacent to River Cree.

Sparling Bridge GI: GI located on public landscaping, narrow access paths and farmland adjacent to the River Cree.

The centre of the site is located at nominally Ordnance Survey National Grid Reference NGR: NX 41234 65240.

3:0 SITE WORKS & IN-SITU TESTING

Light Cable Percussion Boring

3:1 The sinking of Boreholes BH1-OP6, BH2-OP6, BH2A-OP6, BH3-OP6 and BH14-OP6 were undertaken by a Dando 2000 Light Cable Percussion boring rig equipped with 200mm diameter boring tools and casing as appropriate. Due to the nature of the ground conditions encountered no "Undisturbed" samples could be obtained. However, environmental samples, bulk disturbed samples and in-situ standard penetration tests undertaken where appropriate.

Rotary Boreholes

3:2 Rotary drilling was undertaken at all Boreholes including TP9-OP6, changed from a Trial Pit to a Borehole on SWECO instruction, using a tracked Comacchio GEO205 or Massenza MI5 hydraulic top drive rotary drilling rig as noted on the relevant borehole records.

Rotary casing was sunk where appropriate using the Symetrix simultaneous casing systems and down-the-hole hammer. As the name implies, the system is such that the casing follows immediately behind the drill bit, thus keeping the borehole stable in the overburden. Upon reaching the required depth the drill string is reversed, allowing the concentric part of the drill bit to be released and withdrawn from the lined hole leaving the casing in place, and where appropriate U80 or U100 Samples, Standard Penetration Tests, Rotary Core Drilling and / or Rotary Open hole Drilling was undertaken to the full depth of the Boreholes as determined by SWECO.

It will be appreciated that accurate sampling of the overburden and solid geology is not possible with air flushed full hole rotary drilling methods specified, and therefore strata descriptions may not be in precise accord with BSENISO 14688/14689.

Trial Pits

3:3 The Trial Pits were excavated using a wheeled backhoe excavator or a 5t rubber tracked excavator as allowed by access restrictions on site. The Trial Pits were logged, sampled, and photographed by an Engineer from Holequest Ltd. HPSW2, TT1 East and TT1 West were excavated to identify utilities locations and were not logged for geotechnical purposes.

It should be noted that the strengths / relative densities reported on the trial pit records and the descriptions contained therein are based on visual assessment, trial pit stability, ease of excavation and where appropriate in-situ test results.

In-situ Testing

3:4 In-situ testing was undertaken in the boreholes and comprised of the following:-

- Standard Penetration Test
- Constant Flow Permeability Test in Ground Water Monitoring Installations

3:5 The records of the site works and in-situ testing are summarised in Appendix III (SPT) and Appendix V (Permeability tests).

Ground Water

3:6 Ground water observations during the drilling of the boreholes and excavation of the trial pits are presented on the individual logs.

Groundwater monitoring wells comprising 50mm ID HDPE geo-wrapped casing and screen were installed in the Boreholes as directed by SWECO. The installation details are summarised on the appropriate borehole record.

Water levels taken during the fieldwork period are summarised in Appendix V

4:0 LABORATORY TESTING

A programme of soil laboratory testing, scheduled by SWECO, was undertaken at the UKAS accredited laboratory of Professional Soils Laboratory Limited. The tests where appropriate were undertaken in accordance with British Standard 1377 "Methods of Tests for Soils for Civil Engineering Purposes" or as indicated otherwise. The various tests undertaken are as follows:-

1) NATURAL MOISTURE CONTENT

- 2) PARTICLE SIZE DISTRIBUTION BY WET SIEVE
- 3) PARTICLE SIZE DISTRIBUTION BY SEDIMENTATION
- 4) LIQUID AND PLASTIC LIMITS
- 5) UNCONSOLIDATED UNDRAINED TRIAXIAL (MULTISTAGE)
- 6) ONE DIMENSIONAL CONSOLIDATION
- 7) DRY DENSITY / MOISTURE CONTENT RELATIONSHIP 2.5KG HAMMER
- 8) CONSOLIDATED DRAINED SHEARBOX (PEAK ONLY)

A programme of rock laboratory testing, scheduled by SWECO, was undertaken at the UKAS accredited laboratory of MATtest Limited. The various tests undertaken are as follows:-

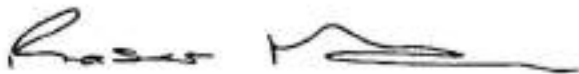
- 1) UNCONFINED COMPRESSIVE STRENGTH - ASTM D7012-14
- 2) POINT LOAD STRENGTH – ISRM (2007)

A programme of laboratory testing for environmental parameters on soils, water and leachates, scheduled by SWECO was undertaken at the UKAS accredited laboratory of Concept Life Sciences Ltd, on behalf of Messrs Holequest Limited. The soil and water samples were tested for one or more of the following:-

- 1) CYANIDE TOTAL
- 2) CYANIDE FREE
- 3) THIOCYANTE
- 4) pH
- 5) ORGANIC MATTER
- 6) SULPHATE (TOTAL)
- 7) SULPHUR (TOTAL)
- 8) ARSENIC
- 9) BORON (WATER SOLUBLE)
- 10) CADMIUM
- 11) CALCIUM
- 12) CONDUCTIVITY
- 13) CHROMIUM (TRIVALENT)
- 14) CHROMIUM (HEXAVALENT)
- 15) COPPER
- 16) DISOLVED ORGANIC CARBON
- 17) LEAD
- 18) MERCURY
- 19) NICKEL
- 20) SELEMIUM
- 21) ZINC
- 22) VANADIUM
- 23) AMMONIACAL NITROGEN
- 24) SULPHIDE
- 25) CHLORIDE
- 26) NITRATE
- 27) PAH USEPA16
- 28) TPH CWG
- 29) TPH BANDED
- 30) BTEX / MTBE
- 31) PHENOLS (MONO)
- 32) ASBESTOS ID
- 33) ASBESTOS QUANTIFICATION

The Geotechnical and Environmental Laboratory Test Results are summarised in Appendix IV.

Prepared By:-



**F. Murray (Engineer)
for HOLEQUEST LTD**

Dated:- August 2018

Approved By:-

A handwritten signature in black ink, appearing to read 'C. Rodger', written in a cursive style.

**C. Rodger (Technical Manager)
for HOLEQUEST LTD
&©ajb**

Dated:- August 2018

APPENDIX I

Terminology Adopted In Description of Soil and Rocks

TERMINOLOGY ADOPTED IN DESCRIPTION OF SOILS

1. The description and classification of soils has been carried out using as a general basis the British Standard Code of Practice for Site Investigations - B.S.5930 - 2015 and BSENISO 14688 / 14689

2. Soils containing 35% or more of material passing a 0.06mm sieve will be classified as **CLAY** or **SILT** as appropriate.

3. The relative densities of granular materials given in this report are based upon visual inspection of the borehole / excavation and the results of in-situ standard penetration and cone penetration tests, where carried out

The classification is as follows :-

TABLE 1 Non-cohesive Granular Materials

N - Value	Relative Density
Below 4	Very Loose
4 to 10	Loose
10 to 30	Medium Dense
30 to 50	Dense
50 and Over	Very Dense

TABLE 2A Cohesive Materials (Field Description)

TERM USED FOR FIELD DESCRIPTION	CONSISTENCY DESCRIPTION DEFINITION
Very Soft	Finger easily pushed in up to 25mm. Exudes between fingers
Soft	Finger pushed in up to 10mm. Moulds by light finger pressure
Firm	Thumb makes impression easily. Cannot be moulded by fingers, rolls in the hand to a 3mm thick thread without breaking or crumbling
Stiff	Can be indented slightly by thumb. Crumbles in rolling a 3mm thick thread, but can then be remoulded into a lump
Very Stiff	Can be indented slightly by thumb nail. Cannot be moulded but crumbles under pressure.
Hard	Can be scratched by thumbnail

TABLE 2B Cohesive Materials (Measured Strength Classification)

TERM BASED ON MEASUREMENT	UNDRAINED STRENGTH CLASSIFICATION DEFINITION C_u in kPa
Extremely low	<10
Very low	10 – 20
Low	20 – 40
Medium	40 – 75
High	75 – 150
Very high	150 – 300
Extremely high	300 - 600

4. The consistency of 'fine soils' given in this report is based on both visual inspection of the sample and the results of in-situ and / or laboratory tests, where carried out.

** Note:- When very stiff cohesive materials (generally with a significant proportion of cobbles and boulders) are encountered, the term Hard may be included in the description to enhance the descriptive term of very stiff, especially where cohesive materials were difficult to progress through, or could not be penetrated by normal light cable percussion boring methods.

BOREHOLE & TRIAL PIT RECORDS
SYMBOLS & ABBREVIATIONS USED:-

U	80mm or 100mm diam. "Undisturbed" sample	80mm diam sample in windowless sampling / rotary boreholes, 100mm diam sample in light cable percussion boreholes
P	Piston Sample "Undisturbed"	
D	Disturbed sample	
B	Bulk Disturbed sample	
W	Water Sample	
ES	Soil Contamination Sample	
EW	Water Contamination Sample	
SPT	Standard Penetration Test	Split Spoon Sampler - Blow count for 300mm penetration = 'N' value
CPT	Standard Cone penetration Test	Solid Cone replaces split spoon sampler, as above blow count for 'N' value
V	In-situ Borehole Vane Test	
VHP	Variable Head Permeability Test	
CHP	Constant Head Permeability test	
PT	Borehole Packer Test	

ROTARY CORE DRILLING

TCR	Total Core Recovery	Ratio of core recovered (solid and non intact) to length of core run
SCR	Solid Core Recovery	Ratio of solid core recovered to length of core run
RQD	Rock Quality Designation	Ratio of solid core pieces longer than 100mm to length of core run
FI	Fracture Index	Count of the number of spacing of fractures over an arbitrary length of core of similar intensity of fracturing. Commonly reported as Fracture Index (FI, number of fractures per metre) or as Fracture Spacing (If,mm).

GROUND WATER

depth (m) comments	Ground Water Level Standing Ground Water Level	Initial ingress level recorded in water strikes column Time observation or a.m. ground water level recorded in the remarks section of the borehole / trial pit record.
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ADDITIONAL INFORMATION

HVT	Hand Vane Tests	Recorded in Samples and In-situ Testing Column on borehole / trial pit records
HPT	Hand Penetrometer Tests	Recorded in Samples and In-situ Testing Column on borehole / trial pit records
CBR	California Bearing Ratio Test	Recorded in Samples and In-situ Testing Column on borehole / trial pit records
PBT	Plate Bearing Test	Recorded in Samples and In-situ Testing Column on borehole / trial pit records

Additional Notes:-

- 1) Ground water levels vary and therefore the observations recorded on the borehole and trial pit records are as observed at the time of the investigation.
- 2) The comments and opinions expressed in this report are based on the ground conditions observed at each location during the site works and on the results of any tests undertaken in-situ or in the laboratory on the samples obtained during the site works.

REFERENCE BIBLIOGRAPHY USED IN REPORTING & TESTING

British Standards:-	Code of Practice for Site Investigation BS5930, 2015 BS EN 14688 Part 1: 2002 BS EN 14688 Part 2: 2002 BS EN 14689 Part 1: 2003 Methods of Test for Soils for Civil Engineering Purposes BS 1377 Testing Of Aggregates BS 812 Code of Practice for Foundations BS8004 Code of Practice for Earthworks BS 6031 Code of Practice for Ground Anchorages BS 8081 Cathodic Protection BS 7361
Scottish Development Department	Specification for Roads & Bridgeworks - Soil Suitability for Earthworks Use of the Moisture Condition Apparatus
Head K.H.	The Manual of Soil Laboratory Testing Vol. 1 to 3.

Terzaghi K. & Peck B.P.	Soil Mechanics in Engineering Practice - Wiley
Tomlinson M.J.	Foundation Design & Construction - Pitman
Lambe & Whitman	Soil Mechanics - Wiley
Blyth F.G.H. & de Freitas M.H.	A Geology for Engineers - Arnold
Burland J.B. & Burbridge M.C. Scotland	Settlement of Foundations on Sand and Gravel (Glasgow & West of Association Centenary Celebrations Invited Lectures 1984)
Forde M.C.	Earthworks: Selection & Compaction (University of Edinburgh)
B.R.E. Publications	

EXPLANATION OF GRAPHIC LOGS FOR BEDROCK CORES

The style of presentation of the graphic logs is guided principally by BS5930:2015, with its interpretation refined by reference to other sources listed below. The logs are set out in columns, with each page carrying standard header and footer banners. The information contained within each column is outlined here.

1. DEPTH

The drillers' depth is given in meters (m), normally relative to ground surface but to another datum, if noted. Depth relative to a survey datum may be given, as available.

2. BOX

The core-box numbers are given, and the depth range of the core contained within that box is marked off.

3. RUNS

The depth range of each core run is marked in this column.

4. NOTES

Brief notes specific to short core sections at given depths are recorded in this column, or if they are too long, they are expanded in the 'Description' column with labels A, B, C, &c.

5. TCR, SCR and RQD

Total core recovery, solid core recovery, and rock quality designation respectively.

TCR is an estimate of the proportion by volume of the run length that is represented by material recovered from the hole and placed in the core box, irrespective of its state of division.

SCR is that proportion of the run length that is represented by core segments that span the full diameter of the hole, irrespective of their individual axial lengths.

RQD measures the proportion of the core, within the given length of borehole, that consists of unbroken sections whose individual axial lengths exceed 100mm. It leads to the descriptive classification of fracture state given in section 8 of the scheme of description and classification of rocks for applications in engineering. These parameters are calculated for each length of core as delimited by the horizontal rules in the column, generally either a box length or a drilling run, whichever is the shorter.

The background to this column is shaded to indicate graphically the values of these three index parameters. RQD is the darkest, SCR intermediate, and TCR the palest. Where values are equal, RQD takes precedence over SCR, and SCR likewise over TCR.

It is an unavoidable consequence of drilling and core recovery that fractures will be induced in the rock, additional to those of natural origin, and that such artifacts are likely to be much more common in certain rocks (eg. laminated mudstones) than in others (eg. dolerite). The RQD parameter thus represents a minimum estimate of the in situ value and should be interpreted in the context of the engineering requirement to be placed on the bedrock structure, especially in relation to whether loads are likely to be tensile, or compressive, or both. TCR is dependent not only on the inherent nature of the rock, but in certain difficult circumstances, also on the drilling method and the skills of the drilling team.

6. FRC

In selected applications, this column logs individual fracture (or discontinuity) surfaces in the style described by Norbury, Child and Spink (in Hawkins, 1986, pp331-342).

7. LOG

This column is ornamented conventionally according to rock type, using symbols recommended in BS5930:2015, but refined as necessary according to geological and engineering requirements. Rockhead, if clearly identified, rather than subject to deep weathering or periglacial frost shattering, is shown as a full line. The arbitrarily determined bottom of the hole, as well as any gaps, is marked by a zig-zag line. Clear boundaries between rock types are marked by full lines; transitional boundaries, where one rock type grades into another, are shown by pecked lines or by gradational ornament if the transition is extended.

To the right of the column, numbers link the rock types shown in the graphic log to their descriptions, adjacent, while brief notes on contact relationships between successive rock types are given, where those contacts are preserved.

8. DESCRIPTION

The standard format of the systematic description is given in the appendix, together with determinative tables and figures for a variety of features. Any extensions to the standard are included in (parentheses). Drillers' notes are contained within [brackets] while salient interpretations that can be stated briefly are enclosed by {braces}.

Where a rock unit consists of two or more intimately-related rock types, eg. alternating mudstones and siltstones, the general features are given first, followed by detailed descriptions of the component rock types.

Colours are generally given using the Munsell scheme, described in the Rock Color Chart referenced below. This element of the description may contain mention of colours arising from alteration, ie. processes occurring near the time of the formation of the rock rather than resulting from more-recent chemical and physical weathering under current or recent climatic regimes.

The strength estimates as contained within these descriptions are based on a visual inspection of the rock material in the context of table 7.

9. REFERENCES AND BIBLIOGRAPHY

- British Standards Institution, 2015, '*Code of Practice for site investigations*', BS5930:2015.
- Collinson, J. D. and Thompson, D. B., 1982, '*Sedimentary Structures*', George Allen & Unwin, ISBN 0-04-552017-8.
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West, G., 1991, '*The Field Description of Engineering Soils and Rocks*', Geological Society of London Professional Handbook Series, Open University Press, ISBN 0-335-15208-2.

A scheme of description and classification of rocks for applications in engineering

This scheme refers to the description of rock specimens as presented in the form of hand specimens acquired either from cored boreholes or from natural or artificial exposures (as available, for example, on hill slopes and river banks, or in excavations). The methods applied are based simply on visual inspection, supplemented by a hand lens (typically $\times 10$ magnification) and a light hammer (to expose unweathered surfaces and/or to give a preliminary assessment of rock strength). The scheme is based on BS5930:2015, although with some re-ordering and some extensions. Thus to facilitate laboratory and/or fieldwork, the assessment of rock strength (listed first in the *Standard*, but which requires the specimen to be destroyed) is postponed until other features of the material have been described. On occasion, it may be useful to extend the *Standard* to give appropriate additional detail. Such extensions can be enclosed in (parentheses).

1.1 The general structure of the description

The principal components of the description are:

- 1 Strength.
- 2 Structure;
- 3 Colour;
- 4 Texture, fabric
- 5 Grain size;
- 6 ROCK NAME.
- 7 Additional features;
- 8 State of weathering;
- 9 Fracture state;

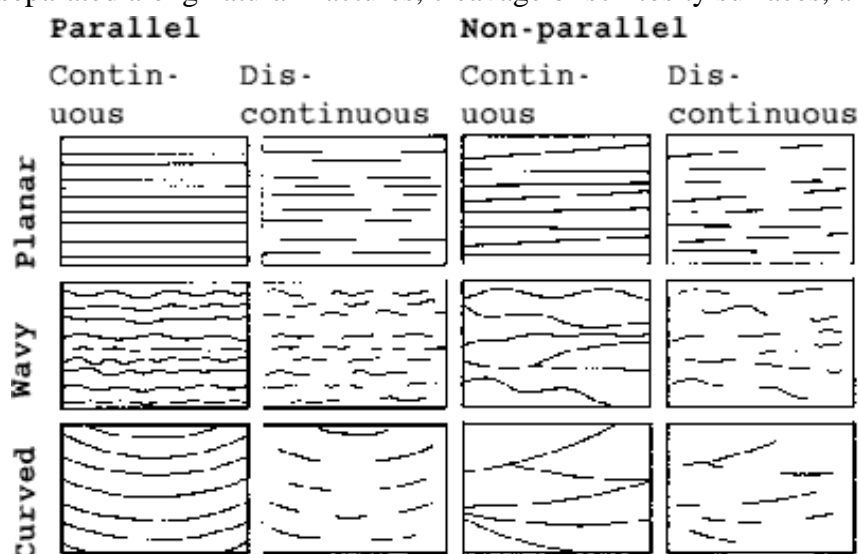
Some details of these components follow and there is a concluding list of further sources of reference.

1:2 Structure

The dimensions are given by:

Spacing or dimension	Compositional layering	Specimen size:	
		Slab (1D)	Block (3D)
>6m		Extremely wide....	
6m	Very thick	Very wide...	Very large...
2m	Thick	Wide...	Large...
600mm	Medium	Medium...	Medium...
200mm	Thin	Close...	Small...
60mm	Very thin	Very close...	Very small...
20mm	Thickly laminated	Extremely close...	
6mm	Thinly laminated	...spaced	...blocky, tabular or columnar.

Compositional layering refers to stratification in sedimentary or some igneous rocks or to foliation in metamorphic or certain igneous rocks. Terms in the third and fourth columns can be applied to fragments of rock separated along natural fractures, cleavage or schistosity surfaces, and similar.



Descriptive terms for bedding/foliation, eg. *planar parallel discontinuous*. After Collinson & Thompson, 1982, fig. 2.6

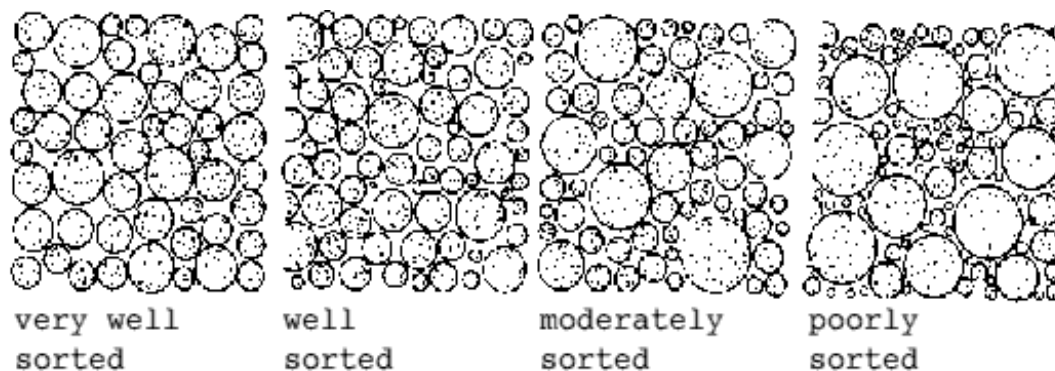
1:3 Colour

The standard colours are:

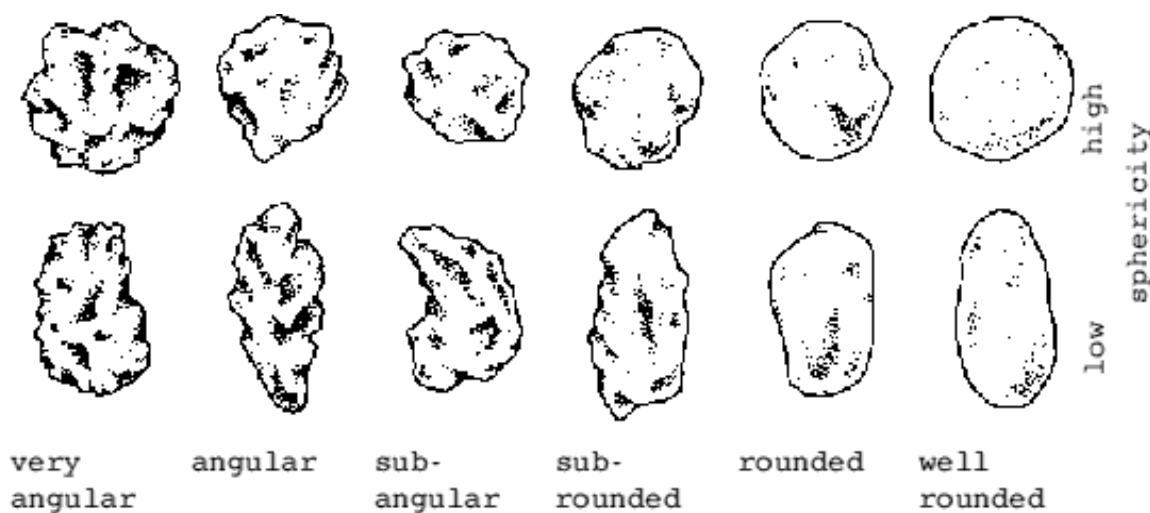
Colour	Supplemented as needed by:...and:	
red	light	pinkish
pink	dark	reddish
yellow	mottled	yellowish
brown	etc	brownish
olive		etc
green		
blue		
white		
grey		
black		
etc		

See also GEOLOGICAL SOCIETY OF AMERICA, *Rock Color Chart* 1991 for an outline of the Munsell scheme, which gives a much more precise definition of colours.

1:4 Texture



Descriptive terms for the degree of sorting in fragmental rocks. After Tucker, 1982, fig. 4.1.



Descriptive terms for roundness and sphericity of clasts in fragmental rocks. After Tucker, 1982, fig. 4.3.

1:5 Grain size

The standard grain sizes are:

Grain size/mm	Bedded rocks	Foliated/massive crystalline rocks
20		
6	RUDACEOUS	COARSE
2	-----	
	- coarse	
0.6	ARENACEOUS - medium	MEDIUM
0.2	- fine	
0.06	----- <i>Normal limit of unaided vision</i> -----	
	ARGILLACEOUS	FINE
0.002	-----	
	-	
	Amorphous or cryptocrystalline	

This may be extended using the Wentworth-Lane scale, below.

THE WENTWORTH-LANE SCALE OF GRAIN SIZE classification

phi:	size/mm	class:
-9	512	Boulders
-8	256	Cobbles: large
-7	128	small
-6	64	Gravel: very coarse
-5	32	coarse
-4	16	medium
-3	8	fine
-2	4	very fine
-1	2	Sand: very coarse
0	1	coarse
1	1/2	medium
2	1/4	fine
3	1/8	very fine
4	1/16	Silt: coarse
5	1/32	medium
6	1/64	fine
7	1/128	very fine
8	1/256	Mud: coarse
9	1/512	medium
10	1/1024	fine

The 'phi' number is calculated as minus the logarithm to the base two of the grain size in mm.

1:6 Rock-type classifications

Sedimentary rocks

Grain size/m	Grain size designation	Sediment grains mainly of siliceous minerals	At least 50% of grains are of carbonate	At least 50% of grains are of volcanic origin
20	Rudaceous	CON-GLOMERATE (rounded clasts cemented in a finer matrix) BRECCIA (angular fragments in a finer matrix)	Calcirudite	AGGLOMERATE (with rounded clasts) or VOLCANIC BRECCIA (with angular clasts, in a finer matrix)
6				
2	----- Coarse arenaceous			
0.6	Medium arenaceous	SANDSTONE	Calcarenite	TUFF or TUFFACEOUS SANDSTONE
0.2	Fine arenaceous			
0.06	<i>Limit of unaided vision</i>	SILTSTONE	Calcisiltite	TUFF or TUFFACEOUS SILTSTONE
	Argillaceous	MUDSTONE	Calcilutite	
0.002	Amorphous or cryptocrystalline	Flint, chert		

Notes:

- 1 Rocks composed of more than 50% carbonate are more usually known as LIMESTONE if the carbonate mineral is mostly calcite (CaCO_3) or DOLOMITE/DOLOMITIC LIMESTONE if the carbonate mineral is predominantly dolomite ($\text{CaMg}(\text{CO}_3)_2$).

Metamorphic rocks

Grain size/m	Grain size designation	Foliated rocks	Non-foliated rocks
20		GNEISS: well-developed but often widely spaced foliation sometimes with schistose layers.	
6	Coarse	MIGMATITE: mixed granitic and gneissose/schistose components.	AMPHIBOLITE MARBLE QUARTZITE BRECCIA (as associated with faulting)
2	-----	<i>Separation by grain size is less important amongst metamorphic rocks</i>	
0.6	Medium	SCHIST: well developed, perhaps undulose foliation, with crystal grains aligned.	SERPENTINE HORNFELS
0.2			
0.06	<i>Unaided vision limit</i>	-----	
	Fine	PHYLLITE: slightly undulose foliation. SLATE: well-developed planar cleavage.	
0.002		-----	
	Amorphous or cryptocrystalline	MYLONITE: usually thinly laminated.	

Notes:

- 1 *Porphyroblast* refers to distinctly larger crystals arising by new growth during metamorphism. *Augen* or *porphyroclast* refers to distinctly larger crystals surviving after deformation during metamorphism.

Igneous rocks

Grain size/m m	Grain size designation	'Acid' (essential quartz and feldspar - <i>leucocratic</i>)	'Intermediate' (some quartz, essential feldspar - <i>mesocratic</i>)	'Basic' (little or no quartz, abundant feldspar - <i>melanocratic</i>)	'Ultrabasic' (no quartz, little or no feldspar - <i>melanocratic</i>)
20	Coarse	GRANITE	DIORITE	GABBROS	PYROXENITE PERIDOTITE
6					
2	-----				
0.6	Medium	MICRO-GRANITE	MICRO-DIORITE	DOLERITE	
0.2					
0.06	<i>Limit of unaided vision</i>				
	Fine	RHYOLITE	ANDESITE	BASALT	
0.002	Amorphous or crypto-crystalline	OBSIDIAN	VOLCANIC GLASS...or...	...PITCHSTONE	

Notes:

- 'Acid', 'intermediate', 'basic' and 'ultrabasic' are somewhat dated terms relating to the amount of SiO₂ in the chemical analysis of the rock (larger to smaller in this ordering). The coarse and medium grained categories of these rocks tend also to range from pale to darker colours because of variation in the proportion of lighter to darker minerals in their constitution. Thus an alternative designation might be *leucocratic* (less than one third dark minerals); *mesocratic* (from one third to two thirds dark minerals); *melanocratic* (greater than two thirds dark minerals). For reasons related to their microscopic texture, the colours of fine grained igneous rocks are not a good guide to identification.
- Some igneous rocks are described as *porphyritic*; they contain scattered crystals (called *phenocrysts*) that are distinctly above the average grain size for the rock.

1:7 Weathering***Weathering and alteration of rock material******Fresh***

No visible sign of weathering of the rock material.

Discoloured

The colour of the original fresh rock material is changed and is evidence of weathering. The degree of change from the original colour should be indicated. If the colour change is confined to particular mineral constituents, this should be mentioned.

Decomposed

The rock is weathered to the condition of a soil in which the original material fabric is still intact, but some or all of the mineral grains are decomposed.

Disintegrated

The rock is weathered to the condition of a soil in which the original material fabric is still intact. The rock is friable, but the mineral grains are not decomposed.

Weathering grades of rock mass***Fresh (I)***

Unchanged from original state.

Slightly weathered (II)

Slight discolouration, slight weakening.

Moderately weathered (III)

Considerably weakened, penetrative discolouration, large pieces cannot be broken by hand

Highly weathered (IV)

Large pieces cannot be broken by hand. Does not readily disaggregate (slake) when dry sample immersed in water.

Completely weathered (V)

Considerably weakened, slakes. Original texture apparent.

Residual soil (VI)

Soil derived by in-situ weathering, but retaining none of the original texture or fabric.

1:8 Fracture / discontinuity state

Types:

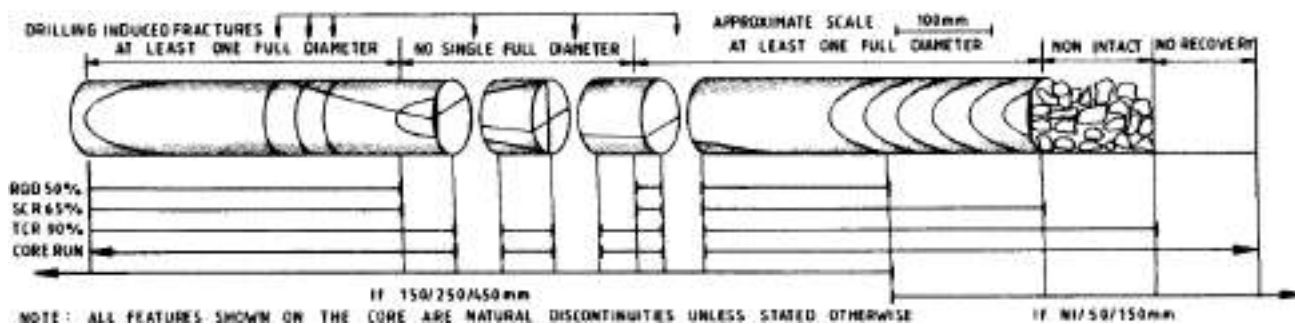
- Joint
- Fault
- Bedding
- Cleavage
- Induced
- Closed/Incipient (non standard term visible fracture with some remaining tensile strength)
- Dulling / Dull (non standard term distinguishing between natural and drill induced fractures)

Descriptors:

- Number of sets
- Orientation
- Spacing
- Persistence or extent
- Termination
- Surface roughness
- Wall strength
- Wall weathering/alteration
- Aperture
- The term "face" is introduced to counter a weakness in Eurocode 7, which does not allow for "non matching" joint faces in it's terminology. Where a fracture is described as having a face, the shape of the face of the rock core on the one side bears no obvious relationship to the shape on the other. There is therefore no way of determining the aperture of the fracture.
- Infilling

Definitions:

- Solid core: core spans full diameter through its axis
- Total core recovery (TCR): proportion (as %) of core material recovered to total length of core run.
- Solid core recovery (SCR): proportion (as %) of solid core to total length of core run.
- Rock quality designation (RQD): proportion (as %) of solid core segments of length $\geq 100\text{mm}$ to total length of core run.
- Fracture index: number of fractures per unit length (commonly one meter).
- Fracture spacing: interval between adjacent fractures on the scan line.



Illustrating descriptive terms for fracture logging. Adapted from Norbury et al., 1986, fig. 1.

Overall designation of rock mass, based on RQD:

RQD/%	Term
0	
	Very poor
25	
	Poor
50	
	Fair
75	
	Good
90	
	Excellent
100	

1:9 Strength

Term (with typical unconfined compressive strength/MPa)	Criteria	Typical examples
Extremely weak (<1.0)	Indented by thumbnail	Some weakly compacted sedimentary rocks...
Very weak (1.0 to 5.0)	Crumbles under firm blows with point of geological hammer, can be peeled with a pocket knife	...some very highly weathered igneous or metamorphic rocks...
Weak (5.0 to 25.0)	Can be peeled with a pocket knife with difficulty, shallow indentations made by firm blow with point of geological hammer	...boulder clays.
Medium strong (25.0 to 50.0)	Cannot be scraped or peeled with a pocket knife, specimen can be fractured with single firm blow of geological hammer	Some sedimentary rocks, some foliated metamorphic rocks, highly weathered igneous and metamorphic rocks.
Strong (50 to 100)	Specimen requires more than one blow of geological hammer to fracture it	Some low-grade metamorphic rocks, marbles, some strongly silica cemented sandstones, some weathered metamorphic and igneous rocks.
Very strong (100 to 250)	Specimen requires many blows of geological hammer to fracture it	Mainly plutonic, hypabyssal and extrusive igneous rocks (medium to coarse grained), sedimentary quartzites, strong slates, gneisses, peridotites.
Extremely strong (>250)	Specimen can only be chipped with geological hammer	Fine grained igneous rocks; metamorphic quartzites, some hornfelses.

2:0 References and bibliography

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APPENDIX II

Borehole & Trial Pit Location Plan



- Notes
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KEY

- MECHANICALLY EXCAVATED TRIAL PIT
- HAND DUG TRIAL PIT
- APPROXIMATE EXTENT OF SSSI
- BOREHOLE LOCATION

Rev	Date	Amendment Details	Orig	Chk'd	App'd
X1	11/04/18	AS BUILT	SC	SMC	NT
X0	16/03/18	AS BUILT	SC	SMC	NT

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Tel: +44 (0)141 414 1700
Web: www.sweco.co.uk

Client

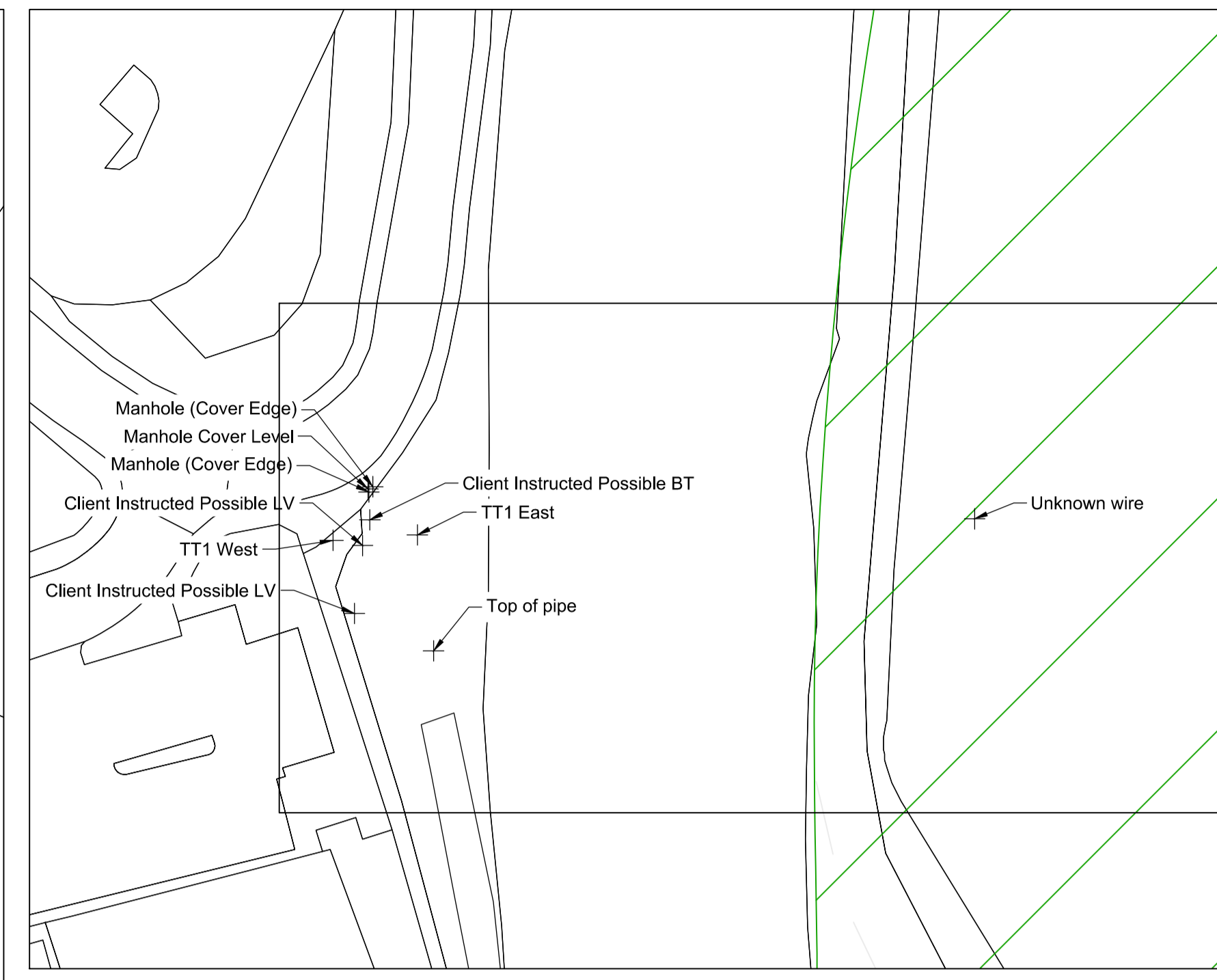
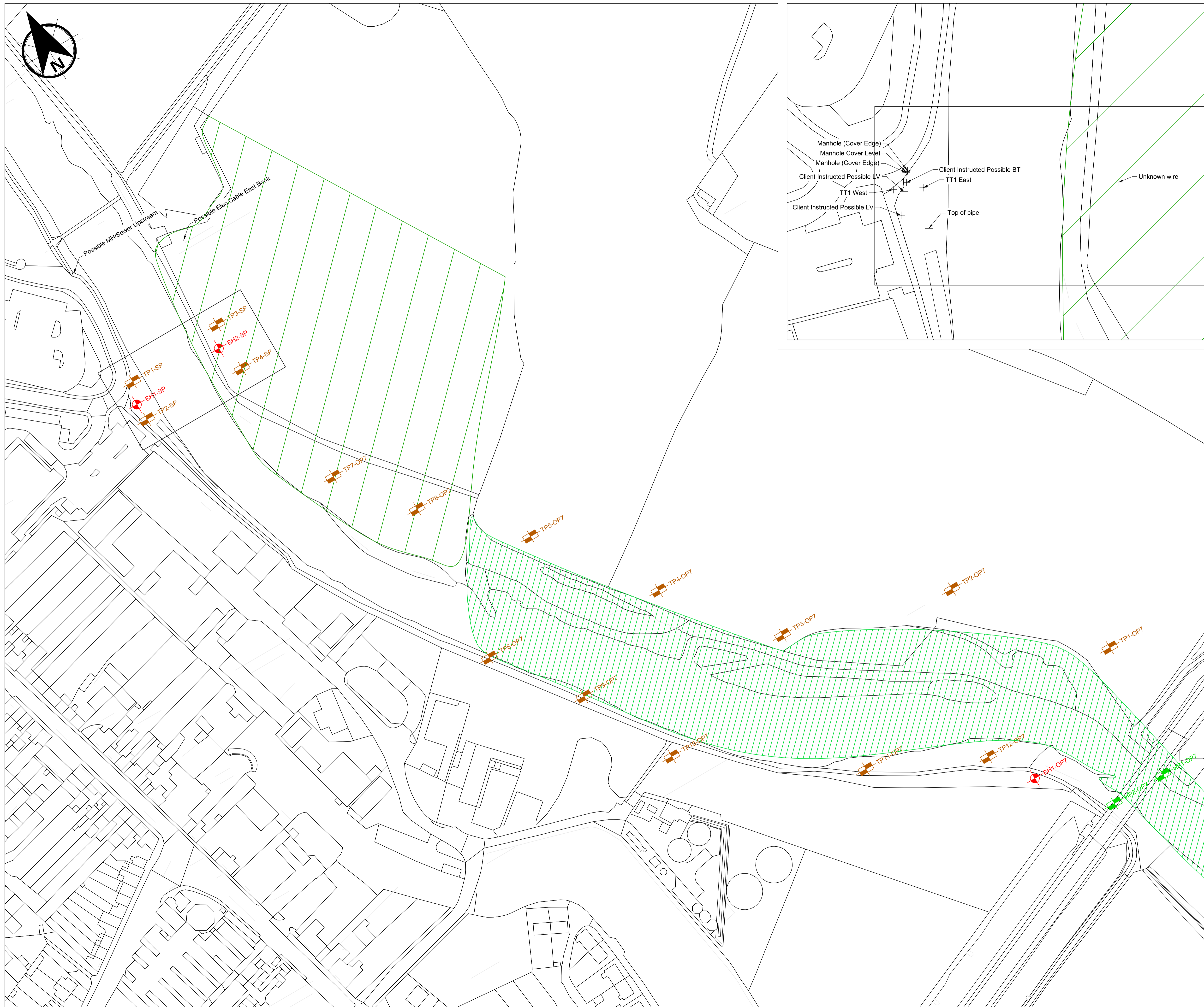
Drawing Status: AS BUILT Suitability: S0

Project Title: NEWTON STEWART FLOOD PREVENTION SCHEME

Drawing Title: PROPOSED GROUND INVESTIGATION TESTING LOCATIONS OPTION 6 - CONSTRUCTION OF DIRECT DEFENCES + SPARLING BRIDGE

Scale	Designed	Drawn	Checked	Approved
1:2000	SMC	SC	SMC	NT
Original Size	Date	Date	Date	Date
A1	17/10/18	16/03/18	16/03/18	16/03/18
Drawing Number	Project Ref. No.			Revision
118908 - SWECO	118908			X1
Project Originator Volume Location Type Role Number				





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 - HAND PIT / TRIAL PIT LOCATIONS TO SUIT STRUCTURAL REQUIREMENTS, AND TARGETED TO MINIMISE IMPACT. REINSTATEMENT TO 'AS-FOUND' CONDITION.
 - ENVIRONMENTAL CONSTRAINTS, NOTABLY "SSSI" IN VICINITY OF WORKS NO ACCESS AT ALL DURING WORKS WITHOUT PRIOR AUTHORIZATION.
 - ALL LOCATIONS ARE INDICATIVE, FINAL LOCATIONS TO SUIT ACCESS, ENVIRONMENTAL & STRUCTURAL CONSTRAINTS. SERVICES ALSO TO BE TAKEN INTO CONSIDERATION.

- KEY
- MECHANICALLY EXCAVATED TRIAL PIT
 - HAND DUG TRIAL PIT
 - APPROXIMATE EXTENT OF SSSI
 - BOREHOLE LOCATION

Rev	Date	Amendment Details	Orig	Chk'd	App'd
X1	11/04/18	AS BUILT	SC	SMC	NT
X0	16/03/18	AS BUILT	SC	SMC	NT

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Client
Dumfries & Galloway COUNCIL

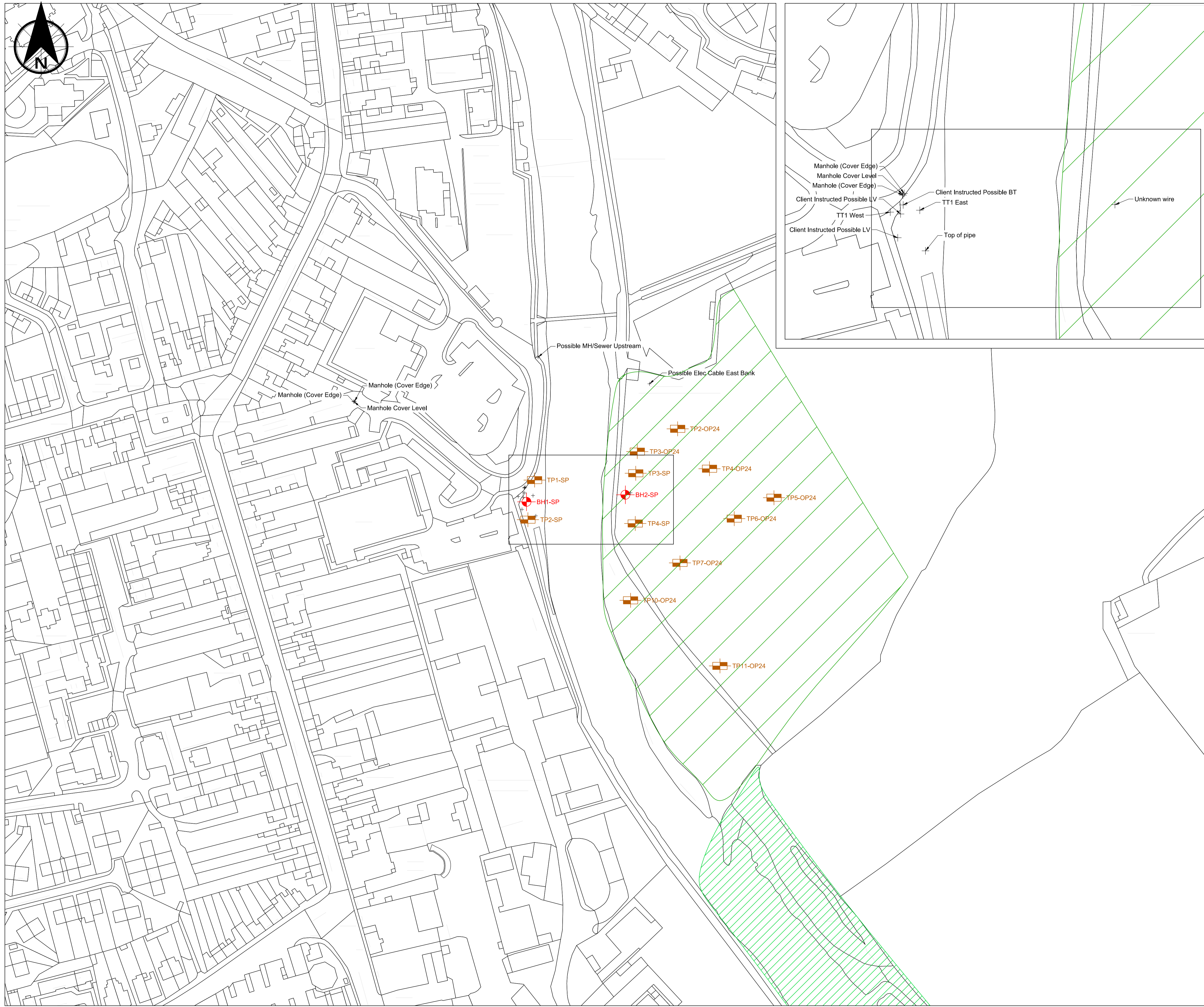
Drawing Status: **AS BUILT** Suitability: **S0**

Project Title
NEWTON STEWART FLOOD PREVENTION SCHEME

Drawing Title
PROPOSED GROUND INVESTIGATION TESTING LOCATIONS OPTION 7 - INCREASE FLOW BENEATH A75

Scale	Designed	Drawn	Checked	Approved
1:1000	SMC	SC	SMC	NT
Original Size	Date	Date	Date	Date
A1	17/10/18	16/03/18	16/03/18	16/03/18

Drawing Number: **118908 - SWECO** - - - - - SK03
Project Ref. No.: **118908**
Revision: **X1**



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 3. LOCATIONS ARE AS DUG FOLLOWING SURVEY BY CONTRACTOR.

- KEY
- MECHANICALLY EXCAVATED TRIAL PIT
 - APPROXIMATE EXTENT OF SSSI
 - BOREHOLE LOCATION

Rev	Date	Amendment Details	Orig	Chk'd	App'd
X1	11/04/18	AS BUILT	SC	SMC	NT
X0	16/03/18	AS BUILT	SC	SMC	NT

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 Web: www.sweco.co.uk



Client

Drawing Status: AS BUILT
 Suitability: S0

Project Title
 NEWTON STEWART
 FLOOD PREVENTION SCHEME

Drawing Title
 PROPOSED GROUND INVESTIGATION
 TESTING LOCATIONS
 OPTION 24 - REPROFILE LAND AROUND
 PUMPING STATION

Scale	Designed	Drawn	Checked	Approved
1:1000	SMC	SC	SMC	NT
Original Size	Date	Date	Date	Date
A1	17/10/18	16/03/18	16/03/18	16/03/18

Drawing Number: 118908 - SWECO - - - - - SK06
 Project Ref. No.: 118908
 Revision: X1

APPENDIX III

Borehole & Trial Pit Records



Certificate No. 642



Certificate No. 007883



Reference	Easting	Northing	Level (m ODN)
BH1-SP	241242.675	565144.772	9.238
BH2-SP	241297.315	565148.683	7.561
BH1-OP6	240948.715	566124.095	15.004
BH2-OP6	240979.611	566048.039	14.046
BH2A-OP6	240980.100	566049.300	14.050
BH3-OP6	241054.871	565871.328	10.943
BH4-OP6	241089.059	565754.690	9.570
BH5-OP6	241139.807	565580.638	9.148
BH7-OP6	241242.253	565279.550	7.992
BH8-OP6	241250.000	565099.302	9.441
BH9-OP6	241294.904	564986.199	8.464
BH11-OP6	241240.514	565493.291	8.252
BH12-OP6	241304.378	565357.366	8.308
BH13-OP6	241329.323	565279.663	8.086
BH14-OP6	241386.187	565302.529	7.311
BH1-OP7	241566.161	564717.077	5.222
HP1-OP6	241045.853	565929.231	10.294
HP1A-OP6	241045.853	565929.231	10.294
HP2-OP6	241091.033	565759.429	9.359
HP2A-OP6	241091.033	565759.429	9.359
HP3-OP6	241112.872	565673.420	9.466
HP4-OP6	241127.314	565619.723	9.201
HP5-OP6	241160.034	565559.455	8.865
HP6-OP6	241186.970	565501.284	8.626
HP7-OP6	241217.492	565432.565	8.291
HP8-OP6	241237.008	565378.291	7.833
HP9-OP6	241197.348	565665.356	9.190
HP10-OP6	241206.244	565630.228	8.650
HP11-OP6	240966.866	566108.533	12.503
HP12-OP6	240982.363	566065.922	12.101
HP1-OP7	241628.171	564683.148	4.950
HP2-OP7	241597.030	564683.017	5.248
HP-SW2	241248.149	565490.710	8.486
TP1-OP6	240964.981	566088.093	14.281
TP2-OP6	241039.300	565941.550	10.337
TP3-OP6	241068.978	565830.720	10.057
TP4-OP6	241086.670	565772.030	9.465
TP5-OP6	241245.445	565248.066	8.061

GEOTECHNICAL • SITE INVESTIGATION • WELL DRILLING

Registered Office: Winston Road, Galashiels, TD1 2DA, Tel: (01896) 752295 Fax: (01896) 751515 Email Address admin@holequest.co.uk

Directors: K.M. Rodger, (Secretary), A.J. Batchelor, (Managing) Registration No. 56002 Scotland, Est.1974, VAT 271 4670 58 www.holequest.co.uk

TP7-OP6	241308.983	564969.091	7.907
TP9-OP6	241256.527	565441.755	8.073
TP11-OP6	241318.366	565297.838	7.683
TP12-OP6	241344.077	565290.944	7.657
TP13-OP6	241372.562	565303.577	7.440
TP-W1-OP6	241092.848	565755.685	8.258
TP-W2-OP6	241206.617	565459.755	6.702
TP1-OP7	241638.196	564758.480	9.097
TP2-OP7	241439.393	564911.124	5.780
TP3-OP7	241485.955	564855.483	5.780
TP4-OP7	241579.347	564830.281	9.696
TP5-OP7	241393.343	564972.471	6.228
TP6-OP7	241347.028	565017.081	6.271
TP7-OP7	241316.121	565055.849	6.625
TP8-OP7	241340.137	564926.191	6.696
TP9-OP7	241374.345	564881.438	6.386
TP10-OP7	241399.436	564828.473	6.434
TP11-OP7	241488.342	564768.460	5.872
TP12-OP7	241550.030	564740.261	5.022
TT1 East	241246.255	565148.237	8.903
TT1 West	241238.087	565147.710	9.051
TP1-SP	241247.132	565156.800	8.629
TP2-SP	241243.429	565134.911	9.415
TP3-SP	241303.050	565160.562	7.420
TP4-SP	241302.775	565132.807	7.339
TP2-OP24	241326.203	565185.130	7.874
TP3-OP24	241303.895	565172.546	7.460
TP4-OP24	241343.818	565163.081	7.935
TP5-OP24	241379.457	565147.051	6.859
TP6-OP24	241357.484	565135.503	7.638
TP7-OP24	241327.487	565111.029	7.596
TP10-OP24	241300.177	565090.351	6.652
TP11-OP24	241349.595	565054.106	7.043



HOLEQUEST LIMITED

Holequest Ltd
Winston Road
Galashiels
Tel: 01896 752295

Borehole No
BH1-OP6
Sheet 1 of 2

Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 240949E - 566124N	Hole Type Cable/Rotary
------------------------------------	-----------------------	----------------------------	---------------------------

Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 5.8m Rotary cored, T2101 water flush, 5.8 - 10.5m	Level: 15.00 m AOD	Orientation 90
---	--------------------	-------------------

Client:- Dumfries & Galloway Council	Dates: 12/01/2018-23/01/2018	Logged By BMY / RR / FM
---	------------------------------	----------------------------

Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m CD)	Legend	Stratum Description
		Depth (m)	Type	Results					
		0.20	B			0.20	14.80		MADE GROUND comprising Dark brown clayey sandy Topsoil
		0.20	ES						MADE GROUND comprising Dark brown very clayey fine to coarse Sand and fine to coarse rounded to subangular Gravel with low cobble content
		0.50	B			0.50	14.50		MADE GROUND comprising Dark brown to black silty gravelly slightly organic fine to coarse Sand with low cobble content intermixed locally with above strata and roots.
			1.00	B					
			1.00	ES					
			1.20	SPT	N=7		1.30	13.70	
			1.30	B	(1,2,2,1,2,2)				
			1.50	ES					
			1.50	B			1.75	13.25	Obstructed on boulder at approx 1.7m
			1.60-2.70	B					Very dense orange brown to grey slightly clayey slightly sandy fine to coarse subrounded to angular GRAVEL with high cobble and boulder content, Gravel, cobbles and boulders of varying lithologies but predominantly of grey Meta-sandstone (wacke)*
			2.80	SPT	N=50				
					(25 for 75mm/50 for 75mm)				
			2.70-4.30	B					
			4.30	SPT	N=50				
					(25 for 75mm/50 for 75mm)				
			4.30-5.80	B					
			5.80	SPT	N=50		5.60	9.40	Grey META-SANDSTONE / META-SILTSTONE (wacke)*
					(25 for 75mm/50 for 75mm)		5.80	9.20	Weak to medium strong, laminated, thinly to medium bedded (dip 40 - 90 degrees) light pinkish / greenish grey fine grained META-SANDSTONE with META-SILTSTONE laminae and occasional beds of medium to coarse grained Meta-sandstone, variable light grey Quartz veins - sub mm to 10mm thick, slightly to moderately weathered, Discontinuities; Set 1: 10 - 30 degrees, very closely to medium spaced, terminating at intersection where seen, planar to undulating, smooth to rough, tight to partly open. Set 2: 45 - 90 degrees, very closely to closely spaced, persistence observed to 200mm, terminating at intersection or in rock where seen, planar to undulating, rough, tight to partly open. Both with patchy reddish brown staining / coatings.
		5.80-6.70	89	72	22				
								NI	
		6.70-7.70	100	40	15				
								>50	
								18	
								NI	
		7.70-8.30	100	42	0				
								>50	
		8.30-9.10	100	0	0				
								>50	
		9.10-9.70	100	0	0				
								35	
								>50	
						9.75	5.25		
			TCR	SCR	RQD	FI			

Remarks: Hand excavated service clearance from GL - 1.2m No groundwater encountered Hard strata / slow progress from 1.7 - 1.75m (1 hr) * Denotes visual assessment of description based on air flushed borehole returns Borehole Terminated on engineers instruction 63mm diam HDPE Gas / Groundwater monitor installed to 6.0m	SPT Hammer HQ01	Scale 1:50	Log Status Final
	Continued next sheet		

HoleBASE 3.1 (B042672) Standard Borehole Log V2 dated 27th Nov 03



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 240980E - 566048N	Hole Type Cable
Drilling Methods:- Light cable percussion, 200mm diam, GL - 1.35m		Level: 14.05 m AOD	Orientation 90
Client:- Dumfries & Galloway Council		Dates: 12/01/2018	Logged By MT / BMY / FM

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m CD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	B	N=50 (2,6/50 for 5mm)	0.20	13.85	[Cross-hatched pattern]	MADE GROUND comprising Dark brown silty sandy Topsoil
		0.20	B					MADE GROUND comprising Brown silty gravelly fine to coarse Sand with low cobble content, Includes Bricks and Brick fragments.
		0.20	ES		0.65	13.40	[Cross-hatched pattern]	MADE GROUND comprising Dark grey silty gravelly fine to coarse slightly organic Sand with low cobble content, Includes Bricks, fragments of Slate, Lime Mortar and locally slightly Ashy.
		0.50	ES					
		0.65	B					
		0.65	ES					
		1.00	ES		1.36	12.69	[Cross-hatched pattern]	Greywacke Cobble / boulder obstruction at 1.35m End of Borehole at 1.36 m
		1.20	SPT					
		1.30	B					
			Type		Results			

Remarks: Hand excavated service clearance from GL - 1.2m No groundwater encountered Hard strata / slow progress from 1.35m (2 hrs) Borehole terminated on cobble / boulder obstruction at 1.355m	SPT Hammer HQ04	Scale 1:50	Log Status Final
---	--------------------	---------------	---------------------



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 240980E - 566049N	Hole Type Cable/Rotary
------------------------------------	-----------------------	----------------------------	---------------------------

Drilling Methods:- Light cable percussion, 200mm diam, GL - 1.6m Rotary open hole, Symetrix 170mm diam, GL - 5.5m Rotary cored, T2101 water flush, 5.5 - 10.5m	Level: 14.05 m AOD	Orientation 90
--	--------------------	-------------------

Client:- Dumfries & Galloway Council	Dates: 22/01/2018-25/01/2018	Logged By BMY / RR / FM
---	------------------------------	----------------------------

Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m CD)	Legend	Stratum Description	
		Depth (m)	Type	Results						
					0.20	13.85		MADE GROUND comprising Dark brown silty sandy Topsoil		
					0.65	13.40		MADE GROUND comprising Brown silty gravelly fine to coarse Sand with low cobble content, Includes Bricks and Brick fragments.		
					1.60	12.45		MADE GROUND comprising Dark grey silty gravelly fine to coarse slightly organic Sand with low cobble content, Includes Bricks, fragments of Slate, Lime Mortar and locally slightly Ashy.	1	
		1.60-2.80	B					Very dense grey brown silty very sandy fine to coarse rounded to angular GRAVEL with low to medium cobble and boulder content*	2	
		2.80	SPT	N=50 (6,18/25,25 for 25mm)					3	
		2.80-4.30	B					Grey META-SANDSTONE / META-SILTSTONE*	4	
		4.30	SPT	N=50 (7,10/13,16,20,1 for 5mm)					5	
		4.30-5.50	B			5.10	8.95	Strong, locally weak to medium strong, laminated to thick bedded (dip 45-70 deg), grey to dark grey, variably light grey, fine to medium grained METASANDSTONE, with laminae to very thin lenses of METAMUDSTONE and quartz veins locally abundant to 50mm. Slightly to moderately weathered Discontinuities; Set1; 10-30deg; very close to widely spaced terminating at intersection where seen, planar to undulating, smooth to rough, tight to part open Set2; 40-70deg, very close to medium space, persistent to 150mm, terminating at intersection where seen, planar to undulating, smooth to rough, tight to part open, yellowish brown staining on faces to 30mm locally, patchy yellowish or reddish brown coating to sub mm fill.	6	
		5.50	SPT	N=50 (25 for 35mm/50 for 50mm)		5.50	8.55		7	
		5.50-6.40	100	83	63			20mm very weak crushed mudstone - fault rock, associated with 60deg dipping fault	8	
		6.40-7.60	100	64	49				9	
		7.60-8.50	100	100	92					
		8.50-9.00	66	56	50					
		9.00-10.50	100	90	83					
			TCR	SCR	RQD	FI				

Remarks: Hand excavated service clearance from GL - 1.2m * Denotes visual assessment of description based on air flushed borehole returns Hard strata / slow progress from 1.4m (2 hrs) Groundwater encountered at 4.0m Borehole terminated on engineers instruction 63mm diam HDPE Gas / Groundwater monitor installed to 5.0m	SPT Hammer HQ01	Scale 1:50	Log Status Final
	Continued next sheet		



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241055E - 565871N	Hole Type Cable/Rotary
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Drilling Methods:- Light cable percussion, 150mm diam, GL - 3.7m Rotary open hole, Symetrix 170mm diam, GL - 5.5m Rotary cored, T2101 water flush, 5.5 - 10.5m	Level: 10.94 m AOD	Orientation 90
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Client:- Dumfries & Galloway Council	Dates: 15/01/2018-26/01/2018	Logged By DF/ RR/ FM
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Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m CD)	Legend	Stratum Description	
		Depth (m)	Type	Results						
		0.10	B			0.10	10.84	MADE GROUND comprising Dark brown silty sandy Topsoil with rootlets		
		0.20	ES							
		0.40	B			0.40	10.54			
				0.50	ES				MADE GROUND comprising Dark grey silty gravelly fine to coarse Sand with medium cobble content, Includes Bricks and fragments of Glass and Coal.	
				1.00	ES					
				1.20	CPT	N=45				
				1.20-1.65	B	(11,18/22,23 for 75mm)			MADE GROUND comprising Brown silty sandy locally very sandy fine to coarse rounded to angular Gravel with high cobble content, Silty / sandy matrix noted slightly organic, Includes Brick and Coal fragments.	1
				1.50	ES					
				2.00	CPT	N=50				
				2.00-2.45	B	(18,25/25,25 for 75mm)	1.80	9.14	Very dense grey slightly silty sandy fine to coarse rounded to angular GRAVEL with low cobble content	2
				2.90	W					
				3.00	CPT	N=50				
				3.00	B	(8,19/23,27 for 75mm)			Dense grey brown silty sandy fine to coarse rounded to angular GRAVEL with medium to high cobble and boulder content*	3
				2.80-4.40	B		3.70	7.24		
				4.40	SPT	N=42				
		4.00-5.50	B	(5,7/8,10,10,14)			Grey META-SANDSTONE*	4		
		5.50	SPT	N=50						
		5.50-6.20	100	14	0	>50				
		6.20-7.70	100	55	53	9	Weak to medium strong, laminated to thickly bedded (dip 60-90deg), extensively disrupted, locally brecciated / sheared by faulting, dark brownish grey to dark grey, fine to medium grained METASANDSTONE with light grey Quartz Veins locally and laminae of Metamudstone, Moderately to highly weathered. Discontinuities; Set1; 5-30deg,extremely close to medium spaced, terminating at intersection where seen, planar to undulating, smooth to rough, tight to part open Set2; 50-90deg, extremely close to medium spaced, terminating at intersection where seen, planar to undulating, rough, tight to part open, dark brown, orangish or reddish brown coating to sub mm fill. Brecciated / crushed Mudstone between 6.1 - 6.45m, probably associated with 80 degree dipping Fault.	5		
		7.70-8.70	100	23	0	>50				
		8.70-9.60	83	30	0	20				
							>50	With laminae of Meta-mudstone between 8.0 - 9.6m	6	
			TCR	SCR	RQD	FI			7	

Remarks: Hand excavated service clearance from GL - 1.2m Hard strata / slow progress from 1.2 - 2.0m (2 hrs) and from 2.7 - 3.7m (3 hrs) Water added in order to advance borehole through granular strata from 1.2 - 2.9m, Groundwater encountered at 2.9m, rising to 2.7m after 20 mins, sealed at 5.4m * Denotes visual assessment of description based on air flushed borehole returns Borehole terminated on engineers instruction	SPT Hammer HQ01	Scale 1:50	Log Status Final
	Continued next sheet		

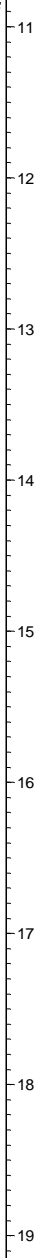


Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241055E - 565871N	Hole Type Cable/Rotary
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Drilling Methods:- Light cable percussion, 150mm diam, GL - 3.7m Rotary open hole, Symetrix 170mm diam, GL - 5.5m Rotary cored, T2101 water flush, 5.5 - 10.5m	Level: 10.94 m AOD	Orientation 90
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Client:- Dumfries & Galloway Council	Dates: 15/01/2018-26/01/2018	Logged By DF/ RR/ FM
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Well	Water Strikes	Rotary Coring					Depth (m)	Level (m CD)	Legend	Stratum Description
		Depth (m)	TCR	SCR	RQD	FI				
		9.60-10.50	100	61	28	15	10.50	0.44	Weak to medium strong, laminated to thickly bedded (dip 60-90deg), extensively disrupted, locally brecciated / sheared by faulting, dark brownish grey to dark grey, fine to medium grained METASANDSTONE with light grey Quartz Veins locally and laminae of Metamudstone, Moderately to highly weathered. Discontinuities; Set1; 5-30deg, extremely close to medium spaced, terminating at intersection where seen, planar to undulating, smooth to rough, tight to part open Set2; 50-90deg, extremely close to medium spaced, terminating at intersection where seen, planar to undulating, rough, tight to part open, dark brown, orangish or reddish brown coating to sub mm fill.
										End of Borehole at 10.50 m



Remarks: Hand excavated service clearance from GL - 1.2m Hard strata / slow progress from 1.2 - 2.0m (2 hrs) and from 2.7 - 3.7m (3 hrs) Water added in order to advance borehole through granular strata from 1.2 - 2.9m, Groundwater encountered at 2.9m, rising to 2.7m after 20 mins, sealed at 5.4m * Denotes visual assessment of description based on air flushed borehole returns Borehole terminated on engineers instruction	SPT Hammer HQ01	Scale 1:50	Log Status Final
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HOLEQUEST LIMITED

Holequest Ltd
Winston Road
Galashiels
Tel: 01896 752295

Borehole No
BH4-OP6
Sheet 1 of 2

Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241089E - 565755N	Hole Type Rotary
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Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 11.3m Rotary cored, T2101 water flush, 11.3 - 15.9m	Level: 9.57 m AOD	Orientation 90
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Client:- Dumfries & Galloway Council	Dates: 17/01/2018-01/02/2018	Logged By BMY / RR / FM
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Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m CD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	ES		0.15	9.42		<p>MADE GROUND comprising Dark brown to black clayey sandy Topsoil with some roots and rootlets</p> <p>MADE GROUND comprising Black slightly organic silty gravelly fine to coarse Sand, Includes Roots, Rootlets, Ash and China</p> <p>MADE GROUND comprising Grey mottled brown silty fine to coarse Sand and fine to coarse angular to subangular Gravel with medium cobble content, Predominantly consists of Bricks, fragments of Masonry, Lime Mortar, Slate and China</p> <p>MADE GROUND comprising Soft orange brown slightly sandy gravelly silty Clay with medium to coarse gravel sized pockets of silty fine to coarse Sand and fine to coarse Gravel as above.</p> <p>Soft orange brown sandy slightly gravelly silty CLAY</p> <p>Soft becoming firm light grey mottled brown sandy silty CLAY of intermediate plasticity.</p> <p>Medium dense grey silty sandy fine to coarse rounded to angular GRAVEL with low to medium cobble and boulder content* No recovery of U100 at 2.8m</p> <p>Very dense grey gravelly cobbly BOULDERS, Predominantly of Meta-sandstone (wacke) but also include Microgranite and Basalt</p> <p>Very dense grey silty sandy fine to coarse rounded to angular GRAVEL with high cobble and boulder content*</p>
		0.20	B		0.40	9.17		
		0.50	ES		0.80	8.77		
		0.50	B		1.00	8.57		
		1.00	ES		1.30	8.27		
		1.00	B		1.30-1.75			
		1.30	ES					
		1.30	B					
		1.30-1.75	U					
		1.30-2.80	B					
		2.80	SPT	N=30	2.80	6.77		
		2.80	U	(2,6/6,6,8,10)				
		2.80-4.20	B					
		4.20	SPT	N=50	4.10	5.47		
				(25 for 5mm/50 for 25mm)				
	5.50-6.80	B		6.00	3.57			
	6.80	SPT	N=50					
			(9 14/16,15,19 for 75mm)					
	6.80-8.30	B						
	8.30	SPT	N=50					
			(11,14 for 25mm/50 for 50mm)					
	8.30-9.80	B						
	9.80	SPT	N=50					
		B	(9 12/15,21,14 for 50mm)					

Remarks: Hand excavated service clearance from GL - 1.3m Groundwater encountered at 4.2m * Denotes visual assessment of description based on air flushed borehole returns Borehole terminated on engineers instruction 63mm diam HDPE Gas / Groundwater monitor installed to 11.0m	SPT Hammer HQ01	Scale 1:50	Log Status Final
	Continued next sheet		



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241089E - 565755N	Hole Type Rotary
Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 11.3m Rotary cored, T2101 water flush, 11.3 - 15.9m		Level: 9.57 m AOD	Orientation 90
Client:- Dumfries & Galloway Council		Dates: 17/01/2018-01/02/2018	Logged By BMY / RR / FM

Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m CD)	Legend	Stratum Description		
		Depth (m)	Type	Results							
		9.80-11.30				10.90	-1.33		Very dense grey silty sandy fine to coarse rounded to angular GRAVEL with high cobble and boulder content*		
		11.30	SPT	N=50		11.30	-1.73			Grey META-SANDSTONE*	11
		11.30-12.00	100	37	0			Medium strong to strong, greenish grey, fine to medium grained METASANDSTONE with a few light grey Quartz and common reddish brown Hematite veins, moderately locally highly weathered. Discontinuities: Set 1, 0 - 30 degrees, extremely closely to closely spaced, terminating at intersection where seen, planar to undulating, smooth to rough, tight to partly open. Set 2, 40 - 90 degrees, extremely closely to closely spaced, terminating at intersection or in rock, persistence seen to 400mm, planar to undulating, smooth commonly polished / slickensided, tight to partly open. Both sets with red brown coatings and up to 2mm fill. Recovered Non - Intact as platy, angular Gravel between 11.3 - 11.4m and 11.9 - 12.25m		12	
		12.00-12.90	100	33	0					13	
		12.90-13.70	100	35	35					14	
		13.70-14.70	100	6	0					15	
		14.70-15.90	100	62	0					16	
							15.90	-6.33			17
											18
										19	
									End of Borehole at 15.90 m		

Remarks: Hand excavated service clearance from GL - 1.3m
Groundwater encountered at 4.2m
* Denotes visual assessment of description based on air flushed borehole returns
Borehole terminated on engineers instruction
63mm diam HDPE Gas / Groundwater monitor installed to 11.0m

SPT Hammer HQ01	Scale 1:50	Log Status Final
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Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241140E - 565581N	Hole Type Rotary
Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 14.3m Rotary cored, T2101 water flush, 14.3 - 19.3m		Level: 9.15 m AOD	Orientation 90
Client:- Dumfries & Galloway Council		Dates: 07/02/2018-19/02/2018	Logged By BMY / CE / FM

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m CD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.18	8.97		TARMAC	
		0.20	B		0.25	8.90		MADE GROUND comprising Pinkish brown silty sandy fine to coarse rounded to angular Gravel	
		0.50	ES						
		0.50	B					MADE GROUND comprising Bluish grey slightly silty sandy fine to coarse angular to subangular Gravel with medium cobble content	
		1.00	ES						
		1.00	B					MADE GROUND comprising Bluish grey silty sandy becoming very sandy with depth fine to coarse angular to subangular Gravel with medium cobble content*	1
		1.30	CPT	N=35 (9,10/8,8,10,9)	1.20	7.95			
		1.30-2.80	B						2
		2.80	CPT	N=50 (9,11/12,8,30 for 75mm)					3
		2.80-4.30	B						4
		4.30	CPT	N=45 (8,10/9,11,11,14)	4.10	5.05		Dense to very dense grey brown silty sandy fine to coarse rounded to angular GRAVEL and COBBLES*	5
		4.30-5.80	B						6
		5.80	CPT	N=50 (25 for 75mm/50 for 75mm)					7
		5.80-7.30	B						8
		7.30	CPT	N=40 (7,8/9,9,8,14)	6.80	2.35		Dense dark brown silty gravelly fine to medium SAND*	9
		7.30-8.80	B		7.80	1.35		Very dense dark grey brown to dark grey silty to very silty fine to medium SAND with possible lenses of Clay towards base.*	
		8.80	CPT	N=50 (25 for 75mm/50 for 75mm)					
		8.80-10.30	B						

Remarks:	Hand excavated service clearance from GL - 1.2m * Denotes visual assessment of description based on air flushed borehole returns Groundwater encountered at approx 4.1m Borehole terminated on engineers instruction 63mm diam HDPE gas / Groundwater monitor installed to 13.0m	SPT Hammer	Scale	Log Status
		HQ03	1:50	Final

Continued next sheet



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241140E - 565581N	Hole Type Rotary
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Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 14.3m Rotary cored, T2101 water flush, 14.3 - 19.3m	Level: 9.15 m AOD	Orientation 90
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Client:- Dumfries & Galloway Council	Dates: 07/02/2018-19/02/2018	Logged By BMY / CE / FM
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Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m CD)	Legend	Stratum Description	
		Depth (m)	Type	Results						
		10.30	CPT	N=50 (25 for 75mm/50 for 75mm)		10.30	-1.15		Very dense dark grey brown to dark grey silty fine to medium SAND with possible lenses of Clay towards base.*	
		10.30-11.80	B						Grey sandy silty CLAY* (BD from 10.3m, Non Plastic)	11
		11.80-13.30	B							12
		13.30-14.30	B			13.50	-4.35		Grey META-SANDSTONE / META-SILTSTONE*	13
		14.30-15.10	88	45	15	14.30	-5.15		Strong, dark grey varied light grey, fine to coarse grained METASANDSTONE with many discontinuous gentle and steep dipping quartz veins to 10mm. Slightly, locally moderately weathered. Discontinuities Set1; 0-25deg, extremely close to medium spaced, terminating at intersection where seen, planar to undulating, smooth to rough, tight to open. Set2; 60-90deg, very close to medium spaced, persistent to 300mm, terminating at intersection where seen, planar to undulating, smooth to rough, tight to partly open. Both sets with patchy red brown and brown coatings	14
					20					15
					>50					16
		15.10-16.40	85	81	50					14
										15
		16.40-17.90	97	77	44					16
									17	
	17.90-19.20	100	92	78					18	
					19.30	-10.15			19	
									End of Borehole at 19.30 m	
		TCR	SCR	RQD	FI					

Remarks: Hand excavated service clearance from GL - 1.2m * Denotes visual assessment of description based on air flushed borehole returns Groundwater encountered at approx 4.1m Borehole terminated on engineers instruction 63mm diam HDPE gas / Groundwater monitor installed to 13.0m	SPT Hammer HQ03	Scale 1:50	Log Status Final
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Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241242E - 565280N	Hole Type Rotary
Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 11.8m Rotary cored, T2101 water flush, 11.8 - 17.5m		Level: 7.99 m AOD	Orientation 90
Client:- Dumfries & Galloway Council		Dates: 12/01/2018-17/01/2018	Logged By CE / FM

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m CD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.15			0.15	7.84	TARMAC	1 2 3 4 5 6 7 8 9
		0.20	ES		0.20	7.79	CONCRETE	
		0.25	ES		0.25	7.74		
		0.30	B		0.35	7.64	TARMAC	
		0.50			0.80	7.19	MADE GROUND comprising Brown slightly silty fine to coarse Sand and fine to coarse rounded to subangular Gravel	
		1.00	ES				MADE GROUND comprising Brown silty very sandy fine to coarse rounded to angular Gravel with high cobble content, Includes Bricks, Roots (up to 30mm diam), and fine Coal fragments.	
		1.00	B				MADE GROUND comprising Brown silty fine to coarse Sand and fine to coarse rounded to subangular Gravel with low cobble content, Includes rare fine to medium gravel of Masonry and Coal.*	
		1.30	SPT	N=28 (4,6/7,7,6,8)				
		1.30-2.80	B					
					2.40	5.59	Soft locally very soft grey locally gravelly silty CLAY* (BD from 2.8m, Non Plastic)	
							70% Recovery of U80 at 2.8m	
		2.80-3.80	U					
		2.80-4.30	B					
		3.80	SPT	N=13 (1,2/2,3,4,4)				
		4.30	SPT	N=24 (5,6/5,6,7,6)	4.10	3.89	Medium dense to very dense with depth grey silty very sandy fine to coarse rounded to subangular GRAVEL with low to medium cobble content after approx 5.1m, Gravel and cobbles of mixed lithologies.*	
		4.30-5.80	B					
		5.80	CPT	N=50 (10,11/50 for 75mm)				
		5.80-7.30	B					
	7.30	CPT	N=50 (25 for 75mm/50 for 75mm)					
	7.30-8.80	B		8.20	-0.21	Soft grey CLAY of intermediate plasticity with closely spaced silty partings*		
	8.80	SPT	N=9 (2,2/2,2,2,3)			No recovery of U80 between 8.8 - 9.8m		
	8.80-9.80	U						
	8.80-10.30	B						

Remarks: Hand excavated service clearance from GL - 1.2m * Denotes visual assessment of description based on air flushed borehole returns Groundwater encountered at 4.1m Borehole terminated on engineers instruction 63mm diam HDPE Gas / Groundwater monitor installed to 12.0m	SPT Hammer HQ03	Scale 1:50	Log Status Final
	Continued next sheet		



Project Name Newton Stewart FPS		Project No. 17/082	Co-ords: 241242E - 565280N	Hole Type Rotary
Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 11.8m Rotary cored, T2101 water flush, 11.8 - 17.5m			Level: 7.99 m AOD	Orientation 90
Client:- Dumfries & Galloway Council			Dates: 12/01/2018-17/01/2018	Logged By CE / FM

Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m CD)	Legend	Stratum Description
		Depth (m)	Type	Results					
		10.30	SPT	N=46 (4,5/10,11,11,14)		10.30	-2.31		Soft grey CLAY of intermediate plasticity with closely spaced silty partings*
		10.30-11.80	B						Dense brown silty sandy fine to coarse rounded to angular GRAVEL with low cobble content*
		11.80	SPT	N=50 (25 for 75mm/50 for 75mm)		11.60 11.80	-3.61 -3.81		Reddish brown META-SANDSTONE (wacke)* Unstable conditions encountered between approx 11.6 - 13.3m - Additional casing installed
		11.80-12.40		0	0				
		11.80-13.30	B 83			12.40	-4.41		Strong, dark purplish grey veined light greenish / pinkish grey, fine to coarse grained META-SANDSTONE (wacke) with sub mm to 15mm thick Quartz veins, slightly weathered, Recovered Non-intact as gravel to cobble sized fragments. Reddish brown META-SANDSTONE (wacke)*
		13.30-13.90	100	42	0	13.30	-5.31		Strong, dark purplish grey, fine to coarse grained META-SANDSTONE (wacke) with sub mm to 15mm thick light greenish to pinkish grey Quartz veins, slightly weathered. Discontinuities; Set 1: 0 - 30 degrees, very closely to closely spaced, terminating at intersection where seen, planar to undulating, rough, tight to partly open. Set 2: 45 - 90 degrees, very closely to closely spaced, persistence observed to 200mm, terminating at intersection or in rock, planar to undulating, smooth to rough, tight to partly open. Both sets with dark purplish brown staining.
					NI				
					25				
					NI				
					25				
					>50				
					AZCL				
		15.00-16.10	86	56	0	15.20 15.25	-7.21 -7.26		Soft to extremely weak, foliated (dip approx 70 degrees), purplish brown, FAULT ROCK including light pinkish grey Quartz veins in top 100mm, highly to completely weathered, Top surface dips approx 60 degrees, Bottom surface dips approx 25 degrees. Discontinuities in random orientations in top 100mm below which commonly extremely closely spaced, parallel to fabric.
		16.10-17.50	100	24	8				Weak to strong, thinly to medium bedded, weakly foliated (dipping 30 - 45 degrees) and brecciated, dark greenish to purplish grey mottled dark purplish brown, fine to medium grained META-SANDSTONE and subordinate META-SILTSTONE, with light grey Veins, moderately to highly weathered. Discontinuities, extremely closely spaced in random orientations, terminating at intersection where seen, undulating, rough, tight to open. Lost flush water returns after approx 15.0m
						17.50	-9.51		Firm, dark purplish brown, crushed FAULT ROCK
									Weak to strong, thinly to medium bedded, weakly foliated (dipping 30 - 45 degrees), dark greenish to purplish grey mottled dark purplish brown, fine to medium grained META-SANDSTONE and subordinate META-SILTSTONE with light grey Veins, moderately to highly weathered. Discontinuities; Set 1: 0 - 45 degrees, extremely closely to closely spaced, terminating at intersection where seen, planer to undulating, rough to smooth, occasionally with crushed Siltstone fill to 20mm thick. Set 2: 50 - 90 degrees, very closely to medium spaced, persistence observed to 150mm, terminating at intersection or in rock where seen, planar to undulating, rough to smooth, tight to partly open.
End of Borehole at 17.50 m									

Remarks:	Hand excavated service clearance from GL - 1.2m	SPT Hammer HQ03	Scale 1:50	Log Status Final
	* Denotes visual assessment of description based on air flushed borehole returns Groundwater encountered at 4.1m Borehole terminated on engineers instruction 63mm diam HDPE Gas / Groundwater monitor installed to 12.0m			



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241250E - 565099N	Hole Type Rotary
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Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 10.3m Rotary cored, T2101 water flush, 10.3 - 15.2m	Level: 9.44 m AOD	Orientation 90
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Client:- Dumfries & Galloway Council	Dates: 16/01/2018-15/02/2018	Logged By MT / CE / FM
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Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m CD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	B		0.10	9.34	TARMAC	
		0.30	ES		0.30	9.14	MADE GROUND comprising Light grey slightly silty sandy fine to coarse subrounded to angular Gravel (Sub-Base)	
		0.50	B		0.50	8.94		
		0.50	ES					
		1.00	B		1.00	8.44	MADE GROUND comprising Black silty gravelly to very gravelly fine to coarse Sand (possibly slightly organic), Includes variable quantity of Ash and Coal debris.	
		1.00	ES		1.20	8.24		
		1.30	SPT	N=10 (2,4/3,2,2,3)			MADE GROUND comprising Grey silty gravelly fine to coarse slightly organic Sand, Includes fragments of Brick and Ashy debris. Becoming brown in colour between 0.6 - 0.7m	
		1.30-2.80	B					
		2.80	SPT	N=14 (3,5/6,2,2,4)			MADE GROUND comprising Brown silty very gravelly fine to coarse Sand with medium cobble content, Includes Bricks and fragments of Brick / Clay Pipe.	
		2.80-4.30	B					
		4.30	CPT	N=48 (10,11/11,13,10,14)			MADE GROUND comprising Loose to medium dense dark grey brown silty fine to coarse Sand and fine to coarse angular to subangular Gravel with lenses of very clayey Sand and sandy gravelly Clay*	
		4.30-5.80	B					
		5.80	CPT	N=50 (25 for 75mm/50 for 75mm)			Dense to very dense greyish brown becoming orangish brown with depth very silty sandy fine to coarse rounded subangular GRAVEL with low cobble and boulder content*	
		5.80-7.30	B					
		7.30	CPT	N=50 (12,13/50 for 75mm)	7.30	2.14	Very dense orangish brown very clayey sandy fine to coarse rounded subangular GRAVEL with low cobble and boulder content*	
		7.30-8.80	B					
		8.80	CPT	N=50 (25 for 75mm/50 for 75mm)			Very dense grey brown slightly silty gravelly COBBLES with low boulder content predominantly of Meta-sandstone (wacke)*	
		8.80-10.30	B		9.30	0.14		

Remarks: Hand excavated service clearance from GL - 1.2m * Denotes visual assessment of description based on air flushed borehole returns Groundwater encountered at 3.8m Borehole terminated on engineers instruction 63mm diam HDPE Gas / groundwater monitor installed to 10.0m	SPT Hammer HQ03	Scale 1:50	Log Status Final
	Continued next sheet		



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241250E - 565099N	Hole Type Rotary
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Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 10.3m Rotary cored, T2101 water flush, 10.3 - 15.2m	Level: 9.44 m AOD	Orientation 90
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Client:- Dumfries & Galloway Council	Dates: 16/01/2018-15/02/2018	Logged By MT / CE / FM
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Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m CD)	Legend	Stratum Description	
		Depth (m)	Type	Results						
		10.30	CPT	N=50		10.00	-0.56		Grey META-SANDSTONE / META-SILTSTONE*	
		10.30-10.80	80	(25 for 75mm/50 for 75mm)	20	10.30	-0.86		Strong to medium strong, locally weak, thickly bedded (dip 30deg), dark reddish brown locally mottled greenish grey, fine to medium grained METASANDSTONE, with subordinate METASILTSTONE, with occasional light grey quartz veins to 15mm. Slightly to moderately weathered. Discontinuities: Set1; 0-35deg, close to medium spaced, terminating at intersection where seen, planar to undulating, smooth to rough, tight to partly open. Set2; 60-90deg, extremely close to medium spaced, persistent to 660mm, terminating at intersection where seen, planar to undulating, smooth to rough, tight to open. Both sets with reddish dark brown coatings.	11
		10.80-12.10	85	72	59					12
		12.10-13.70	94	62	50					13
		13.70-15.20	100	82	61					14
						15.20	-5.76		End of Borehole at 15.20 m	15
										16
										17
										18
										19

Remarks: Hand excavated service clearance from GL - 1.2m * Denotes visual assessment of description based on air flushed borehole returns Groundwater encountered at 3.8m Borehole terminated on engineers instruction 63mm diam HDPE Gas / groundwater monitor installed to 10.0m	SPT Hammer HQ03	Scale 1:50	Log Status Final
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Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241295E - 564986N	Hole Type Cable/Rotary
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Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 12.4m Rotary cored, T2101 water flush, 12.4 - 17.4m	Level: 8.46 m AOD	Orientation 90
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Client:- Dumfries & Galloway Council	Dates: 17/01/2018-12/02/2018	Logged By MT / CE / FM
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Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m CD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	ES		0.10	8.36		TARMAC
		0.30	B		0.30	8.16		MADE GROUND comprising Grey slightly silty sandy fine to coarse subrounded to angular Gravel (Sub-base)
		0.50	ES					
		1.00	ES		1.20	7.26		Firm locally soft grey mottled brown and rarely black slightly sandy silty CLAY of very high plasticity with occasional lenses of silty Sand and pockets of organic debris.
		1.30-1.75	U					
		1.30-2.80	B		2.20	6.26		Firm grey mottled brown and rarely black slightly sandy silty CLAY with occasional lenses of silty Sand and pockets of organic debris*
		2.80	SPT	N=50 (25 for 75mm/50 for 75mm)				Very dense dark brown to light brown silty to very silty fine to coarse SAND and fine to coarse rounded to angular GRAVEL that includes fragments of timber / organic debris and occasional rootlets*
		2.80-4.30	B		3.50	4.96		Very dense light brown slightly silty sandy fine to coarse rounded to angular GRAVEL with low to high cobble and boulder content*
		4.30	SPT	N=50 (25 for 75mm/50 for 75mm)				
		4.30-5.80	B					
		5.80	CPT	N=50 (10,12/24,26 for 75mm)				
		5.80-7.30	B					
		7.30	CPT	N=50 (9,12/13,12,25 for 75mm)				
		7.30-8.80	B					
		8.80	SPT	N=36 (9,9/10,8,7,11)	8.80	-0.34		Dense to very dense dark brown to brownish grey silty very sandy fine to coarse GRAVEL with low to high cobble and boulder content*
	8.80-10.30	B						

Remarks: Hand excavated service clearance from GL - 1.2m * Denotes visual assessment of description based on air flushed borehole returns Groundwater encountered at 3.0m Borehole terminated on engineers instruction 63mm diam HDPE Gas / groundwater monitor installed to 10.0m	SPT Hammer HQ03	Scale 1:50	Log Status Final
	Continued next sheet		



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241295E - 564986N	Hole Type Cable/Rotary
Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 12.4m Rotary cored, T2101 water flush, 12.4 - 17.4m		Level: 8.46 m AOD	Orientation 90
Client:- Dumfries & Galloway Council		Dates: 17/01/2018-12/02/2018	Logged By MT / CE / FM

Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m CD)	Legend	Stratum Description	
		Depth (m)	Type	Results						
		10.30	SPT	N=50 (25 for 75mm/50 for 75mm)		10.80	-2.34		Dense to very dense dark brown to brownish grey silty very sandy fine to coarse GRAVEL with low to high cobble and boulder content*	
		10.30-11.80	B							
		11.80	SPT	N=50 (25 for 75mm/50 for 75mm)		12.40	-3.94		Strong, thick bedded (dip 60 degrees), dark reddish brown occasionally red, fine to coarse grained METASANDSTONE with sparse light greenish and pinkish grey quartz veins to 10mm, moderately to highly weathered. Discontinuities: Set 1; dipping 0 - 20 degrees, extremely closely to wide spaced, terminating at intersection where seen, planar to undulating, smooth to rough, tight to partly open. Set 2; dipping 45 - 90 degrees, extremely closely to closely spaced, persistence observed to 220mm, terminating at intersection or in rock, undulating, rough, tight to open. Both sets with dark reddish brown coatings / stains. Recovered Non - Intact as angular to subrounded Gravel and Cobbles between 13.0 - 13.3m	
		12.40-14.00	63	38	16					AZCL
		14.00-15.50	100	81	63	18				14
		15.50-16.50	100	16	0	>50			Extremely weak to medium strong, variably brecciated METASANDSTONE between 15.0 - 16.5m	15
		16.50-17.40	94	82	38	20				16
						17.40	-8.94		End of Borehole at 17.40 m	17
										18
										19

Remarks: Hand excavated service clearance from GL - 1.2m * Denotes visual assessment of description based on air flushed borehole returns Groundwater encountered at 3.0m Borehole terminated on engineers instruction 63mm diam HDPE Gas / groundwater monitor installed to 10.0m	SPT Hammer HQ03	Scale 1:50	Log Status Final
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Borehole No
BH11-OP6
Sheet 1 of 2

Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241241E - 565493N	Hole Type Rotary
Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 13.3m Rotary cored, T2101 water flush, 13.3 - 17.8m		Level: 8.25 m AOD	Orientation 90
Client:- Dumfries & Galloway Council		Dates: 25/01/2018-02/02/2018	Logged By MT / CE / FM

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m CD)	Legend	Stratum Description				
		Depth (m)	Type	Results								
		0.20	B					Dark brown clayey very sandy gravelly TOPSOIL with low cobble content and occasional medium to coarse gravel sized pockets of grey mottled orange firm silty Clay				
		0.20	ES									
		0.50	ES									
			0.90	B		0.90	7.35		Black very clayey gravelly fine to medium organic SAND with low cobble content	1		
			1.00	ES								
			1.30	SPT	N=11 (1,1/1,2,3,5)	1.20	7.05		Medium dense dark brown very silty gravelly fine to coarse SAND (possibly slightly organic)*			
			1.30-2.80	B								2
						3.10	5.15					3
			2.80-4.30	B		3.70	4.55		Firm light grey brown slightly sandy slightly gravelly silty CLAY*			
												4
			4.30	SPT	N=26 (6,7/6,7,7,6)				Medium dense to dense greyish brown clayey fine to coarse SAND and fine to coarse rounded to subangular GRAVEL includes possible thin lenses of Clay*			
			4.30-5.80	B								5
			5.80	SPT	N=40 (8,9/10,9,10,11)	6.20	2.05					6
			5.80-7.30	B					Very dense grey silty sandy fine to coarse rounded to subangular GRAVEL with low cobble and boulder content*			
			7.30	SPT	N=50 (10,11/50 for 75mm)							7
		7.30-8.80	B								8	
		8.80	SPT	N=50 (25 for 75mm/50 for 75mm)								
		8.80-10.30	B								9	

Remarks: Hand excavated service clearance from GL - 1.2m * Denotes visual assessment of description based on air flushed borehole returns Groundwater encountered at 6.2m Borehole terminated on engineers instruction 63mm diam HDPE Gas / Groundwater monitor installed to 12.0m	SPT Hammer HQ03	Scale 1:50	Log Status Final
	Continued next sheet		



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241241E - 565493N	Hole Type Rotary
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Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 13.3m Rotary cored, T2101 water flush, 13.3 - 17.8m	Level: 8.25 m AOD	Orientation 90
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Client:- Dumfries & Galloway Council	Dates: 25/01/2018-02/02/2018	Logged By MT / CE / FM
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Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m CD)	Legend	Stratum Description		
		Depth (m)	Type	Results							
		10.30	SPT	N=50 (25 for 75mm/50 for 75mm)					Very dense grey silty sandy fine to coarse rounded to subangular GRAVEL with low cobble and boulder content*		
		10.30-11.80	B								11
		11.80	SPT	N=50 (25 for 75mm/50 for 75mm)					Grey META-SANDSTONE / META-SILTSTONE*		
		11.80-13.30	B			12.40	-4.15				12
		13.30	SPT	N=50 (25 for 75mm/50 for 75mm)					Strong, locally medium strong, thin to tickly bedded (dip 30-50deg), dark grey, fine to medium grained METASANDSTONE with occasional metamudstone laminae and light greenish grey to pinkish grey quartz / haematite veins to 10mm. Slightly to moderatley weathered. Discontinuities. Set1; 5-30deg, very close to close spaced, terminating at intersection where seen, planar to undulating, smooth to rough, tight to part open. Set2; 40-90deg, very close to close spaced, persistent to 200mm, terminating at intersection, planar to undulating, smooth to rough, tight to part open. Patchy orangish or reddish brown coating occassional sub mm fill.		
		13.30-14.80	83	53	30	13.30	-5.05				13
					>50						14
					26						14
					>50						15
					14						15
		14.80-16.30	100	87	72				16		
									16		
		16.30-17.80	97	69	42				17		
									17		
				>50					17		
				22					17		
					17.80	-9.55			18		
								End of Borehole at 17.80 m	18		
									19		
									19		

Remarks: Hand excavated service clearance from GL - 1.2m * Denotes visual assessment of description based on air flushed borehole returns Groundwater encountered at 6.2m Borehole terminated on engineers instruction 63mm diam HDPE Gas / Groundwater monitor installed to 12.0m	SPT Hammer HQ03	Scale 1:50	Log Status Final
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Borehole No
BH12-OP6
Sheet 1 of 2

Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241304E - 565357N	Hole Type Rotary
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Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 13.9m Rotary cored, T2101 water flush, 13.9 - 18.8m	Level: 8.31 m AOD	Orientation 90
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Client:- Dumfries & Galloway Council	Dates: 18/01/2018-12/02/2018	Logged By BMY / RR / FM
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Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m CD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.20	8.11		Dark brown silty sandy TOPSOIL with some rootlets and low to medium cobble and boulder content	
		0.20	B						
		0.50	ES		0.50	8.11		Grey brown locally slightly organic at top clayey sandy fine to coarse rounded to subrounded GRAVEL with high cobble and boulder content	
		0.50	B						
		1.00	ES		1.20	7.11		Very dense becoming medium dense with depth grey silty very sandy fine to coarse rounded to subangular GRAVEL with low to medium cobble and boulder content*	
		1.00	B						
		1.30	SPT	N=50 (6,19 for 50mm/31,19 for 25mm)					
			1.30-2.80	B					
			2.80	SPT	N=40 (10,15 for 25mm/14,6,9,11)				
			2.80-4.30	B					
			4.30	SPT	N=17 (3,6/6,4,4,3)				
			4.30-5.80	B					
			5.80	SPT	N=21 (2,3/3,4,7,7)				
			5.80-7.30	B					
			7.30	SPT	N=20 (1,3/5,3,5,7)				
		7.30-8.80	B		7.80	0.51		Firm grey slightly sandy locally slightly gravelly silty CLAY*	
		8.80-9.25	U						
		8.80-10.30	B						

Remarks: Hand excavated service clearance from GL - 1.2m * Denotes visual assessment of description based on air flushed borehole returns Groundwater ingress from surface in service clearance and encountered from 1.3m Borehole terminated on engineers instruction 63mm diam HDPE Gas / Groundwater monitor installed to 13.0m	SPT Hammer HQ01	Scale 1:50	Log Status Final
	Continued next sheet		



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241304E - 565357N	Hole Type Rotary
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Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 13.9m Rotary cored, T2101 water flush, 13.9 - 18.8m	Level: 8.31 m AOD	Orientation 90
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Client:- Dumfries & Galloway Council	Dates: 18/01/2018-12/02/2018	Logged By BMY / RR / FM
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Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m CD)	Legend	Stratum Description	
		Depth (m)	Type	Results						
		10.30-10.75	U			11.50	-3.19		Firm grey slightly sandy locally slightly gravelly silty CLAY* No recovery of U100 between 10.3 - 10.75m	11
		10.30-11.80	B							
		11.80	SPT	N=50 (8,13/13,14,15,8 for 25mm)					Very dense grey silty sandy fine to coarse rounded to subangular GRAVEL with high cobble and boulder content*	12
		11.80-13.30	B							
		13.30	SPT	N=50 (10,15 for 25mm/50 for 50mm)		13.50	-5.19		Grey META-SANDSTONE / META-SILTSTONE*	13
		13.30-13.90	B							
		13.90	SPT	N=50 (25 for 5mm/50 for 25mm)		13.90	-5.59		Strong, locally weak to medium strong above 15.0m, thin to tick bedded (dip40-60deg), dark grey, fine to medium grained METASANDSTONE with light grey quartz veins to 15mm (common 15.45-15.7m). Slightly, locally moderately weathered. Discontinuities; Set1; 0-30deg, extremely close to wide spaced, terminating at intersection where seen, planar to undulating, rough, tight to open. Set2; 45-90deg, very close to medium spaced, persistent to 260mm, terminating at intersection where seen, planar to undulating, smooth to rough, tight to part open. Both sets with patchy dark brown coating to sub mm fill.	14
		13.90-15.30	82	43	18					>50
		15.30-16.80	100	83	42	17				16
		16.80-18.20	100	90	68	7				17
	18.20-18.80	100	100	100					18	
					18.80	-10.49			End of Borehole at 18.80 m	19

Remarks: Hand excavated service clearance from GL - 1.2m * Denotes visual assessment of description based on air flushed borehole returns Groundwater ingress from surface in service clearance and encountered from 1.3m Borehole terminated on engineers instruction 63mm diam HDPE Gas / Groundwater monitor installed to 13.0m	SPT Hammer HQ01	Scale 1:50	Log Status Final
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Borehole No
BH13-OP6
Sheet 1 of 2

Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241329E - 565280N	Hole Type Rotary
Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 13.9m Rotary cored, T2101 water flush, 13.9 - 20.0m		Level: 8.09 m AOD	Orientation 90

Client:- Dumfries & Galloway Council	Dates: 18/01/2018-07/02/2018	Logged By BMY / RR / FM
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Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m CD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	ES		0.10	7.99		Dark brown silty sandy TOPSOIL with many rootlets
		0.20	B					Grey brown slightly organic very clayey sandy fine to coarse rounded to subangular GRAVEL with low cobble content
		0.50	ES		0.50	7.59		Reddish brown silty sandy fine to coarse rounded to subangular GRAVEL with low to medium cobble content
		0.50	B					
		1.00	ES		1.20	6.89		Dense grey silty sandy fine to coarse rounded to subangular GRAVEL*
		1.00	B					
		1.30	SPT	N=42 (6,15/14,9,9,10)				
		1.30-2.80	B					
		2.80	SPT	N=50 (4,9/12,14,14,10 for 50mm)				
		2.80-4.30	B		3.80	4.29		Soft to firm, locally stiff, grey slightly sandy slightly gravelly silty CLAY with lenses of Sand and Gravel* (BD from 4.3m, Non Plastic)
		4.30-4.75	U					No recovery of U100 between 4.3 - 4.75m
		4.30-5.80	B					
		5.80	SPT	N=27 (7,10/5,7,8,7)				
		5.80-7.30	B					
		7.30-7.75	U					
	7.30-8.80	B		8.00	0.09		Medium dense becoming very dense with depth grey slightly silty sandy fine to coarse rounded to subangular GRAVEL with low to high with depth cobble and boulder content*	
	8.80	SPT	N=22 (6,6/7,4,3,8)					
	8.80-10.30	B						

Remarks: Hand excavated service clearance from GL - 1.2m * Denotes visual assessment of description based on air flushed borehole returns Groundwater ingress from surface during service clearance and encountered from 2.5m Borehole terminated on engineers instruction 63mm diam HDPE Gas / Groundwater monitor installed to 14.0m	SPT Hammer HQ01	Scale 1:50	Log Status Final
	Continued next sheet		



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Borehole No
BH13-OP6
Sheet 2 of 2

Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241329E - 565280N	Hole Type Rotary
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Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 13.9m Rotary cored, T2101 water flush, 13.9 - 20.0m	Level: 8.09 m AOD	Orientation 90
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Client:- Dumfries & Galloway Council	Dates: 18/01/2018-07/02/2018	Logged By BMY / RR / FM
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Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m CD)	Legend	Stratum Description	
		Depth (m)	Type	Results						
		10.30	SPT	N=50 (7,11,13,15,22 for 60mm)					Medium dense becoming very dense with depth grey slightly silty sandy fine to coarse rounded to subangular GRAVEL with low to high with depth cobble and boulder content*	
		10.30-11.80	B							11
		11.80	SPT	N=49 (13,12 for 25mm/13,12,12,12)						12
		11.80-13.30	B							13
		13.30	SPT	N=50 (13,12 for 50mm/18,32 for 25mm)						
		13.30-13.90	B			13.90	-5.81			
		13.90-14.60	B	36	21	24			Weak to strong, thick bedded (dip70deg), extensively incipiently brecciated, dark brownish grey, fine to medium grained METASANDSTONE with occasional very thin partings of very weak cleaved metamudstone, light grey quartz and reddish brown haematite veins to 40mm throughout. Moderately weathered. Discontinuities. Set1; 10-30deg, very close to medium spaced, terminating at intersection where seen, planar to undulating, smooth to rough, tight to part open Set2; 45-90deg, very close to medium spaced, persistent to 300mm, terminating at intersection where seen, planar to undulating, smooth to rough, tight to open. Both sets with reddish brown coatings to sub mm fill	14
		13.90-14.80	B 71							15
		14.80	SPT	N=50 (25,0 for 25mm/50 for 25mm)						
		14.60-15.10	B	0	0	>50				16
		15.10-16.10	100	48	42	11				17
		16.10-17.60	100	69	48	>50				18
		17.60-18.90	96	69	46	25				19
		18.90-20.00	100	80	59	6				
			TCR	SCR	RQD	FI			End of Borehole at 20.00 m	

Remarks: Hand excavated service clearance from GL - 1.2m
* Denotes visual assessment of description based on air flushed borehole returns
Groundwater ingress from surface during service clearance and encountered from 2.5m
Borehole terminated on engineers instruction
63mm diam HDPE Gas / Groundwater monitor installed to 14.0m

SPT Hammer HQ01	Scale 1:50	Log Status Final
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Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241386E - 565303N	Hole Type Cable/Rotary
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Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 13.3m Rotary cored, T2101 water flush, 13.3 - 18.5m	Level: 7.31 m AOD	Orientation 90
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Client:- Dumfries & Galloway Council	Dates: 18/01/2018-16/02/2018	Logged By MT / DF / RR
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Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m CD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.30	7.01		Dark brown silty sandy TOPSOIL	
		0.50	ES					Brown silty gravelly fine to medium locally slightly organic SAND	
		1.00	ES		1.00	6.31		Very dense brown silty sandy fine to coarse rounded to subangular GRAVEL with high cobble content, Gravel and cobbles of varying lithologies.	1
		2.00	CPT	N=50					2
		2.00	B	(8,16/19,23,8 for 75mm)	2.30	5.01		Medium dense becoming very dense grey slightly silty sandy fine to coarse rounded to angular GRAVEL with low to high cobble and boulder content	
		2.80	SPT	N=50					3
				(10,12/16,17,10,7 for 50mm)					
		2.80-4.30	B						4
		4.30	SPT	N=10					5
				(5,6/3,2,2,3)					
		4.30-5.80	B						6
		5.80	SPT	N=50					7
			(2,2/6,14,29,1 for 5mm)						
	5.80-7.30	B						8	
	7.30	SPT	N=50					9	
			(7,18/24,16,10 for 50mm)						
	7.30-8.80	B						10	
	8.80-10.30	B						11	

Continued next sheet

Remarks: Hand excavated service clearance from GL - 1.2m * Denotes visual assessment of description based on air flushed borehole returns Hard strata / slow progress from 1.3 - 2.3 (3 hrs) Groundwater encountered at 2.8m, rising to 1.1m after several days Borehole terminated on engineers instruction 63mm diam HDPE Gas / Groundwater monitor installed to 13.0m	SPT Hammer HQ01	Scale 1:50	Log Status Final
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Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241386E - 565303N	Hole Type Cable/Rotary
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Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 13.3m Rotary cored, T2101 water flush, 13.3 - 18.5m	Level: 7.31 m AOD	Orientation 90
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Client:- Dumfries & Galloway Council	Dates: 18/01/2018-16/02/2018	Logged By MT / DF / RR
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Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m CD)	Legend	Stratum Description	
		Depth (m)	Type	Results						
		10.30	SPT	N=50 (20,5 for 15mm/50 for 50mm)					Medium dense becoming very dense grey slightly silty sandy fine to coarse rounded to angular GRAVEL with low to high cobble and boulder content	11
		10.30-11.80	B							
		11.80	SPT	N=50 (5,20/30,20 for 25mm)					Weak to strong, thin to medium bedded (dip10-20deg) dark reddish brown mottled greenish grey, fine to coarse METASANDSTONE including thin beds of METAMUDSTONE with occasional light grey quartz veins to 20mm, Moderately to locally highly weathered. Discontinuities; Set1; 5-20deg, extremely close to medium spaced, terminating at intersection where seen, planar to undulating, smooth to rough, tight to open, occasionally with crushed rock fill to 25mm. Set2; 45-90deg, extremely close to wide spaced, persistent to 140mm, terminating at intersection where seen, planar to undulating, smooth to rough, tight to open. Both sets with dark reddish brown coating.	12
		11.80-13.30	B							
		13.30	SPT	N=50 (25 for 25mm/50 for 5mm)		13.30	-5.99			13
		13.30-14.70	100	66	37	>50				
		14.70-16.20	100	89	45	16				
		16.20-17.20	100	70	45					
		17.20-18.50	100	52	29	35				
						18.50	-11.19			
								End of Borehole at 18.50 m	19	
		TCR	SCR	RQD	FI					

Remarks: Hand excavated service clearance from GL - 1.2m * Denotes visual assessment of description based on air flushed borehole returns Hard strata / slow progress from 1.3 - 2.3 (3 hrs) Groundwater encountered at 2.8m, rising to 1.1m after several days Borehole terminated on engineers instruction 63mm diam HDPE Gas / Groundwater monitor installed to 13.0m	SPT Hammer HQ01	Scale 1:50	Log Status Final
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Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241257E - 565442N	Hole Type Rotary
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Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 13.3m Rotary cored, T2101 water flush, 13.3 - 17.9m	Level: 8.07 m AOD	Orientation 90
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Client:- Dumfries & Galloway Council	Dates: 26/01/2018-07/02/2018	Logged By MT / CE / FM
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Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m CD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.70	7.37		Dark brown silty sandy gravelly TOPSOIL grading to brown silty gravelly fine to medium slightly organic SAND with rootlets and low cobble content with depth (Possible Made Ground)	
		0.30	B			7.27			
		0.50	ES		1.30	6.77		Brown slightly sandy gravelly CLAY with lenses of Sand (Possible Made Ground)	
		0.50	B						
		1.00	ES		1.30-2.80			Black silty gravelly fine to medium slightly organic SAND*	
		1.00	B						
		1.30	SPT	N=27 (3,3/6,7,6,8)					
			1.30-2.80	B					
			2.80	SPT	N=36 (7,8/9,8,9,10)	3.40	4.67		Medium dense to dense light grey brown silty to very silty gravelly fine to coarse SAND with occasional clay lenses*
			2.80-4.30	B					
			4.30	CPT	N=47 (9,11/10,12,11,14)	4.30-5.80			Dense locally very dense grey brown silty sandy fine to coarse rounded to angular GRAVEL with low to medium cobble content*
			4.30-5.80	B					
			5.80	CPT	N=50 (25 for 75mm/50 for 75mm)				
			5.80-7.30	B					
			7.30	CPT	N=37 (8,9/10,8,8,11)	7.30-8.80			Dense locally very dense grey brown silty sandy fine to coarse rounded to angular GRAVEL with low to medium cobble content*
		7.30-8.80	B						
		8.80	CPT	N=50 (25 for 75mm/50 for 75mm)	8.80-10.30			Dense locally very dense grey brown silty sandy fine to coarse rounded to angular GRAVEL with low to medium cobble content*	
		8.80-10.30	B						

Remarks: Hand excavated service clearance from GL - 1.2m * Denotes visual assessment of description based on air flushed borehole returns Groundwater encountered at 2.8m Borehole terminated on engineers instruction 63mm diam HDPE Gas / Groundwater monitor installed to 12.0m	SPT Hammer HQ03	Scale 1:50	Log Status Final
	Continued next sheet		



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Borehole No
TP9-OP6
Sheet 2 of 2

Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241257E - 565442N	Hole Type Rotary
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Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 13.3m Rotary cored, T2101 water flush, 13.3 - 17.9m	Level: 8.07 m AOD	Orientation 90
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Client:- Dumfries & Galloway Council	Dates: 26/01/2018-07/02/2018	Logged By MT / CE / FM
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Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m CD)	Legend	Stratum Description	
		Depth (m)	Type	Results						
		10.30	CPT	N=39 (10,10/8,9,11,11)		10.70	-2.63		Dense locally very dense grey brown silty sandy fine to coarse rounded to angular GRAVEL with low to medium cobble content*	
		10.30-11.80	B			11.60	-3.53		Light grey slightly sandy silty CLAY*	11
		11.80	CPT	N=41 (8,9/10,10,9,12)		12.70	-4.63		Dense grey brown silty sandy fine to coarse rounded to angular GRAVEL with medium cobble and boulder content*	12
		11.80-13.30	B			13.30	-5.23		Grey META-SANDSTONE / META-SILTSTONE (wacke)*	13
		13.30	CPT	N=50 (25 for 75mm/50 for 75mm)		14.80			Medium strong to strong, thin to thickly bedded, locally laminated (dip20deg), dark grey veined light greenish to pinkish grey, fine to coarse grained METASANDSTONE, with subordinate thinly bedded METAMUDSTONE including quartz veins to 20mm locally. Slightly weathered. Discontinuities. Set1; 0-30deg extremely close to medium spaced, terminate at intersection where seen, planar to undulating, smooth to rough, tight to partly open. Set2; 45-90deg, very close to wide spaced, persistent to 160mm, terminate at intersection where seen, planar to undulating, smooth to rough, tight to part open. Both sets with patchy dark reddish brown coating to sub mm fill.	14
		13.30-14.80	100	50	20	16.30				15
		14.80-16.30	100	69	67	17.90				16
		16.30-17.90	100	97	74					17
					17.90	-9.83			End of Borehole at 17.90 m	18
										19

Remarks: Hand excavated service clearance from GL - 1.2m
* Denotes visual assessment of description based on air flushed borehole returns
Groundwater encountered at 2.8m
Borehole terminated on engineers instruction
63mm diam HDPE Gas / Groundwater monitor installed to 12.0m

SPT Hammer HQ03	Scale 1:50	Log Status Final
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Borehole No
BH1-OP7
Sheet 1 of 2

Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241566E - 564717N	Hole Type Rotary
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Drilling Methods:- Rotary open hole, Symatrix 170mm diam, GL - 14.8m Rotary cored, T2101 water flush, 14.8 - 19.8m	Level: 5.22 m AOD	Orientation 90
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Client:- Dumfries & Galloway Council	Dates: 17/01/2018-30/01/2018	Logged By MT / CE / FM
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Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m CD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	B		0.20	5.02		Brown clayey sandy gravelly TOPSOIL	
		0.20	ES					Medium dense dark brown clayey sandy fine to coarse GRAVEL organic to slightly organic with depth	
		0.50	ES						
		▽	1.00	ES					1
			1.30	SPT	N=28 (5,7/6,7,8,7)				
			1.30-2.80	B		1.80	3.42	Dense grey brown silty fine to coarse SAND and fine to coarse rounded to angular GRAVEL with medium to high cobble and boulder content, Gravel, cobbles and boulders of mixed lithologies.*	2
		▽	2.80	CPT	N=35 (7,8/8,9,8,10)				3
			2.80-4.30	B		3.50	1.72	Loose light grey to grey very silty locally slightly gravelly fine to medium SAND*	4
			4.30	SPT	N=9 (3,3/2,2,3,2)				5
			4.30-5.80	B					6
			5.80	SPT	N=6 (2,1/2,1,2,1)				7
			5.80-7.30	B					8
			7.30	SPT	N=6 (1,1/2,1,2,1)				9
			7.30-8.80	B					
		8.80	SPT	N=6 (1,1/1,2,1,2)					
		8.80-10.30	B						

Remarks: Hand excavated service clearance from GL - 1.2m Groundwater encountered at 1.0m and 2.8m * Denotes visual assessment of description based on air flushed borehole returns Borehole terminated on engineers instruction 63mm diam HDPE Gas / Groundwater monitor installed to 14.0m	SPT Hammer HQ03	Scale 1:50	Log Status Final
	Continued next sheet		



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241566E - 564717N	Hole Type Rotary
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Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 14.8m Rotary cored, T2101 water flush, 14.8 - 19.8m	Level: 5.22 m AOD	Orientation 90
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Client:- Dumfries & Galloway Council	Dates: 17/01/2018-30/01/2018	Logged By MT / CE / FM
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Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m CD)	Legend	Stratum Description	
		Depth (m)	Type	Results						
		10.30-11.80	B					Loose light grey to grey very silty locally slightly gravelly fine to medium SAND* Unable to undertake SPT Test at 10.3m due to differential hydrostatic head	11	
		11.80-13.30	B					Unable to undertake SPT Test at 11.8m due to differential hydrostatic head	12	
		13.30-14.80	B			13.90	-8.68	Grey brown silty fine to coarse SAND and fine to coarse angular to subangular rarely rounded GRAVEL with medium cobble content*	14	
						14.50	-9.28	Reddish brown META-SANDSTONE*		
		14.80-15.60		42	0	0		Strong locally weak to medium strong, dark reddish grey, fine to coarse grained METASANDSTONE including mainly steep dipping light yellowish grey quartz veins to 20mm and reddish brown haematite veins generally <2mm. Slightly to moderately, locally highly weathered. Discontinuities: Set1; 5-30deg, extremely close to close, terminating at intersection where seen, planar to undulating, rough, tight to open. Set2: (below 18.0m) 50-90deg, close spaced, terminating at intersection where seen, persistent to 150mm, planar to undulating, smooth to rough, tight to part open, with patchy greenish brown or reddish brown stain. Unstable conditions encountered between 14.8 - 16.3m - Additional casing installed	15	
		15.60-16.30		0	0	0			16	
		16.30-17.40		86	73	45			17	
		17.40-18.40		95	50	40			18	
		18.40-19.80		100	82	40			19	
							19.80	-14.58	End of Borehole at 19.80 m	
			TCR	SCR	RQD	FI				

Remarks: Hand excavated service clearance from GL - 1.2m Groundwater encountered at 1.0m and 2.8m * Denotes visual assessment of description based on air flushed borehole returns Borehole terminated on engineers instruction 63mm diam HDPE Gas / Groundwater monitor installed to 14.0m	SPT Hammer HQ03	Scale 1:50	Log Status Final
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Borehole No
BH1-SP
Sheet 1 of 2

Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241243E - 565145N	Hole Type Rotary
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Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 13.3m Rotary cored, T2101 water flush, 13.3 - 18.7m	Level: 9.24 m AOD	Orientation 90
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Client:- Dumfries & Galloway Council	Dates: 21/12/2017-23/12/2017	Logged By CE / FM
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Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m CD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	B		0.10	9.14	MADE GROUND comprising silty sandy Topsoil with rootlets		
		0.50	B		0.50	8.74		MADE GROUND comprising clayey slightly organic fine to coarse Sand and fine to coarse rounded to angular Gravel that includes Plastic, Paper and Brick	
		1.30	SPT	N=26 (5,6/7,6,6,7)				MADE GROUND comprising clayey gravelly fine to coarse Sand intermixed with brown clayey sandy fine to coarse rounded to angular Gravel with medium cobble content, locally slightly organic, Includes Bricks, fragments of Brick, Masonry, Glass and Coal.*	1
		1.30-2.80	B					2	
		2.80	SPT	N=28 (10,11/6,7,8,7)				3	
		2.80-4.30	B					4	
		4.30	SPT	N=50 (4,4/50 for 75mm)	4.30	4.94	Dark brown silty locally gravelly fine to coarse organic SAND with thin lenses of Clay, Gravel and Cobbles*	5	
		4.30-5.80	B					6	
	▽	5.80	SPT	N=31 (8,9/7,7,8,9)	5.60	3.64	Dense locally medium dense grey silty fine to coarse SAND and fine to coarse rounded to angular GRAVEL with low locally high cobble and boulder content, Gravel, cobbles and boulders of mixed lithologies.*	7	
		5.80-7.30	B					8	
		7.30	CPT	N=34 (7,8/9,9,8,8)				9	
		7.30-8.80	B						
		8.80	CPT	N=26 (5,6/6,7,6,7)					
		8.80-10.30	B						

Continued next sheet

Remarks: Hand excavated service clearance from GL - 1.2m
* Denotes visual assessment of description based on air flushed borehole returns
Groundwater encountered at 5.8m
Borehole terminated on engineers instruction
63mm diam HDPE Gas / Groundwater monitor installed to 13.0m

SPT Hammer
HQ03

Scale
1:50

Log Status
Final



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241243E - 565145N	Hole Type Rotary
Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 13.3m Rotary cored, T2101 water flush, 13.3 - 18.7m		Level: 9.24 m AOD	Orientation 90
Client:- Dumfries & Galloway Council		Dates: 21/12/2017-23/12/2017	Logged By CE / FM

Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m CD)	Legend	Stratum Description	
		Depth (m)	Type	Results						
		10.30	CPT	N=32 (7,8/8,9,6,9)					Dense locally medium dense grey silty fine to coarse SAND and fine to coarse rounded to angular GRAVEL with low locally high cobble and boulder content, Gravel, cobbles and boulders of mixed lithologies.*	
		10.30-11.80	B							11
		11.80	CPT	N=36 (8,7/7,9,9,11)						12
						12.40	-3.16		Grey META-SANDSTONE / META-SILTSTONE (wacke)*	
		13.30	CPT	N=50 (25 for 75mm/50 for 75mm)		13.30	-4.06			13
		13.30-14.80	73	64	39				Medium strong to strong, thick bedded (Dipping approx 50 degrees at 16.0m), grey stained reddish brown (above 16.1 and below 17.1m, fine to medium grained META-SANDSTONE (wacke) including mainly intact, occasionally vuggy, light grey Quartz veins (occasionally with reddish brown hematite) dipping 10 - 90 degrees, slightly weathered, moderately weathered between 13.7 - 14.7m. Discontinuities (Excluding intact veins): Set 1: dipping 10 - 30 degrees, closely to wide spaced, terminating at intersection where seen, planar to undulating, smooth to rough, tight to partly open. Set 2: 50 - 90 degrees, very closely to wide spaced, persistence observed to 650mm, terminating at intersection or in rock where seen, planar to undulating, smooth to rough, tight to partly open. Both sets with reddish brown stains / coatings, occasionally polished, few re-activating Quartz veins.	14
										15
		14.80-16.40	100	93	86					16
										17
		16.40-18.00	100	88	71					18
										19
		18.00-18.90	100	86	86					20
						18.90	-9.66			21
									End of Borehole at 18.90 m	22
			TCR	SCR	RQD	FI				

Remarks: Hand excavated service clearance from GL - 1.2m * Denotes visual assessment of description based on air flushed borehole returns Groundwater encountered at 5.8m Borehole terminated on engineers instruction 63mm diam HDPE Gas / Groundwater monitor installed to 13.0m	SPT Hammer HQ03	Scale 1:50	Log Status Final
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Borehole No
BH2-SP
Sheet 1 of 2

Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241297E - 565149N	Hole Type Rotary
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Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 10.3m Rotary open hole, 115mm diam, 10.3 - 10.7m Rotary cored, T2101 water flush, 10.3 - 10.5m & 10.7m - 15.7m	Level: 7.56 m AOD	Orientation 90
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Client:- Dumfries & Galloway Council	Dates: 15/12/2017-20/12/2017	Logged By CE / FM
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Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m CD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.60	6.96		Dark brown clayey sandy becoming gravelly with depth TOPSOIL with many rootlets
					1.20	6.36		Brown silty locally slightly organic fine to coarse SAND and fine to coarse rounded to angular GRAVEL with medium cobble content
	1.30	CPT	N=8 (1,2/2,2,2,2)					
	1.30-2.80	B						
	2.80	CPT	N=31 (6,12/12,6,7,6)					
	2.80-4.30	B						
	4.30	CPT	N=38 (7,8/14,7,8,9)					
	4.30-5.80	B						
	5.80	CPT	N=17 (8,5/5,4,4,4)					
	5.80-7.30	B						
	7.30	CPT	N=50 (25 for 75mm/50 for 75mm)					
	7.30-8.80	B						
	8.80	CPT	N=50 (25 for 75mm/50 for 75mm)					
8.80-10.30	B							
				9.90	-2.34			

Remarks: Hand Excavated Service clearance from GL - 1.2m * Denotes visual assessment of description based on air flushed borehole returns Groundwater encountered at approx 1.8m Borehole terminated on engineers instruction 63mm diam HDPE Gas / Groundwater monitor installed to 10.0m	SPT Hammer HQ03	Scale 1:50	Log Status Final
	Continued next sheet		



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Borehole No
BH2-SP
Sheet 2 of 2

Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241297E - 565149N	Hole Type Rotary
Drilling Methods:- Rotary open hole, Symetrix 170mm diam, GL - 10.3m Rotary open hole, 115mm diam, 10.3 - 10.7m Rotary cored, T2101 water flush, 10.3 - 10.5m & 10.7m - 15.7m		Level: 7.56 m AOD	Orientation 90
Client:- Dumfries & Galloway Council		Dates: 15/12/2017-20/12/2017	Logged By CE / FM

Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m CD)	Legend	Stratum Description
		Depth (m)	Type	Results					
		10.30-10.50	CPT	N=50 0/25 for 75mm/50 for 75mm)		10.70	-3.14		Dark reddish brown META-SANDSTONE / META-SILTSTONE (wacke)*
		10.70-11.40	100	71	0				Weak to medium strong, thickly bedded (dipping 35 - 60 degrees), dark reddish brown speckled light grey, fine to medium grained META-SANDSTONE (wacke), includes minor discontinuous light grey Quartz veins mainly <2mm thick and occasional platy "rip up" clasts of Siltstone to 15mm, moderately weathered. Discontinuities (Excluding intact veins); Set 1: dipping 0 - 30 degrees, very closely to medium spaced, terminating at intersection where seen, planar to undulating, rough, tight to partly open. Set 2: dipping 40 - 90 degrees, extremely closely to closely spaced, persistence observed to 400mm, terminating at intersection or in rock where seen, planar to undulating, tight to moderately wide. Both sets with reddish brown staining and occasional patchy greensih grey coating.
		11.40-12.70	100	38	0	28			
		12.70-13.60	100	56	0		13.25	-5.69	
		13.60-14.60	100	45	35		13.75	-6.19	Extremely weak to weak, laminated to thinly bedded (dipping 35 - 65 degrees), brecciated above 13.6m, dark reddish brown to grey, fine grained META-SANDSTONE and META-SILTSTONE (wacke) with occasional light grey Quartz veins, moderately to highly weathered. Discontinuities (Excluding intact veins), random orientation, extremely closely spaced in brecciated rock, planar, smooth, tight to partly open. Between 13.6 - 13.75m mainly dipping 50 - 70 degrees, extremely closely to closely spaced, persistence observed to 100mm, terminating at intersection, planar to undulating, smooth, tight.
								>50	
		14.60-15.70	100	66	18	25	15.70	-8.14	Medium strong, medium to thickly bedded (dipping 10 - 65 degrees) dark reddish brown, fine to coarse grained META-SANDSTONE (wacke), occasional intact light grey quartz veins to 20mm thick, moderately locally highly to completely weathered. Discontinuities (Excluding intact veins); Set 1: dipping 10 - 30 degrees, very closely to closely spaced, terminating at intersection where seen, planar to undulating, rough, tight to partly open. Set 2: dipping 50 - 90 degrees, very closely to closely spaced, persistence observed to 180mm, terminating at intersection or in rock where seen, planar to undulating, smooth to rough, tight to partly open. Both sets with reddish brown coating / sub-mm fill. Extremely weak to weak, brecciated, laminated reddish brown and green META-SILTSTONE between 14.25 - 14.5m
									End of Borehole at 15.70 m

Remarks:	Hand Excavated Service clearance from GL - 1.2m	SPT Hammer HQ03	Scale 1:50	Log Status Final
	* Denotes visual assessment of description based on air flushed borehole returns Groundwater encountered at approx 1.8m Borehole terminated on engineers instruction 63mm diam HDPE Gas / Groundwater monitor installed to 10.0m			



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241093E - 565756N Level: 8.26 m AOD	Date 05/02/2018
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Excavation Method:- Hand excavated, GL - 0.6m	Dimensions: 1.00m Depth 0.60m	Scale 1:25
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Client: Dumfries & Galloway Council	Logged By BMY / FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20 0.20	ES B		0.30	7.96		Dark reddish brown to black psuedofibrous to fibrous PEAT
0.50 0.50	ES B		0.60	7.66		Black silty sandy fine to coarse GRAVEL with low to medium cobble content
Trialpit Complete at 0.60 m						

Remarks: Trial pit sides stable during excavation Trial pit terminated due to water ingress	Log Status Final
Groundwater: Groundwater encountered at 0.5m rising to 0.3m after 30 mins	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241207E - 565460N Level: 6.70 m AOD	Date 05/02/2018
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Excavation Method:- Hand excavated, GL - 1.0m	Dimensions: 1.00m Depth 1.10m	Scale 1:25
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Client: Dumfries & Galloway Council	Logged By BMY / FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20 0.20	ES B		0.50	6.20		MADE GROUND comprising Black clayey organic fine to coarse Sand and fine to coarse rounded to angular Gravel with low cobble and boulder content at depth, Includes China and Brick fragments.
0.50 0.50	ES B					MADE GROUND comprising Black clayey sandy gravelly Cobbles and Boulders, Matrix surrounding cobbles noted organic
1.00 1.00	ES B		1.10	5.60		<p>-----</p> <p>Trialpit Complete at 1.10 m</p>

Remarks:	Trial pit sides stable during excavation Trial pit terminated due to water ingress.	Log Status Final
Groundwater:	Groundwater encountered at 1.0m	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 240965E - 566088N Level: 14.28 m AOD	Date 25/01/2018
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Excavation Method:- 3T Mini Excavator, GL - 1.6m	Dimensions: 2.00m Depth 1.60m	Scale 1:25
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Client: Dumfries & Galloway Council	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.45	13.83		MADE GROUND comprising Dark brown clayey sandy gravelly Topsoil with medium to high cobble and boulder content
0.50	ES					
0.80	B		1.10	13.18		MADE GROUND comprising Dark grey mottled light brown and yellowish light brown clayey to very clayey fine to coarse Sand and fine to coarse angular to subangular Gravel with medium to high cobble and boulder content, Includes Bricks, fragments of Brick, Masonry, Slate, Roots, Rootlets and thin lenses of Demo Rubble, Slightly organic to organic where dark grey.
1.00	ES					
1.30	D		1.60	12.68		Soft orange brown slightly sandy gravelly silty CLAY of very high plasticity with low cobble and boulder content (Possible Made Ground)
1.50	ES					
						<p>Boulder obstruction at 1.6m</p> <p>Trialpit Complete at 1.60 m</p>

Remarks: Trial pit terminated on boulder obstruction and trial pit sides collapsing at depth	Log Status Final
Groundwater: No groundwater encountered	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241039E - 565942N Level: 10.34 m AOD	Date 25/01/2018
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Excavation Method:- 3T Mini Excavator, GL - 2.4m	Dimensions: 2.00m Depth 2.40m	Scale 1:25
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Client: Dumfries & Galloway Council	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.05			0.05	10.29		MADE GROUND comprising Red single sized Gravel
0.20	ES					MADE GROUND comprising Grey brown mottled dark yellowish brown slightly silty to silty sandy fine to coarse Gravel with high cobble and boulder content, Includes many Bricks and fragments of Brick, Masonry, Tiles, Wire, and Roots, Pockets of peaty debris encountered at depth.
0.40	B					
0.50	ES					
1.00	ES					
1.40	B					
1.50	ES					
1.90	B					
2.00	ES					Becoming very clayey after approx 1.8m
2.30	D		2.30	8.04		
			2.40	7.94		Orange brown mottled yellow brown silty to very silty fine to medium SAND with possible lenses of soft Silt
Trialpit Complete at 2.40 m						

Remarks: Trial pit sides collapsing with depth Trial pit terminated due to collapse.	Log Status
Groundwater: No groundwater encountered	Final



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241069E - 565831N Level: 10.06 m AOD	Date 26/01/2018
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Excavation Method:- 3T Mini Excavator, GL - 2.0m	Dimensions: 2.00m	Scale 1:25
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Client: Dumfries & Galloway Council	Depth 2.00m 0.60m	Logged By BMY / FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.10	9.96		MADE GROUND comprising Dark brown silty sandy Topsoil with rootlets
0.50 0.60	ES B					MADE GROUND comprising Light grey brown mottled dark brown silty very sandy fine to coarse angular to subangular Gravel with high cobble and boulder content predominantly of Masonry, Includes also variable proportions of Ash, Tile and Brick fragments.
						Lense 150mm thick of dark grey Ash and Clinker at approx 0.7m
1.00	ES		0.95	9.11		MADE GROUND comprising Light yellowish brown mottled dark brown silty very gravelly fine to coarse Sand with low cobble content predominantly of Lime Mortar / Masonry fragments, Includes medium to coarse gravel and cobble sized pockets of peaty debris and Roots.
1.40 1.50	B ES		1.50	8.56		MADE GROUND comprising Grey brown silty sandy fine to coarse rounded to subangular Gravel with low cobble content, Includes rare fine to medium gravel of Masonry and Brick fragments.
1.80	B					
2.00	ES		2.00	8.06		Trialpit Complete at 2.00 m

Remarks:	Trial pit sides collapsing with depth Trial pit terminated due to collapse.	Log Status
Groundwater:	No groundwater encountered	Final



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241087E - 565772N Level: 9.47 m AOD	Date 29/01/2018
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Excavation Method:- 3T Mini Excavator, GL - 2.0m	Dimensions: 2.00m	Scale 1:25
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Client: Dumfries & Galloway Council	Depth 1.90m	0.60m	Logged By BMY / RR / FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.20	ES		0.05	9.42		MADE GROUND comprising White single sized Gravel	
0.50 0.50	ES B		0.40	9.07		MADE GROUND comprising Light grey mottled orange and black silty very gravelly fine to coarse Sand with high cobble content predominantly of Masonry, Includes variable quantities of Ash, Coal and Bricks.	
1.00 1.00	ES B		0.90	8.57		Soft becoming firm locally stiff with depth sandy silty CLAY with lenses (generally <2mm thick) of silty fine to medium Sand and organic debris (Peat) with depth, Locally with Roots / Rootlets.	1
1.60	B		1.80 1.90	7.67 7.57		Reddish brown slightly silty sandy fine to coarse GRAVEL with high cobble content	2
Trialpit Complete at 1.90 m							
							3
							4

Remarks:	Trial pit sides stable during excavation Trial pit terminated at scheduled depth.	Log Status Final
Groundwater:	Groundwater encountered at 1.4m (Seepage from westerly face) and 1.8m	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241245E - 565248N Level: 8.06 m AOD	Date 08/02/2018
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Excavation Method:- Hand excavated, GL - 1.2m	Dimensions: 1.00m Depth 1.20m	Scale 1:25
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Client: Dumfries & Galloway Council	Logged By BMY / FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20 0.20	ES B		0.40	7.66		MADE GROUND comprising Dark brown silty sandy gravelly Topsoil with roots and rootlets throughout, Includes fragments of Brick and Coal.
0.50 0.50	ES B					MADE GROUND comprising Light grey brown silty sandy fine to coarse rounded to angular Gravel with low cobble content, Includes fragments of Brick and Concrete.
1.00 1.00	ES B		0.80	7.26		MADE GROUND comprising Brown silty to very silty gravelly fine to medium rarely coarse slightly organic Sand, Includes occasional fragments of Coal.
			1.20	6.86		<p>-----</p> <p>Trialpit Complete at 1.20 m</p>

Remarks: Approx 400mm diam VC pipe encountered at 1.0m Trial pit terminated at scheduled depth.	Log Status Final
Groundwater: No groundwater encountered	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241309E - 564969N Level: 7.91 m AOD	Date 05/02/2018
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Excavation Method:- 3T Mini Excavator, GL - 1.6m	Dimensions: 2.00m Depth 1.60m	Scale 1:25
Client: Dumfries & Galloway Council		Logged By FM

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.30	7.61		MADE GROUND comprising Dark brown silty sandy Topsoil with some rootlets
0.50	ES		0.50	7.41		MADE GROUND comprising Soft to firm light orange brown slightly sandy very silty locally slightly organic Clay, Includes some rootlets and occasional Coal fragments.
0.70	B					Firm to stiff locally very soft to soft light grey mottled orange and rarely black slightly sandy silty CLAY, Occasional silty partings at top becoming thinly laminated with depth (Laminae includes Silt, Clay, fine to medium and medium to coarse Sand).
1.00	ES					
1.50	B		1.40	6.51		Orange brown mottled grey slightly sandy gravelly CLAY with low cobble and boulder content
			1.60	6.31		Obstructed on cobbles / boulders at 1.6m Trialpit Complete at 1.60 m

Remarks:	Trial pit sides stable during excavation Trial pit terminated at scheduled depth.	Log Status Final
Groundwater:	No groundwater encountered	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241318E - 565298N Level: 7.68 m AOD	Date 31/01/2018
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Excavation Method:- JCB 3CX, GL - 2.4m	Dimensions: 3.00m Depth 2.40m	Scale 1:25
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Client: Dumfries & Galloway Council	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.20	7.48		MADE GROUND comprising Moss overlying dark brown silty sandy Topsoil with rootlets
0.50	ES		0.40	7.28		MADE GROUND comprising Grey silty locally very silty sandy fine to coarse rounded to angular Gravel with medium cobble and low boulder content
0.50	B					MADE GROUND comprising Orange brown silty very sandy fine to coarse rounded to subangular Gravel with low cobble content
			0.80	6.88		Orange brown silty gravelly fine to medium locally coarse SAND
1.00	ES		0.90	6.78		Dark reddish brown slightly silty sandy fine to coarse rounded to subangular GRAVEL and COBBLES with high boulder content
1.50	B					Stained / coated Black (Possibly Geothite) from 1.5 - 1.8m
			1.80	5.88		Grey slightly silty sandy fine to coarse rounded to angular GRAVEL with low cobble content
2.20	B		2.40	5.28		
Trialpit Complete at 2.40 m						

Remarks:	Trial pit sides collapsing and undermining with depth Trial pit terminated due to collapsing / undermining.	Log Status
Groundwater:	Groundwater ingress from surface and encountered at 1.8m	Final



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241344E - 565291N Level: 7.66 m AOD	Date 30/01/2018
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Excavation Method:- JCB 3CX, GL - 2.3m	Dimensions: 3.00m	Scale 1:25
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Client: Dumfries & Galloway Council	Depth 2.30m	0.60m	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.20	ES		0.10	7.56		MADE GROUND comprising Dark brown silty sandy Topsoil with rootlets	
			0.35	7.31		MADE GROUND comprising Orange brown slightly silty sandy fine to coarse rounded to subangular Gravel with low cobble content locally intermixed with Topsoil	
0.50	ES		0.70	6.76		MADE GROUND comprising Grey silty locally very silty sandy fine to coarse rounded to angular Gravel with low cobble content	
0.70	B						
1.00	ES		0.90	6.76		Brown silty gravelly fine to medium SAND	1
1.20	B						
2.00	B		1.45	6.21		Dark reddish brown silty sandy fine to coarse rounded to subangular GRAVEL with low cobble content	
			2.30	5.36		Trialpit Complete at 2.30 m	
							3
							4

Remarks: Trial pit sides stable during excavation Trial pit terminated at scheduled depth.	Log Status
Groundwater: Groundwater encountered at 1.5m	Final



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241373E - 565304N Level: 7.44 m AOD	Date 30/01/2018
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Excavation Method:- JCB 3CX, GL - 2.3m	Dimensions: 3.00m	Scale 1:25
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Client: Dumfries & Galloway Council	Depth 2.30m	0.60m	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.30	7.14		Dark brown silty very sandy locally gravelly TOPSOIL with many rootlets
0.40	B		0.55	6.89		Dark reddish brown very silty gravelly to very gravelly fine to medium SAND with low cobble content and many rootlets (Possibly slightly organic)
0.50	ES					
1.00	ES					
1.60	B					Stained / coated Black (possibly Geothite) after 1.5m
			2.30	5.14		Trialpit Complete at 2.30 m

Remarks: Trial pit sides stable during excavation Trial pit terminated at scheduled depth.	Log Status Final
Groundwater: Groundwater encountered at 1.5m	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241638E - 564758N Level: 9.10 m AOD	Date 06/02/2018
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Excavation Method:- 3T Mini Excavator, GL - 2.5m	Dimensions: 2.00m Depth 2.50m	Scale 1:25
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Client: Dumfries & Galloway Council	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.35	8.75		Turf overlying light orange brown mottled grey brown slightly sandy silty slightly organic CLAY with rootlets
0.50	ES					Firm locally very soft becoming very soft to soft after 2.0m grey locally mottled orange brown silty CLAY of high plasticity occasionally closely fissured towards top with black coatings and includes pockets / lenses of organics.
1.00 1.00	ES B		2.50	6.60		
2.00	B					Trialpit Complete at 2.50 m

Remarks: Trial pit sides stable during excavation Trial pit terminated at scheduled depth.	Log Status Final
Groundwater: No groundwater encountered	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241579E - 564830N Level: 9.70 m AOD	Date 06/02/2018
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Excavation Method:- 3T Mini Excavator, GL - 2.5m	Dimensions: 2.00m Depth 2.50m	Scale 1:25
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Client: Dumfries & Galloway Council	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.35	9.35		Turf overlying light orange brown mottled grey brown slightly sandy silty slightly organic CLAY with rootlets
0.50 0.60	ES B					Firm to stiff locally soft becoming soft locally very soft after 1.7m light orange brown mottled grey, orange brown and black silty CLAY of very high plasticity occasionally fissured towards top with black coatings
1.00	ES		2.50	7.20		becoming grey locally mottled dark grey to black in colour with organic lenses and pockets between 1.2 - 2.5m
1.60	B					Trialpit Complete at 2.50 m
2.50	B					

Remarks: Trial pit sides stable during excavation Trial pit terminated at scheduled depth.	Log Status Final
Groundwater: No groundwater encountered	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241486E - 564855N Level: 5.78 m AOD	Date 31/01/2018
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Excavation Method:- JCB 3CX, GL - 1.8m	Dimensions: 3.00m	Scale 1:25
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Client: Dumfries & Galloway Council	Depth 1.80m	0.60m	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.60	5.18		Dark brown silty sandy TOPSOIL grading to dark reddish brown silty gravelly fine to medium slightly organic Sand with rootlets with depth
0.50	ES					
0.80	B		1.80	3.98		Grey slightly silty sandy fine to coarse rounded to subangular GRAVEL with low to medium cobble content
1.00	ES					
						Trialpit Complete at 1.80 m

Remarks: Trial pit sides collapsing with depth Trial pit terminated due to collapse.	Log Status Final
Groundwater: Groundwater encountered at 0.9m	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241579E - 564830N Level: 9.70 m AOD	Date 31/01/2018
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Excavation Method:- JCB 3CX, GL - 1.8m	Dimensions: 3.00m	Scale 1:25
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Client: Dumfries & Galloway Council	Depth 1.80m	0.60m	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.60	9.10		Dark brown silty sandy TOPSOIL grading to dark reddish brown silty gravelly fine to medium slightly organic Sand with rootlets
0.50	ES					
0.80	B		1.15	8.55		Grey mottled orange brown silty locally very silty fine to medium interbedded with medium to coarse SAND
1.00	ES					
1.80	B		1.80	7.90		Grey slightly silty sandy fine to coarse rounded to subangular GRAVEL with low to medium cobble content
Trialpit Complete at 1.80 m						

Remarks:	Trial pit sides collapsing and undermining with depth Trial pit terminated due to collapse.	Log Status
Groundwater:	Groundwater encountered at 0.6m	Final



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241393E - 564972N Level: 6.23 m AOD	Date 31/01/2018
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Excavation Method:- JCB 3CX, GL - 2.2m	Dimensions: 3.00m	Scale 1:25
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Client: Dumfries & Galloway Council	Depth 2.20m	0.60m	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.60	5.63		Dark brown silty sandy TOPSOIL grading to dark reddish brown silty gravelly fine to medium slightly organic Sand with rootlets with depth
0.50	ES					
0.80	B		2.20	4.03		Grey silty sandy fine to coarse rounded to angular GRAVEL with low to medium cobble content
1.00	ES					
1.80	B					Trialpit Complete at 2.20 m

Remarks:	Trial pit sides relatively stable during excavation Trial pit terminated at scheduled depth.	Log Status Final
Groundwater:	Groundwater encountered at 1.1m	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241347E - 565017N Level: 6.27 m AOD	Date 19/12/2017
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Excavation Method:- 3T Mini Excavator, GL - 2.0m	Dimensions: 3.50m	Scale 1:25
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Client: Dumfries & Galloway Council	Depth 2.00m 0.50m	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES					Dark brown silty sandy very gravelly TOPSOIL with many roots and rootlets grading to light brown silty to very silty slightly gravelly locally slightly organic fine to medium Sand with rootlets
0.50	ES					
0.90	B		0.80	5.47		Brown mottled black silty fine to coarse SAND
1.00	ES		1.00	5.27		Grey locally with mottled black or dark purplish red staining slightly silty sandy to very sandy fine to coarse rounded to subangular GRAVEL with low cobble and boulder content, Gravel, cobbles and boulders of mixed lithologies.
1.50	B					
			2.00	4.27		Trialpit Complete at 2.00 m

Remarks:	Trial pit sides undermining with depth Trial pit terminated due to undermining.	Log Status Final
Groundwater:	Groundwater encountered at 0.95m	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241316E - 565056N Level: 6.63 m AOD	Date 19/12/2017
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Excavation Method:- 3T Mini Excavator, GL - 1.8m	Dimensions: 4.50m	Scale 1:25
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Client: Dumfries & Galloway Council	Depth 1.80m	0.50m	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES					Dark brown silty sandy very gravelly TOPSOIL with many roots and rootlets grading to brown silty to very silty slightly gravelly locally slightly organic fine to medium Sand with rootlets
0.50 0.50	ES B					
1.00 1.10	ES B		1.00 1.20	5.63 5.43		Grey slightly silty fine to coarse SAND and fine to medium rounded to subangular GRAVEL
1.60	B		1.80	4.83		Grey to reddish brown with depth slightly silty very gravelly fine to coarse SAND with high cobble and boulder content, Gravel, cobbles and boulders of mixed lithologies.
Trialpit Complete at 1.80 m						

Remarks:	Trial pit sides undermining with depth Trial pit terminated due to undermining.	Log Status Final
Groundwater:	Groundwater encountered at 1.15m	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241340E - 564926N Level: 6.70 m AOD	Date 05/02/2018
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Excavation Method:- 3T Mini Excavator, GL - 1.9m	Dimensions: 2.00m	Scale 1:25
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Client: Dumfries & Galloway Council	Depth 1.90m 0.60m	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.20	ES		0.30	6.40		MADE GROUND comprising Dark brown silty sandy Topsoil with some rootlets	
0.50	ES					MADE GROUND comprising Light brown to grey brown silty to very silty fine to coarse Sand and fine to coarse rounded to angular Gravel with low to medium cobble content, Includes rare Bricks and fragments of Tile with depth.	
0.80	B		1.20	5.50		MADE GROUND comprising Brown silty sandy fine to coarse rounded to angular Gravel with medium to high cobble content, Includes rare fragments of Brick and Glass.	1
1.00	ES						
1.50	ES		1.90	4.80		Trialpit Complete at 1.90 m	2
1.80	B						
							3
							4

Remarks:	Slight collapse of trial pit sides with depth, Trial pit sides undermining with depth Trial pit terminated due to collapse / undermining.	Log Status Final
Groundwater:	Groundwater encountered at 1.8m	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241374E - 564881N Level: 6.39 m AOD	Date 05/02/2018
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Excavation Method:- 3T Mini Excavator, GL - 2.1m	Dimensions: 2.00m Depth 2.10m	Scale 1:25
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Client: Dumfries & Galloway Council	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.50	5.89		MADE GROUND comprising Dark brown silty sandy gravelly Topsoil with low cobble and boulder content, Includes rare Glass fragments.
0.50	ES					
0.80	B		1.10	5.29		MADE GROUND comprising Dark grey brown silty fine to coarse Sand and fine to coarse rounded to angular Gravel, Includes fragments of China and Tile.
1.00	ES					
1.50	ES		1.40	4.99		MADE GROUND comprising Light grey brown very clayey very sandy fine to coarse angular to tabular occasionally subrounded Gravel with low cobble content, Includes occasional fragments of orange brown Tile.
1.80	B					
			2.10	4.29		Light grey brown clayey sandy fine to coarse angular to tabular occasionally subrounded GRAVEL with low to medium cobble content, Includes some rootlets and lenses / pockets (up to cobble sized) of silty fine to coarse Sand and Peaty debris.
Trialpit Complete at 2.10 m						

Remarks:	Trial pit sides stable during excavation Trial pit terminated at scheduled depth.	Log Status Final
Groundwater:	Groundwater seepages encountered after 1.4m	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241399E - 564828N Level: 6.43 m AOD	Date 22/01/2018
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Excavation Method:- JCB 3CX, GL - 2.4m	Dimensions: 3.00m Depth 2.40m	Scale 1:25
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Client: Dumfries & Galloway Council	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.10	6.33		MADE GROUND comprising Dark brown silty sandy Topsoil
			0.40	6.03		MADE GROUND comprising Dark brownish grey slightly silty sandy fine to coarse rounded to subangular Gravel
0.50	ES		0.50	5.93		MADE GROUND comprising Firm to very stiff grey sandy slightly gravelly silty Clay that includes fragments of Brick and Coal.
0.70	B					MADE GROUND comprising Brownish grey very clayey very sandy fine to coarse rounded to angular Gravel with rare cobbles
1.00	ES		0.85	5.58		Very soft to soft dark brown sandy slightly gravelly slightly organic CLAY
1.00	B					
1.50	ES		1.40	5.03		Greyish brown slightly silty sandy fine to coarse rounded to angular GRAVEL with low cobble content, Gravel and cobbles of varying lithologies.
2.00	B					
			2.40	4.03		Trialpit Complete at 2.40 m

Remarks: Trial pit sides collapsing with depth Trial pit terminated due to collapse.	Log Status
Groundwater: Groundwater encountered at 1.2m	Final



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241488E - 564768N Level: 5.87 m AOD	Date 22/01/2018
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Excavation Method:- JCB 3CX, GL - 2.3m	Dimensions: 3.00m	Scale 1:25
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Client: Dumfries & Galloway Council	Depth 2.30m	0.60m	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.70	5.17		Dark brown clayey sandy gravelly TOPSOIL grading to brown silty fine to medium locally slightly organic SAND with depth, including roots and rootlets throughout.
0.50	ES					
1.00 1.00	ES B		2.30	3.57		Dark reddish brown slightly silty sandy fine to coarse rounded to angular GRAVEL with high cobble and low boulder content
2.00	B					
Trialpit Complete at 2.30 m						

Remarks: Trial pit sides collapsing with depth trial pit terminated due to collapse.	Log Status Final
Groundwater: Groundwater encountered at 1.8m	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241550E - 564740N Level: 5.02 m AOD	Date 22/01/2018
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Excavation Method:- JCB 3CX, GL - 2.35m	Dimensions: 3.00m	Scale 1:25
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Client: Dumfries & Galloway Council	Depth 2.35m	0.60m	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES					Dark brown clayey sandy TOPSOIL with roots, rootlets and rare crisp packets / litter debris Becoming very gravelly after approx 0.2m
0.50 0.60	ES B		0.50	4.52		Grey brown silty very gravelly fine to coarse SAND with low cobble content, Gravel and cobbles of mixed lithologies.
1.00	ES		1.10	3.92		Includes a lense (approx 150mm thick) of bluish grey very silty fine to medium Sand along riverside TP face
1.60	B					Grey brown becoming orange brown with depth slightly silty slightly sandy fine to coarse rounded to subangular GRAVEL and COBBLES with medium boulder content, Gravel, cobbles and boulders of mixed lithologies. Layer of conjoined cobbles and boulders encountered at approx 1.2m
Trialpit Complete at 2.35 m						

Remarks:	Trial pit sides collapsing and undermining with depth Trial pit terminated due to collapse.	Log Status
Groundwater:	Groundwater encountered at 0.9m	Final



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241326E - 565185N Level: 7.87 m AOD	Date 14/12/2017
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Excavation Method:- JCB 3CX, GL - 3.35m	Dimensions: 5.50m	Scale 1:25
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Client: Dumfries & Galloway Council	Depth 3.35m	1.50m	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES					Dark brown silty sandy becoming very gravelly towards base TOPSOIL with roots and rootlets
0.50	ES		0.50	7.37		Dark reddish brown silty to very silty gravelly fine to medium SAND (possibly slightly organic) (Non Plastic)
0.80	B					
1.00	ES					
1.80	B		1.20	6.67		Dark reddish brown slightly silty sandy fine to coarse rounded to subangular GRAVEL with low cobble content, Gravel and cobbles of mixed lithologies.
			2.30	5.57		Grey silty fine to coarse SAND
2.80	B		2.50	5.37		Grey becoming reddish brown with depth slightly silty sandy fine to coarse rounded to angular GRAVEL with low to high cobble and boulder content, Gravel, cobbles and boulders of mixed lithologies.
			3.35	4.52		Trialpit Complete at 3.35 m

Remarks:	Trial pit sides collapsing and undermining with depth Trial pit terminated due to collapsing / undermining.	Log Status
Groundwater:	Groundwater encountered at 2.4m	Final



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241304E - 565173N Level: 7.46 m AOD	Date 13/12/2017
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Excavation Method:- JCB 3CX, GL - 2.65m	Dimensions: 5.50m Depth 2.65m	Scale 1:25
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Client: Dumfries & Galloway Council	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.40	7.06		Dark brown becoming orange brown with depth silty sandy TOPSOIL with some rootlets and low cobble and boulder content towards base
0.50 0.60	ES B					
1.00	ES		1.30	6.16		Dark brownish grey becoming grey with depth slightly silty sandy fine to coarse rounded to subangular GRAVEL with high cobble content and low boulder content Gravel, cobbles and boulders of mixed lithologies.
1.50	B					
2.50	B		2.10	5.36		Grey slightly sandy to sandy fine to coarse rounded to subangular GRAVEL with high cobble content and low boulder content. Gravel, cobbles and boulders of mixed lithologies.
			2.65	4.81		Trialpit Complete at 2.65 m

Remarks:	Trial pit sides collapsing with depth and undermining below approx 2.1m Trial pit terminated due to collapsing / undermining.	Log Status Final
Groundwater:	groundwater encountered at 2.1m	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241344E - 565163N Level: 7.94 m AOD	Date 13/12/2017
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Excavation Method:- JCB 3CX, GL - 2.95m	Dimensions: 5.50m Depth 2.95m	Scale 1:25
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Client: Dumfries & Galloway Council	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.40	7.54		Dark brown silty sandy TOPSOIL with some rootlets. Becoming very gravelly after approx 0.25m
0.50	ES					Dark reddish brown very silty gravelly becoming very gravelly with depth fine to coarse SAND with low cobble content and rootlets towards top (possibly slightly organic towards top).
0.80	B		1.40	6.54		Dark brownish grey silty sandy fine to coarse rounded to subangular GRAVEL with low to medium cobble content.
1.00	ES					Shallow dipping bed (<5 degrees) of possibly very sandy Gravel approx 200mm thick observed in TP sidewall at approx 1.7m.
1.80	B		2.60	5.34		Grey slightly sandy fine to coarse rounded to subangular GRAVEL with low cobble and boulder content
2.70	B					
			2.95	4.99		Trialpit Complete at 2.95 m

Remarks:	Trial pit sides collapsing with depth and undermining below 2.6m Trial pit terminated due to collapsing / undermining.	Log Status
Groundwater:	Groundwater encountered at 2.6m	Final



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241379E - 565147N Level: 6.86 m AOD	Date 13/12/2017
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Excavation Method:- JCB 3CX, GL - 2.3m	Dimensions: 5.50m	Scale 1:25
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Client: Dumfries & Galloway Council	Depth 2.30m 1.50m	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.40	6.46		Dark brown silty sandy TOPSOIL
0.50	ES					
0.70	B		1.60	5.26		Light brown silty to very silty slightly gravelly fine to coarse SAND grading to medium to coarse with depth. Includes thin lenses of reddish brown staining towards base.
1.00	ES					
1.70	B		2.30	4.56		Grey becoming reddish brown silty sandy fine to coarse rounded to angular GRAVEL with medium to high cobble content. Gravel and cobbles of mixed lithologies.
Trialpit Complete at 2.30 m						

Remarks:	Trial pit undermining below 1.65m Trial pit terminated due to undermining.	Log Status Final
Groundwater:	Groundwater encountered at 1.65m	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241357E - 565136N Level: 7.64 m AOD	Date 13/12/2017
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Excavation Method:- JCB 3CX, GL - 3.3m	Dimensions: 5.50m Depth 3.30m	Scale 1:25
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Client: Dumfries & Galloway Council	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.40	7.24		Dark brown silty sandy TOPSOIL with some rootlets, becoming very gravelly after approx 0.3m.
0.50	ES		0.70	6.94		Brown very silty gravelly fine to coarse SAND with some rootlets (Possibly slightly organic)
0.80	B		2.30	5.34		Dark orange brown silty sandy locally very sandy fine to coarse rounded to subangular GRAVEL with medium cobble content, Gravel and cobbles of mixed lithologies.
1.00	ES					
2.30	B		2.30	5.34		Grey becoming reddish brown with depth slightly sandy fine to coarse rounded to subangular occasionally angular or tabular GRAVEL with medium to high cobble content and low boulder content, Gravel, cobbles and boulders of mixed lithologies.
3.30	B		3.30	4.34		Trialpit Complete at 3.30 m

Remarks:	Trial pit undermining below approx 2.5m Trial pit terminated due to undermining.	Log Status
Groundwater:	Conditions becoming damp at 2.3m, Groundwater encountered at 2.5m	Final



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241327E - 565111N Level: 7.60 m AOD	Date 13/12/2017
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Excavation Method:- JCB 3CX, GL - 3.0m	Dimensions: 5.50m	Scale 1:25
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Client: Dumfries & Galloway Council	Depth 3.00m 1.50m	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.45	7.15		Dark brown silty sandy TOPSOIL with some rootlets, becoming very gravelly after approx 0.25m.
0.50	ES					Dark orange brown silty sandy fine to coarse rounded to subangular GRAVEL with low cobble content, Gravel and cobbles of mixed lithologies.
0.65	B		1.00	6.60		Dark reddish brown silty slightly gravelly fine to coarse SAND, Includes lenses (<100mm thick) of fine and fine to medium Gravel.
1.00	ES					
1.50	B		1.90	5.70		Light grey to dark grey becoming reddish brown with depth sandy fine to coarse rounded to angular GRAVEL with medium cobble and low boulder content. Gravel, cobbles and boulders of mixed lithologies.
2.50	B					
			3.00	4.60		Trialpit Complete at 3.00 m

Remarks:	Trial pit sides collapsing with depth and undermining below 2.4m Trial pit terminated due to collapsing / undermining.	Log Status
Groundwater:	Groundwater encountered at 2.4m	Final



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241300E - 565090N Level: 6.65 m AOD	Date 19/12/2017
Excavation Method:- 3T Mini Excavator, GL - 2.0m		Dimensions: 4.50m Depth 2.00m	Scale 1:25
Client: Dumfries & Galloway Council			Logged By FM

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description		
Depth (m)	Type	Results						
0.20	ES					Dark brown silty sandy very gravelly TOPSOIL with many roots and rootlets grading to brown silty to very silty slightly gravelly locally slightly organic fine to medium Sand with rootlets		
0.50	ES							
0.80	B							
1.00	ES		0.95	5.70		Grey slightly silty fine to coarse SAND and fine to medium rarely coarse rounded to subangular GRAVEL	1	
1.30	B		1.15	5.50		Grey mottled reddish brown and occasionally black slightly silty fine to coarse SAND with lenses (generally <100mm thick) of medium to coarse Sand, very soft Silt / Clay of low plasticity and fine to medium rounded Gravel.		
						With high cobble and boulder content after approx 1.5m		
			2.00	4.65			2	
Trialpit Complete at 2.00 m								
							3	
							4	

Remarks:	Trial pit sides undermining with depth Trial pit terminated due to undermining.	Log Status Final
Groundwater:	Groundwater encountered at 1.0m	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241350E - 565054N Level: 7.04 m AOD	Date 14/12/2017
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Excavation Method:- JCB 3CX, GL - 2.7m	Dimensions: 5.50m	Scale 1:25
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Client: Dumfries & Galloway Council	Depth 2.70m	1.50m	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.20	ES					Dark brown silty sandy gravelly TOPSOIL grading to brown very silty slightly organic fine to medium Sand with roots and rootlets throughout	
0.50	ES						
1.00 1.00	ES B		0.80	6.24		Diffuse margin to brown silty fine to coarse SAND with some roots and rootlets (Non Plastic)	1
			1.50	5.54		Bluish grey slightly silty fine to coarse SAND	
			1.80	5.24		Partly decomposed tree surrounded by Peaty debris encountered at approx 1.7m	
2.00	B					Grey becoming reddish brown with depth slightly silty sandy fine to coarse rounded to angular GRAVEL with high cobble content, Gravel and cobbles of mixed lithologies.	2
			2.70	4.34		Trialpit Complete at 2.70 m	3
							4

Remarks:	Trial pit sides collapsing and undermining with depth Trial pit terminated due to undermining.	Log Status
Groundwater:	Groundwater encountered at 2.0m	Final



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241247E - 565157N Level: 8.63 m AOD	Date 19/12/2017
Excavation Method:- 3T Mini Excavator, GL - 2.0m		Dimensions: 3.50m Depth 2.00m	Scale 1:25
Client: Dumfries & Galloway Council			Logged By FM

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.60	8.03		MADE GROUND comprising dark brown very clayey organic fine to coarse Sand and fine to coarse rounded to angular Gravel of low plasticity with low cobble content, Includes fragments of Slate, Brick, Masonry, rare Air Filters and many Roots / Rootlets.
0.50 0.50	ES B					
0.80	B		2.00	6.63		MADE GROUND comprising light grey mottled brown and dark grey very clayey fine to coarse Sand and fine to medium occasionally coarse Gravel with lenses (<200 thick) of very clayey organic Sand and low cobble content, Includes variable proportions of Ash, Coal, Bricks and fragments of Brick, Tile and Masonry.
1.00	ES					
1.50	ES					
1.80	B					Intermixed with reddish brown silty sandy fine to medium subrounded to angular Gravel between 1.7 - 2.0m
2.00	ES					Trialpit Complete at 2.00 m

Remarks:	Slight collapse of trial pit sides with depth Trial pit terminated at scheduled depth	Log Status Final
Groundwater:		



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241243E - 565135N Level: 9.42 m AOD	Date 19/12/2017
Excavation Method:- 3T Mini Excavator, GL - 1.85m		Dimensions: 3.50m Depth 1.85m	Scale 1:25
Client: Dumfries & Galloway Council			Logged By FM

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.20	9.22		MADE GROUND comprising light brown silty sandy gravelly Topsoil with many rootlets
0.50 0.50	ES B					MADE GROUND comprising dark brown very clayey organic fine to coarse Sand of intermediate plasticity and fine to coarse rounded to angular Gravel with cobble sized pockets of sandy slightly gravelly Clay and silty gravelly Sand and low cobble / boulder content, Includes fragments of Coal, China, Brick, Masonry, Glass, Clay Pipe and some Roots / rootlets.
1.00	ES					
1.50 1.50	ES B		1.35	8.07		MADE GROUND comprising dark brown mottled light brown and black locally slightly organic clayey locally very clayey very sandy fine to coarse rounded to angular Gravel with low cobble content predominantly of Bricks, Includes lenses of Ash and fragments of Glass / Glass bottles.
1.80	ES		1.85	7.57		
Obstruction on possible corrugated Tin Sheet at 1.85m Trialpit Complete at 1.85 m						

Remarks:	Slight collapse of trial pit sides with depth Trial pit terminated at scheduled depth.	Log Status
Groundwater:		Final



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241303E - 565161N Level: 7.42 m AOD	Date 15/12/2017
Excavation Method:- JCB 3CX, GL - 3.0m		Dimensions: 5.50m Depth 3.00m	Scale 1:25
Client: Dumfries & Galloway Council			Logged By FM

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.40	7.02		Dark brown silty sandy very gravelly with depth TOPSOIL with rootlets and low boulder content
0.50	ES					Dark reddish brown silty very sandy fine to coarse rounded to subangular GRAVEL with some roots and rootlets (locally slightly organic)
0.70	B		1.20	6.22		Sand becoming more predominant with depth
1.00	ES					Greyish brown slightly silty medium to coarse SAND
1.70	B		3.00	4.42		Grey becoming reddish brown with depth slightly silty sandy fine to coarse rounded to subangular GRAVEL with high cobble and boulder content becoming silty sandy gravelly COBBLES with high boulder content at depth. Gravel, cobbles and boulders of mixed lithologies. Thin layer of Cobbles encountered at approx 1.35m
Trialpit Complete at 3.00 m						

Remarks: Trial pit sides collapsing with depth Trial pit terminated due to collapse.	Log Status Final
Groundwater:	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241303E - 565133N Level: 7.34 m AOD	Date 13/12/2017
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Excavation Method:- JCB 3CX, GL - 2.5m	Dimensions: 5.50m Depth 2.50m	Scale 1:25
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Client: Dumfries & Galloway Council	Logged By FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20	ES		0.40	6.94		Dark brown silty sandy TOPSOIL with some rootlets, becoming very gravelly with low cobble content towards base
0.50 0.50	ES B		0.85	6.49		Dark reddish brown silty to very silty gravelly fine to coarse slightly organic SAND with occasional rootlets
1.00	ES		1.20	6.14		Dark reddish brown silty sandy fine to coarse rounded to subangular GRAVEL with low cobble content, Gravel and cobbles of mixed lithologies.
1.50	B		1.70	5.64		Brown very silty gravelly fine to coarse SAND
2.50	B		2.50	4.84		Diffuse margin to Grey becoming reddish brown with depth silty sandy fine to coarse GRAVEL with medium cobble and low boulder content, Gravel, cobbles and boulders of mixed lithologies.
Trialpit Complete at 2.50 m						

Remarks: Trial pit sides collapsing with depth and undermining below 1.9m Trial pit terminated due to collapsing / undermining.	Log Status Final
Groundwater:	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241046E - 565929N Level: 10.29 m AOD	Date 19/01/2018
Excavation Method:- Hand Excavated, GL - 0.5m		Dimensions: 1.00m Depth 0.50m	Scale 1:13
Client: Dumfries & Galloway Council			Logged By MT / FM

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.05			0.05	10.24		MADE GROUND comprising Red single size Gravel
0.20 0.20	B ES					MADE GROUND comprising Grey silty very gravelly fine to coarse Sand with high cobble and boulder content, Includes much Bricks and Masonry. Voidage noted around conjoined cobbles / boulders with depth where cobbles / boulders predominant.
0.50	ES		0.50	9.79		Pinch bar inserted approx 0.5m below boulder with no resistance - void Trialpit Complete at 0.50 m

Remarks:	Trial pit terminated due to boulders - to be re-excavated with 3T Mini Excavator to confirm wall base. See attached sketch for foundation detail	Log Status
Groundwater:	No groundwater encountered	Final



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241046E - 565929N Level: 10.29 m AOD	Date 24/01/2018
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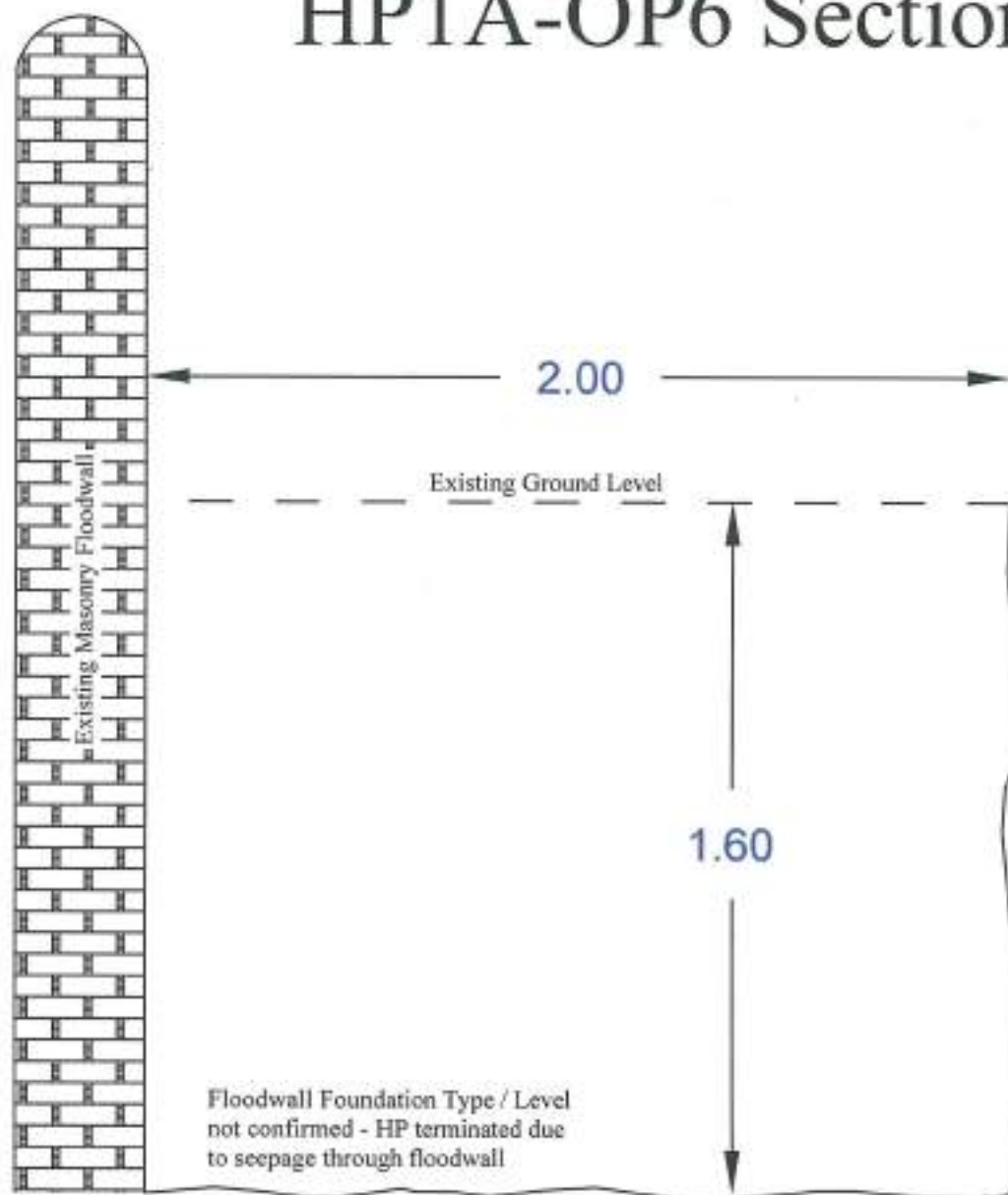
Excavation Method:- 3T Mini Excavator, GL - 1.6m	Dimensions: 1.50m	Scale 1:13
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Client: Dumfries & Galloway Council	Depth 1.60m	0.60m	Logged By MT / FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
1.00	ES		1.00	9.29		MADE GROUND comprising Grey silty very gravelly fine to coarse Sand with high cobble and boulder content, Includes much Bricks and Masonry. Voidage noted around conjoined cobbles / boulders with depth where cobbles / boulders predominant.
1.50	ES		1.60	8.69		MADE GROUND comprising Grey mottled yellowish brown and brown silty sandy gravelly angular to subrounded Cobbles and Boulders. Below approx 1.5m includes Bricks and fragments of Brick, Slate and Masonry.
Trialpit Complete at 1.60 m						

Remarks:	Trial pit terminated due to water ingress from existing floodwall. See attached sketch for foundation detail	Log Status Final
Groundwater:	Groundwater encountered at approx 1.6m - seeping through existing wall from river	

Newton Stewart FPS HP1A-OP6 Section



Shows approximate assumed extent of excavation

Notes:
- All dimensions are in metres unless otherwise specified.
- Background topographical data as provided by Gevo UK Ltd where applicable.

Drawing:
HP1-OP6 Sketch

Drawing No:-	HP1-OP6	Scale:-	Not To Scale
Drawn By:-	F.Murray	Date:-	04.04.17
Checked By:-	C.Rodger	Date:-	04.04.17

Project:
Newton Stewart FPS

Client:
Dumfries & Galloway Council



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Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241091E - 565759N Level: 9.36 m AOD	Date 19/01/2018
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Excavation Method:- Hand Excavated, GL - 1.2m	Dimensions: 1.00m Depth 1.20m	Scale 1:13
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Client: Dumfries & Galloway Council	Logged By MT / FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
			0.10	9.26		MADE GROUND comprising Dark brown silty sandy Topsoil
			0.30	9.06		MADE GROUND comprising Brown silty very gravelly fine to coarse Sand with medium cobble content, Includes Ash, Brick and much Masonry.
0.30 0.30	B ES		0.30	9.06		MADE GROUND comprising Black slightly organic silty gravelly fine to coarse Sand with low cobble content, Includes Ash and some Brick.
0.50 0.50	B ES		0.50	8.86		MADE GROUND comprising Brown silty locally gravelly fine to coarse Sand with medium cobble content that includes Ash and cobble sized pockets of orange brown sandy Clay with depth
0.90	B					
1.00	ES					
			1.20	8.16		Trialpit Complete at 1.20 m

Remarks:	Trial pit terminated at scheduled depth - To be re-excavated with 3T Mini excavator to confirm wall base. See attached sketch for foundation detail	Log Status Final
Groundwater:	No groundwater encountered	

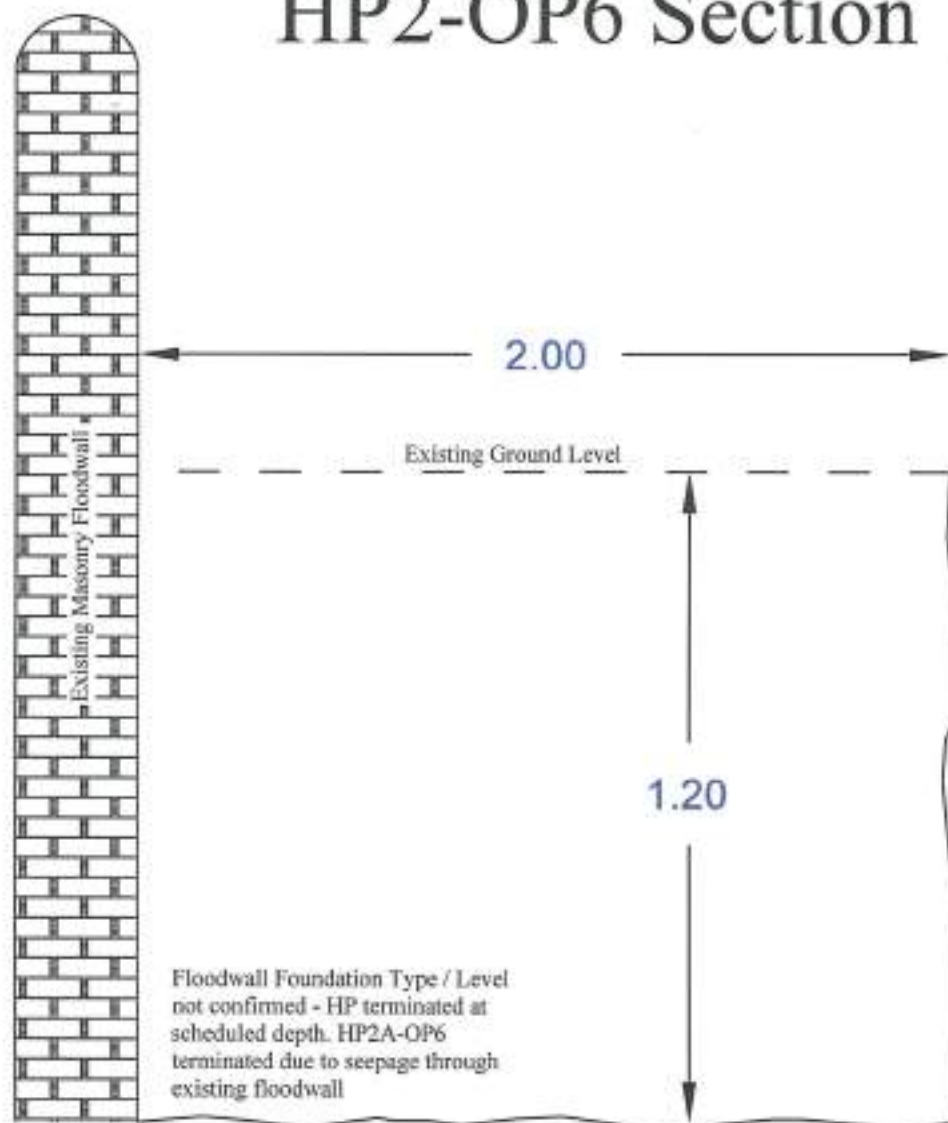


Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241091E - 565759N Level: 9.36 m AOD	Date 24/01/2018
Excavation Method:- 3T Mini Excavator, GL - 0.7m		Dimensions: 1.50m Depth 0.70m	Scale 1:13
Client: Dumfries & Galloway Council			Logged By MT / FM

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.10			9.26		MADE GROUND comprising Dark brown silty sandy Topsoil	
0.30			9.06		MADE GROUND comprising Brown silty very gravelly fine to coarse Sand with medium cobble content, Includes Ash, Brick and much Masonry.	
0.50			8.86		MADE GROUND comprising Black slightly organic silty gravelly fine to coarse Sand with low cobble content, Includes Ash and some Brick	
0.70			8.66		MADE GROUND comprising Brown silty locally gravelly fine to coarse Sand with medium cobble content that includes Ash and cobble sized pockets of orange brown sandy Clay with depth	
Trialpit Complete at 0.70 m						

Remarks:	Trial pit terminated due to water ingress through existing floodwall. See attached sketch for foundation detail	Log Status Final
Groundwater:	Groundwater encountered at 0.7m - Seepage through existing floodwall	

Newton Stewart FPS HP2-OP6 Section



Denotes approximate water level
extent of excavation

Notes:

- All dimensions are in metres unless otherwise specified.
- Background topographical data as provided by Geo-UK Ltd where applicable.

Drawing:

HP2-OP6 Sketch

Drawing

No: HP2-OP6/04

Scale:

Not To Scale

Drawn By: F. Murray

Date: 04.04.17

Checked By: C. Rodger

Date: 04.04.17

Project:

Newton Stewart FPS

Client:

Dumfries &
Galloway Council



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Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241113E - 565673N Level: 9.47 m AOD	Date 24/01/2018
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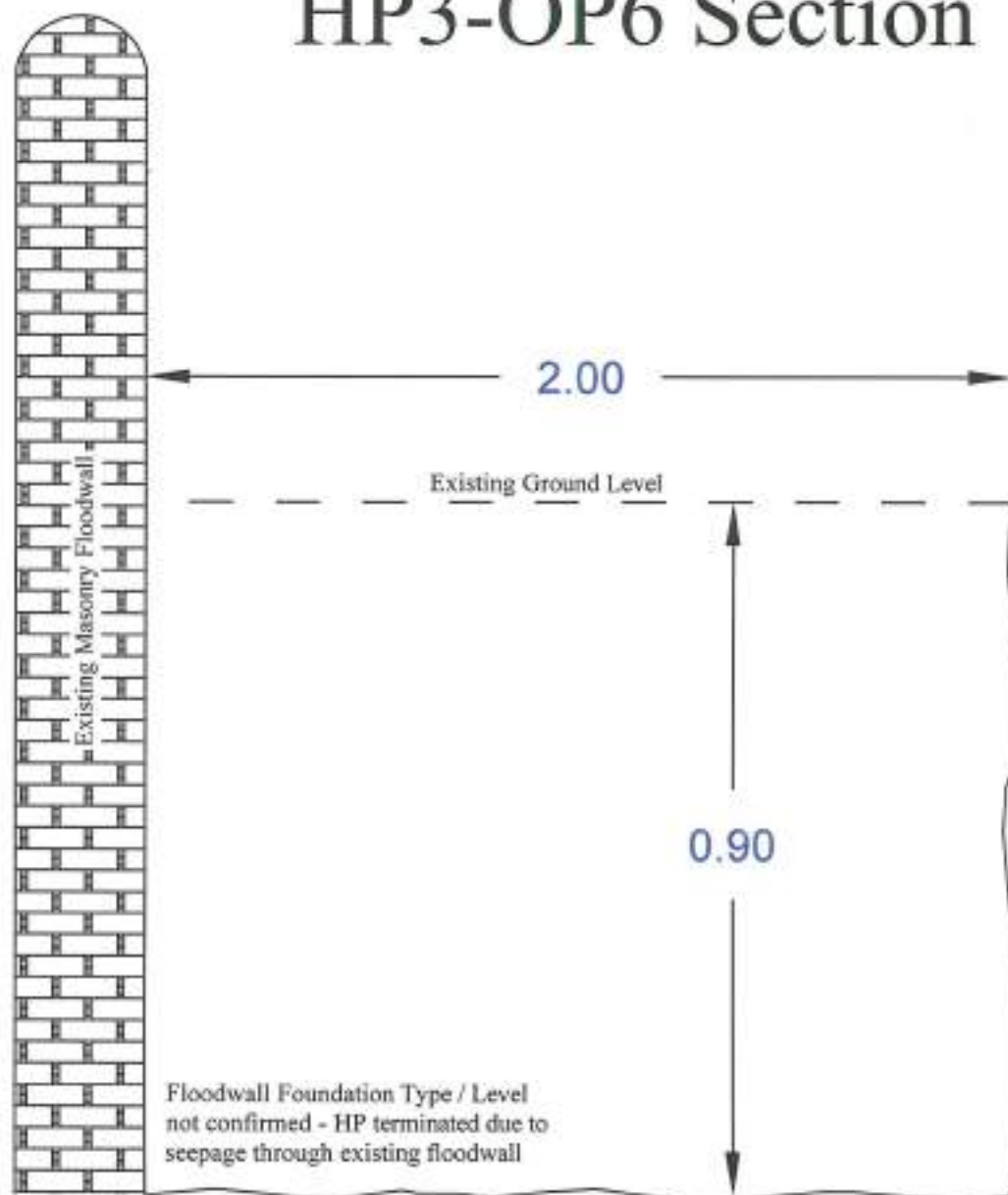
Excavation Method:- 3T Mini Excavator, GL - 0.9m	Dimensions: 1.50m	Scale 1:13
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Client: Dumfries & Galloway Council	Depth 0.90m	0.60m	Logged By MT / FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20 0.20	ES B					MADE GROUND comprising Grey brown silty very gravelly fine to coarse Sand with medium cobble and boulder content with depth, Includes Bricks, fragments of Brick and occasionally Masonry
0.50	ES					
			0.90	8.57		Trialpit Complete at 0.90 m

Remarks:	Trial pit terminated due to water ingress through existing floodwall. See attached sketch for foundation details	Log Status Final
Groundwater:	Groundwater encountered at 0.9m - Seepage through existing floodwall	

Newton Stewart FPS HP3-OP6 Section



 Denotes approximate ultimate extent of excavation

Notes:
- All dimensions are in metres unless otherwise specified
- Background topographical data as provided by Sivers UK Ltd where applicable

Drawing:

HP3-OP6 Sketch

Drawing No: H0000X06FPS/007 Scale: Not To Scale

Drawn By: F. Murray Date: 04.04.17
Checked By: C. Rodger Date: 04.04.17

Project:

Newton Stewart FPS

Client:

Dumfries &
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Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241127E - 565620N Level: 9.20 m AOD	Date 25/01/2018
------------------------------------	-----------------------	---	--------------------

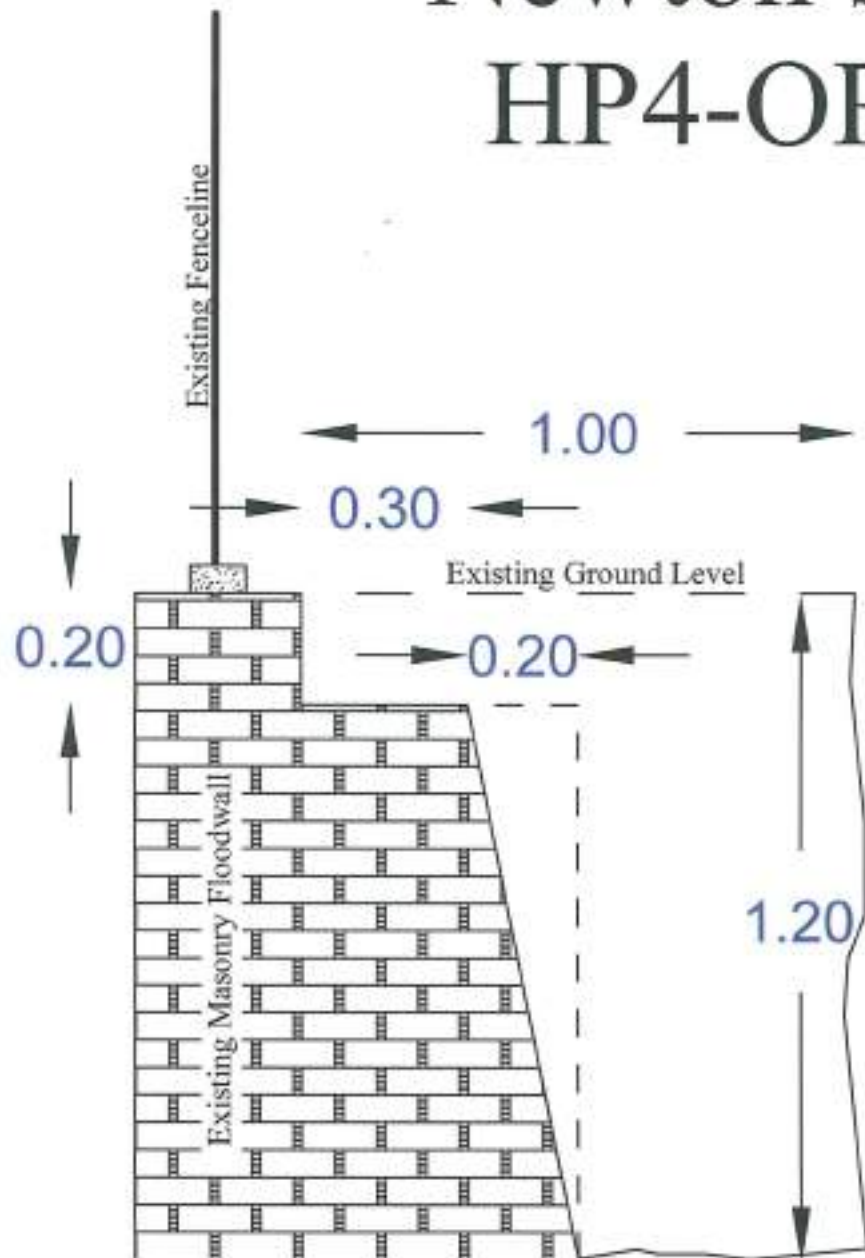
Excavation Method:- Hand Excavated, GL - 1.2m	Dimensions: 1.00m Depth 1.20m	Scale 1:13
---	----------------------------------	---------------

Client: Dumfries & Galloway Council	Logged By MT / FM
--	----------------------

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.05			0.05	9.15		MADE GROUND comprising White single sized Gravel
0.20 0.20	B ES					MADE GROUND comprising Dark brown silty very gravelly fine to coarse Sand with low cobble content, Includes much Ashy debris and occasional Bricks.
0.50	ES					
0.60			0.60	8.60		MADE GROUND comprising Dark brown silty sandy gravelly subrounded to angular Cobbles and Boulders, Includes much Ashy debris and occasional Bricks.
1.00	ES					
1.20			1.20	8.00		Trialpit Complete at 1.20 m

Remarks: Trial pit terminated at scheduled depth. See attached sketch for foundation detail	Log Status Final
Groundwater: No groundwater encountered	

Newton Stewart FPS HP4-OP6 Section



Floodwall Foundation Type / Level
not confirmed - HP terminated at
scheduled depth.



Denotes approximate ultimate
extent of excavation

Notes:
- All dimensions are in metres unless otherwise specified.
- Background topographical data as provided by Sweco UK
Ltd where applicable.

Drawing:

HP4-OP6 Sketch

Drawing
No: HO/DGCON/FPS/006

Scale:
Not To Scale

Drawn By: F.Murray Date: 04.04.17

Checked By: C.Rodger Date: 04.04.17

Project:

Newton Stewart FPS

Client:

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Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241160E - 565560N Level: 8.87 m AOD	Date 06/02/2018
------------------------------------	-----------------------	---	--------------------

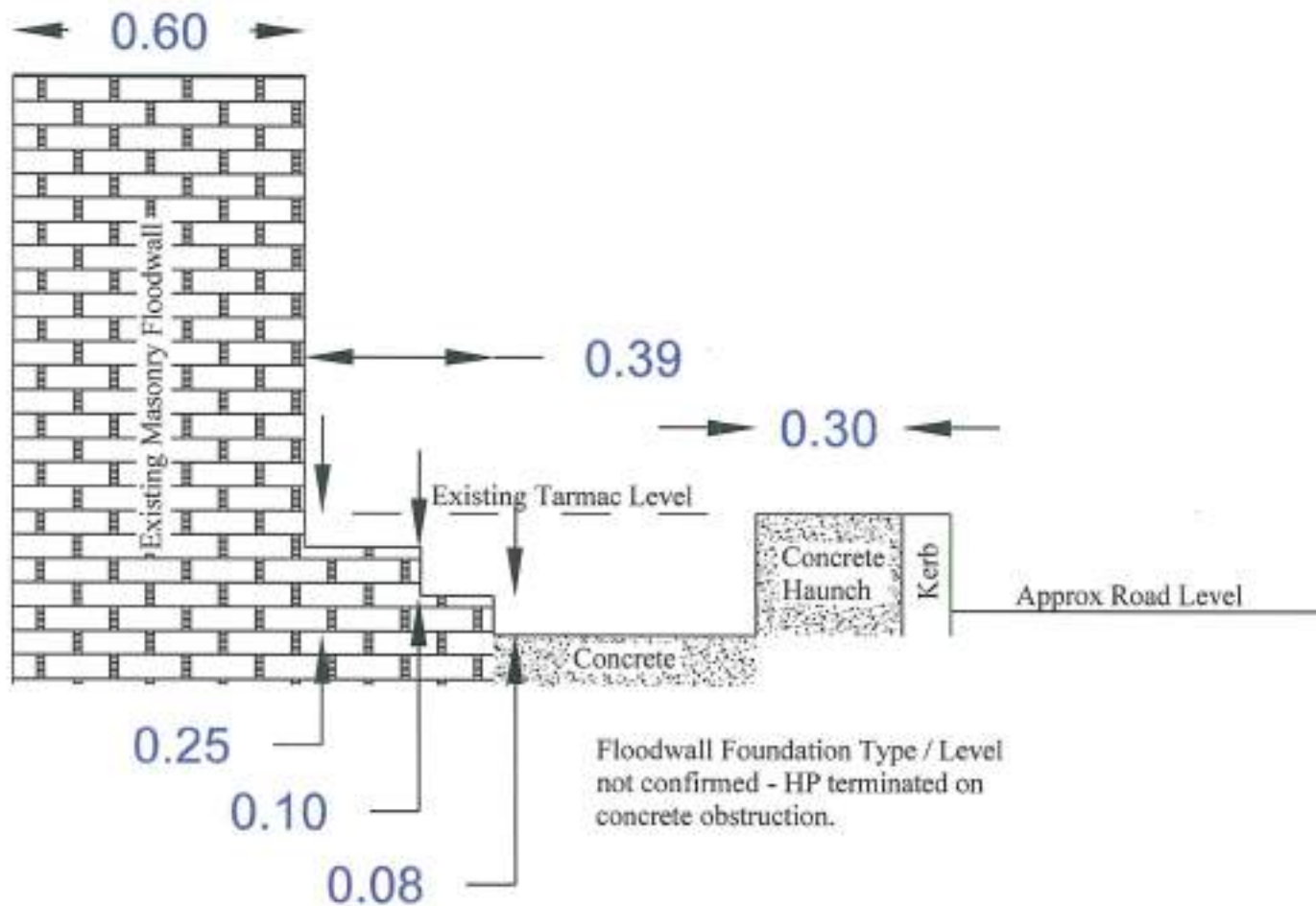
Excavation Method:- Hand excavated, GL - 0.25m	Dimensions: 0.60m Depth 0.25m	Scale 1:13
--	----------------------------------	---------------

Client: Dumfries & Galloway Council	Logged By BMY / FM
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Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
			0.15	8.72		MADE GROUND comprising Tarmac
			0.25	8.62		MADE GROUND comprising Grey silty sandy fine to coarse angular Gravel
<p>Concrete obstruction encountered at 0.25 - 0.28m Trialpit Complete at 0.25 m</p>						

Remarks: See attached sketch for termination detail	Log Status Final
Groundwater: No groundwater encountered	

Newton Stewart FPS HP5-OP6 Section



Denotes approximate sub-surface
extent of excavation

Notes:

- All dimensions are in metres unless otherwise specified.
- Background topographical data as provided by Swiss UK Ltd where applicable.

Drawing:

HP5-OP6 Sketch

Drawing No:- HQ/DCO/MSFPS/005

Scale:- Not To Scale

Drawn By:- F.Murray
Checked By:- C.Rodger

Date:- 04.04.17
Date:- 04.04.17

Project:

Newton Stewart FPS

Client:

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Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241187E - 565501N Level: 8.63 m AOD	Date 06/02/2018
------------------------------------	-----------------------	---	--------------------

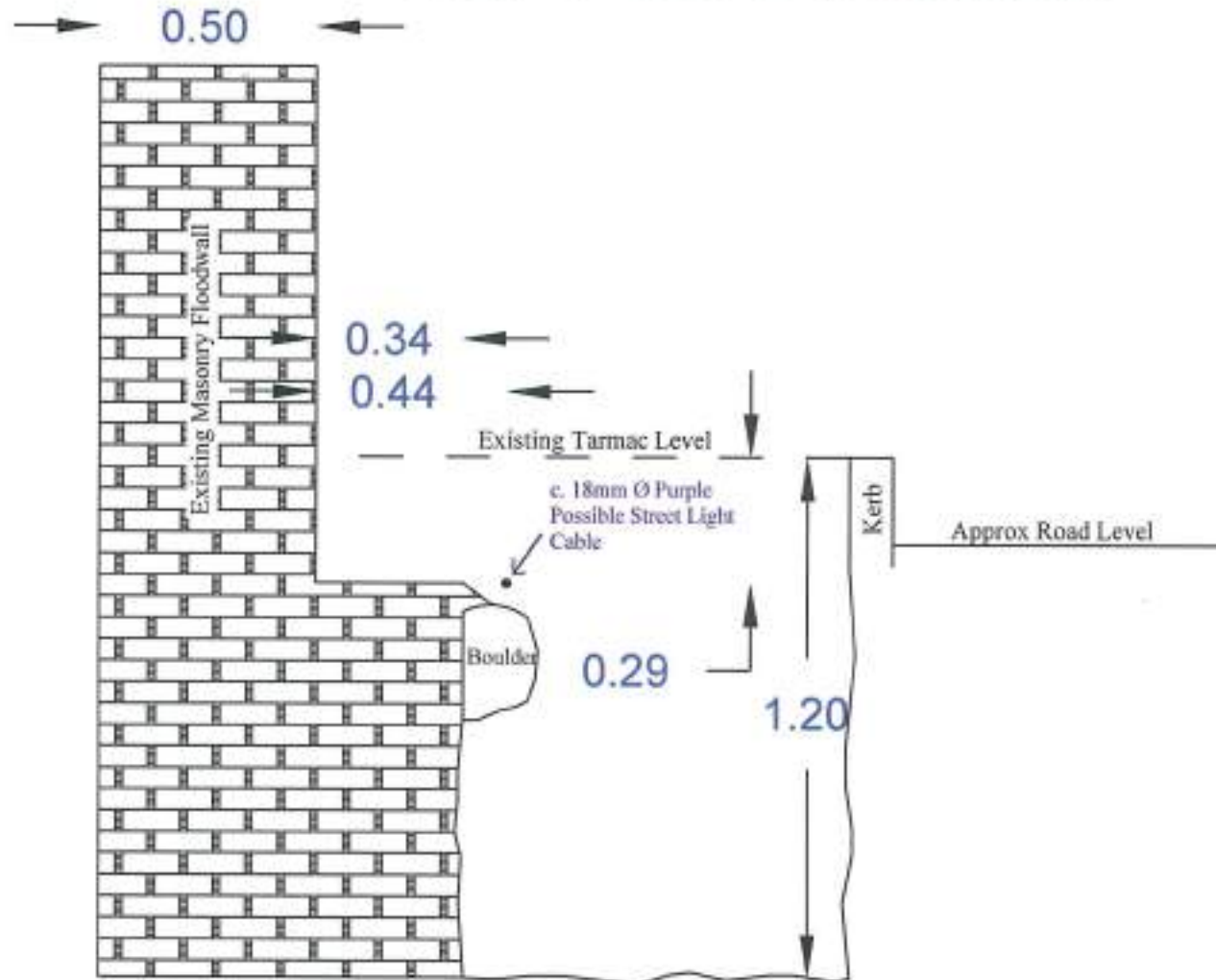
Excavation Method:- Hand Excavated, GL - 1.2m	Dimensions: 1.00m Depth 1.20m	Scale 1:13
---	----------------------------------	---------------

Client: Dumfries & Galloway Council	Logged By BMY / FM
--	-----------------------

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20 0.20	ES B		0.09 0.15	8.54 8.48		TARMAC MADE GROUND comprising Grey brown silty sandy fine to coarse rounded to angular Gravel MADE GROUND comprising Dark grey brown locally slightly organic silty very sandy fine to coarse angular to subrounded Gravel, Includes Tile, China and Brick fragments.
0.50 0.50	ES B		0.50	8.13		MADE GROUND comprising Dark grey brown locally organic very clayey very sandy fine to coarse angular to subrounded Gravel with low cobble content, Includes Tile, China, Glass and Bone.
1.00 1.00	ES B		1.20	7.43		Trialpit Complete at 1.20 m

Remarks: Trial pit sides stable during excavation. See attached sketch for foundation details	Log Status Final
Groundwater: No groundwater encountered	

Newton Stewart FPS HP6-OP6 Section



Floodwall Foundation Type / Level
not confirmed - HP terminated at
scheduled depth.

Shows approximate external
view of excavation

Note:
- All dimensions are in metres unless otherwise specified.
- Referenced topographical data as provided by Svecos UK
Ltd where applicable.

Drawing:
HP6-OP6 Sketch

Drawing No: H200002FF0212 Scale: Not To Scale

Drawn By: F.Murray Date: 04.04.17
Checked By: C.Rodger Date: 04.04.17

Project:
Newton Stewart FPS

Client:
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Galloway Council**



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Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241217E - 565433N Level: 8.29 m AOD	Date 05/02/2018
------------------------------------	-----------------------	---	--------------------

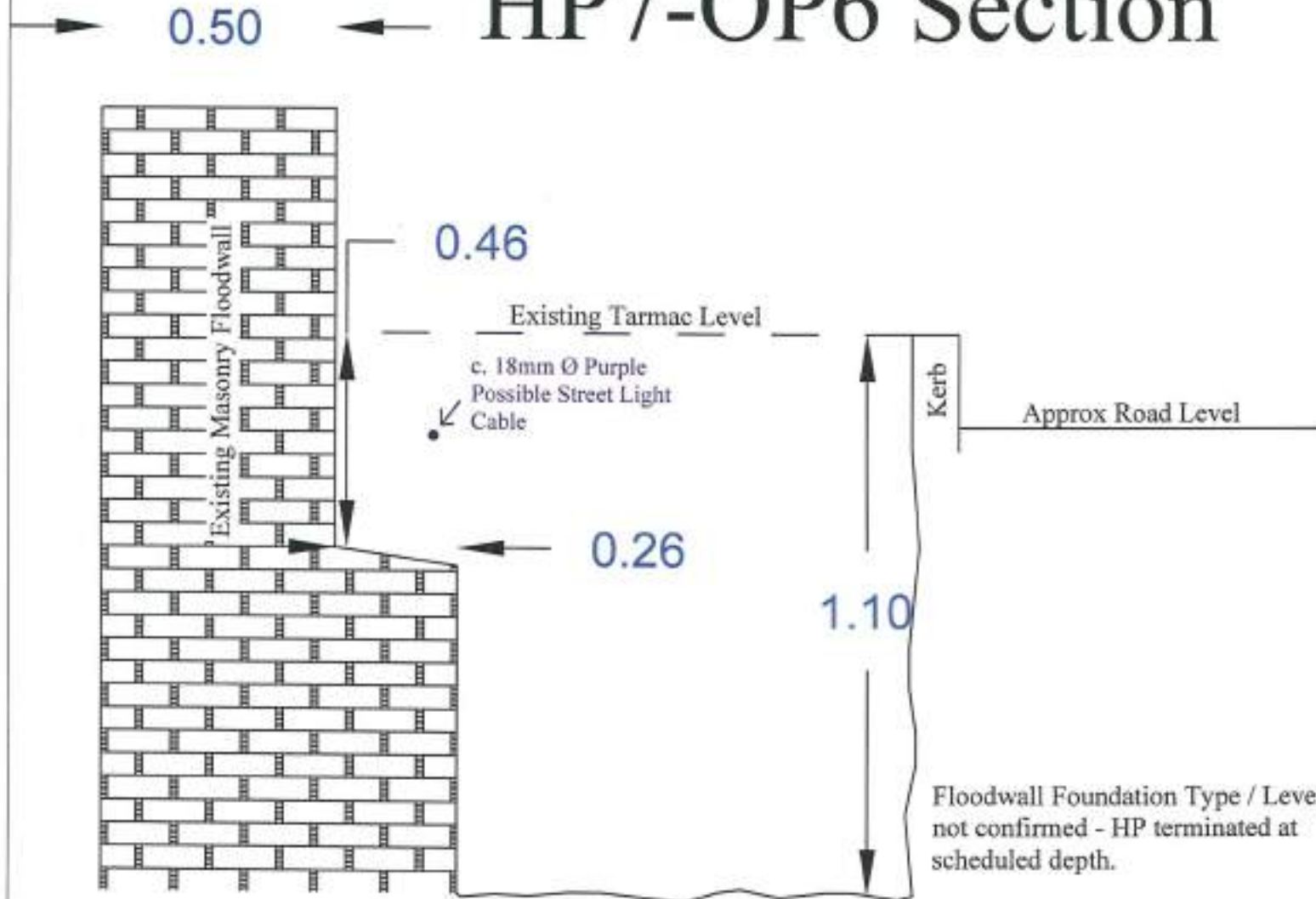
Excavation Method:- Hand Excavated, GL - 1.1m	Dimensions: 1.00m Depth 1.10m	Scale 1:13
---	----------------------------------	---------------

Client: Dumfries & Galloway Council	Logged By BMY / FM
--	-----------------------

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.05	ES B		0.05	8.24		TARMAC
0.20 0.20			0.18	8.11		MADE GROUND comprising Grey brown silty sandy fine to coarse rounded to angular Gravel
	ES B		0.34	7.95		MADE GROUND comprising brownish grey silty fine to coarse Sand
0.50 0.50						MADE GROUND comprising Dark grey locally mottled yellowish brown silty sandy fine to coarse subrounded to angular Gravel with low to medium cobble content, Includes fragments of Brick, Tile, Timber and lenses of Masonry debris.
1.00 1.00	ES B		1.10	7.19		Trialpit Complete at 1.10 m

Remarks: Trial pit sides stable during excavation. See attached sketch for foundation detail	Log Status Final
Groundwater: No groundwater encountered	

Newton Stewart FPS HP7-OP6 Section



Floodwall Foundation Type / Level
not confirmed - HP terminated at
scheduled depth.



Denotes approximate waterment
extent of excavation

Notes:
- All dimensions are in metres unless otherwise specified.
- Backsight to ground level data as provided by Swiss Ltd
L10 where applicable.

Drawing:
HP7-OP6 Sketch

Drawing No: HD08CH9FP011 Scale: Not To Scale

Drawn By: F.Murray Date: 04.04.17
Checked By: C.Rodger Date: 04.04.17

Project:
Newton Stewart FPS

Client:
Dumfries & Galloway Council



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Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241237E - 565378N Level: 7.83 m AOD	Date 24/01/2018
------------------------------------	-----------------------	---	--------------------

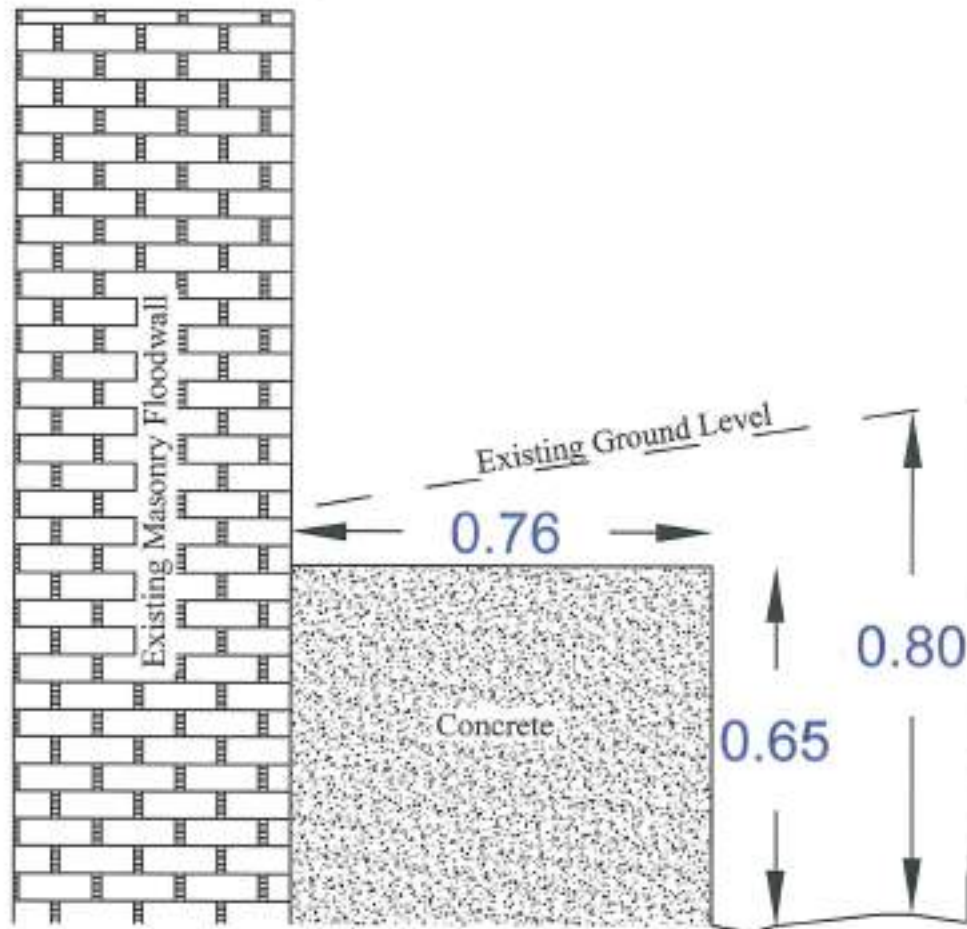
Excavation Method:- Hand Excavated, GL - 0.8m	Dimensions: 1.00m Depth 0.80m	Scale 1:13
---	----------------------------------	---------------

Client: Dumfries & Galloway Council	Logged By BMY / FM
--	-----------------------

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.05			0.05	7.78		MADE GROUND comprising Dark brown silty sandy Topsoil with many rootlets
0.20 0.20	ES B					MADE GROUND comprising Dark brown silty slightly organic fine to coarse Sand and fine to coarse rounded to angular Gravel with medium cobble content, Includes occasional Tar Scalps and Roots.
0.50 0.50	ES B					
0.80 0.80	ES B		0.80	7.03		Trialpit Complete at 0.80 m

Remarks: Trial pit terminated on engineers instruction . See attached sketch for foundation detail	Log Status Final
Groundwater: Groundwater encountered at 0.55m	

Newton Stewart FPS HP8-OP6 Section



Floodwall Foundation Type / Level
not confirmed - HP terminated at
scheduled depth.



Denotes approximate assumed
extent of excavation

Notes:
- All dimensions are in metres unless otherwise specified.
- Background topographical data as provided by Swiss UK
Ltd where applicable.

Drawing:
HP8-OP6 Sketch

Drawing No:	HP8-OP6-0012	Scale:	Not To Scale
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Drawn By:	F. Murray	Date:	04.04.17
Checked By:	C. Rodger	Date:	04.04.17

Project:
Newton Stewart FPS

Client:
**Dumfries &
Galloway Council**



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Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241197E - 565665N Level: 9.19 m AOD	Date 30/01/2018
------------------------------------	-----------------------	---	--------------------

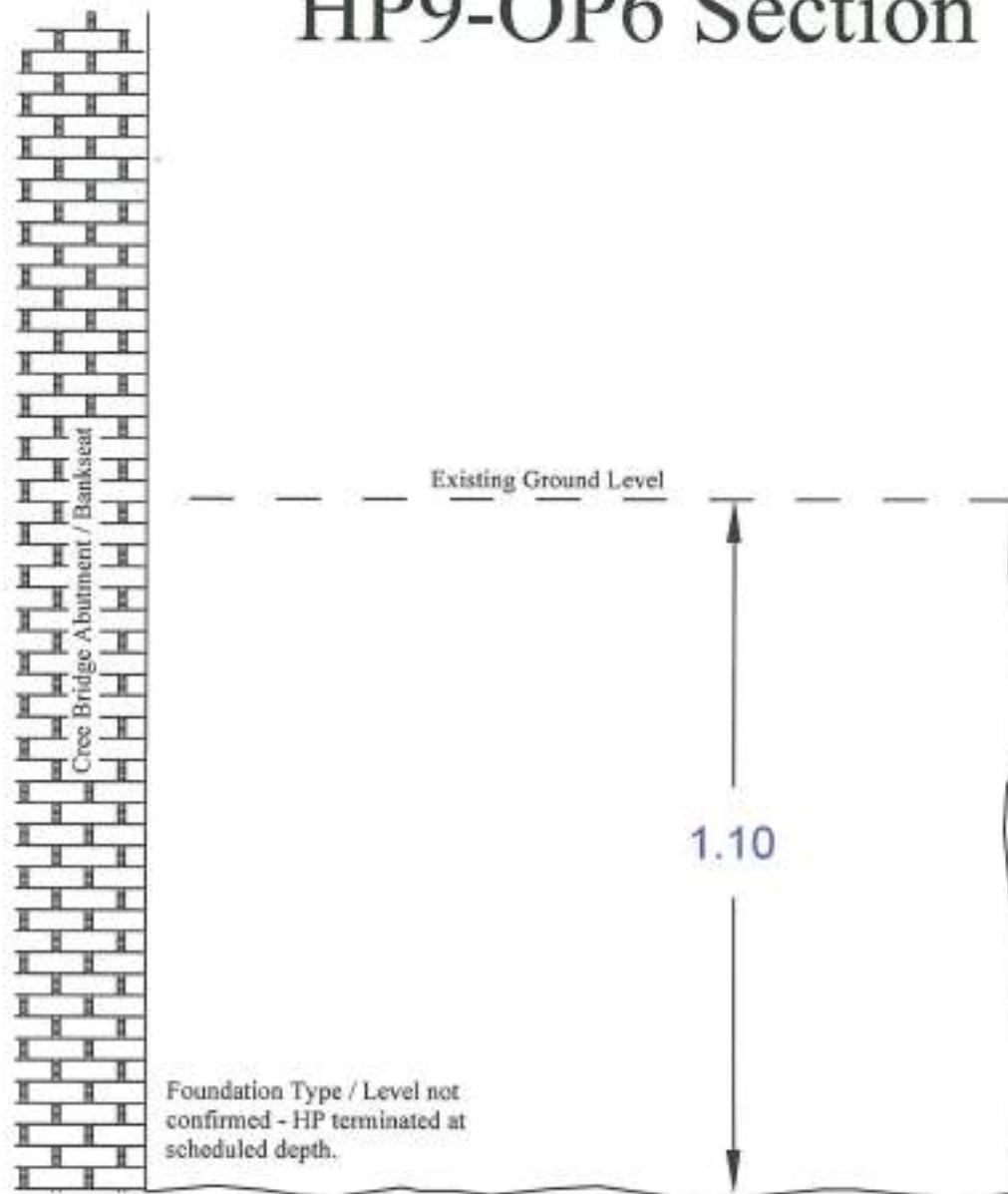
Excavation Method:- Hand Excavated, GL - 1.1m	Dimensions: 1.00m Depth 1.10m	Scale 1:13
---	----------------------------------	---------------

Client: Dumfries & Galloway Council	Logged By BMY / FM
--	-----------------------

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20 0.20	ES B		0.30	8.89		MADE GROUND comprising Dark brown to black sandy gravelly Topsoil with low cobble content, Includes Bricks, Glass, Roots and Lime Mortar.
0.50 0.50	ES B		0.50	8.69		MADE GROUND comprising Dark brown to black silty very gravelly fine to coarse slightly organic Sand with low cobble content, Includes fragments of China, Glass and Coal.
1.00 1.00	ES B		1.10	8.09		MADE GROUND comprising Dark grey brown organic very clayey sandy fine to coarse angular Gravel with medium cobble content
						Trialpit Complete at 1.10 m

Remarks: Trial pit sides stable during excavation. See attached sketch for foundation detail	Log Status Final
Groundwater: No groundwater encountered	

Newton Stewart FPS HP9-OP6 Section



Denotes approximate subsoil
contour of excavation

Note:-

- All dimensions are in metres unless otherwise specified.
- Referenced topographical data as provided by Sweco UK Ltd where applicable.

Drawing:-

HP9-OP6 Sketch

Drawing

No:- HQ/000009FPS/013

Scale:-

Not To Scale

Drawn By:- F.Murray

Date:- 04.04.17

Checked By:- C.Rodger

Date:- 04.04.17

Project:-

Newton Stewart FPS

Client:-

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Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241206E - 565630N Level: 8.65 m AOD	Date 31/01/2018
------------------------------------	-----------------------	---	--------------------

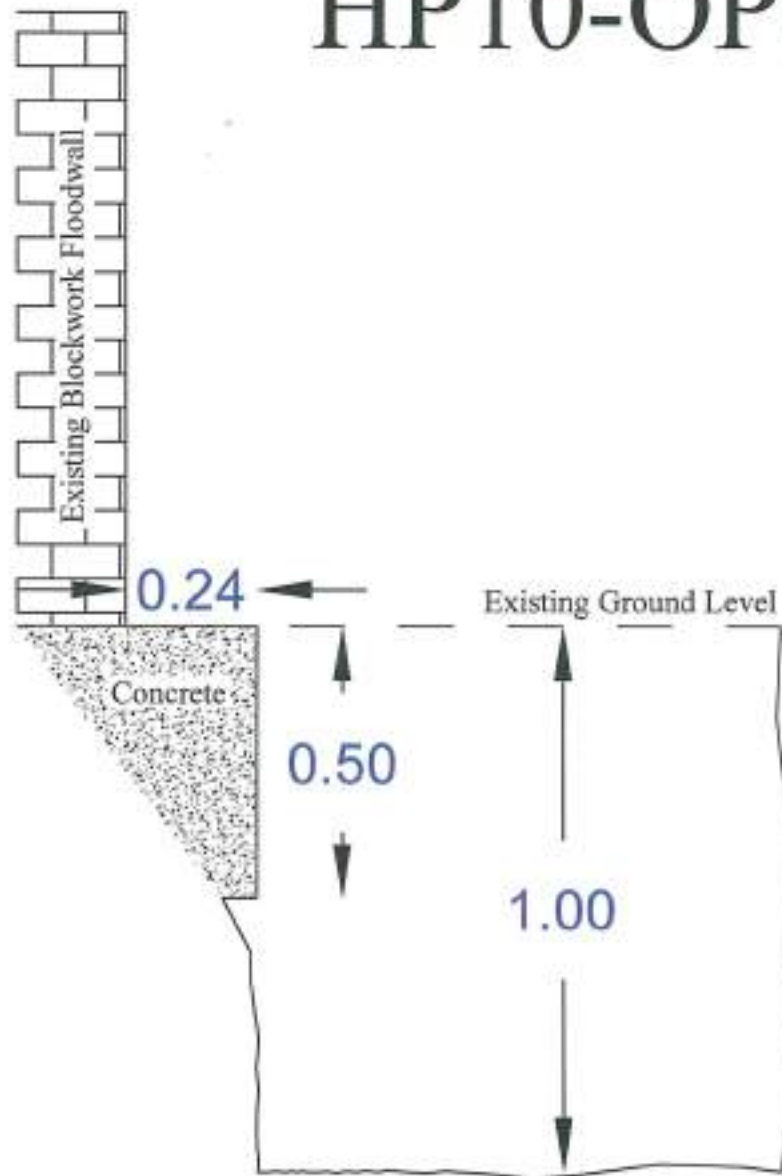
Excavation Method:- Hand Excavated, GL - 1.0m	Dimensions: 1.00m	Scale 1:13
---	-------------------	---------------

Client: Dumfries & Galloway Council	Depth 1.00m	0.60m	Logged By BMY / FM
--	----------------	-------	-----------------------

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.20 0.20	ES B					MADE GROUND comprising Dark brown silty sandy gravelly Topsoil that includes Pottery / China at top.	
0.50 0.50	ES B						
1.00 1.00	ES B		1.00	7.65			
						Trialpit Complete at 1.00 m	1

Remarks: Trial pit sides stable during excavation. See attached sketch for foundation detail	Log Status Final
Groundwater: Groundwater encountered at approx 1.0m	

Newton Stewart FPS HP10-OP6 Section



Denotes approximate extent of excavation

Notes:

- All dimensions are in metres unless otherwise specified.
- Background topographical data as provided by Geos UK Ltd where applicable.

Drawing:-

HP10-OP6 Sketch

Drawing

No:- HQ/DOC/MSFP&S14

Scale:-

Not To Scale

Drawn By:- F.Murray

Date:- 04.04.17

Checked By:- C.Rodger

Date:- 04.04.17

Project:-

Newton Stewart FPS

Client:-

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Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 240967E - 566109N Level: 12.50 m AOD	Date 29/01/2018
------------------------------------	-----------------------	--	--------------------

Excavation Method:- Hand Excavated, GL - 1.2m	Dimensions: 1.00m Depth 1.20m	Scale 1:13
---	----------------------------------	---------------

Client: Dumfries & Galloway Council	Logged By BMY / FM
--	-----------------------

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20 0.20	ES B					MADE GROUND comprising Dark brown organic silty fine to coarse Sand and fine to coarse angular to rounded Gravel with high cobble and boulder content, Includes variable quantities of Glass, China, Bricks, Masonry, Lime Mortar, Metal and Roots.
0.50 0.50	ES B					
1.00 1.00	ES B					
			1.20	11.30		Trialpit Complete at 1.20 m

Remarks: Trial pit sides stable during excavation Trial pit terminated at scheduled depth.	Log Status Final
Groundwater: No groundwater encountered	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 240982E - 566066N Level: 12.10 m AOD	Date 29/01/2018
------------------------------------	-----------------------	--	--------------------

Excavation Method:- Hand Excavated, GL - 1.2m	Dimensions: 1.00m Depth 1.20m	Scale 1:13
---	----------------------------------	---------------

Client: Dumfries & Galloway Council	Logged By BMY / FM
--	-----------------------

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20 0.20	ES B					MADE GROUND comprising Dark brown organic silty fine to coarse Sand and fine to coarse angular to rounded Gravel with high cobble and boulder content, Includes variable quantities of Glass, China, Kitchen Sink and Roots.
0.50	ES		0.50	11.60		Orange brown very clayey very sandy fine to coarse angular to subrounded GRAVEL with low cobble content (Possible Made Ground)
1.00 1.00	ES B					
			1.20	10.90		Trialpit Complete at 1.20 m

Remarks: Trial pit sides stable during excavation Trial pit terminated at scheduled depth.	Log Status Final
Groundwater: No groundwater encountered	



Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241628E - 564683N Level: 4.95 m AOD	Date 05/02/2018
------------------------------------	-----------------------	---	--------------------

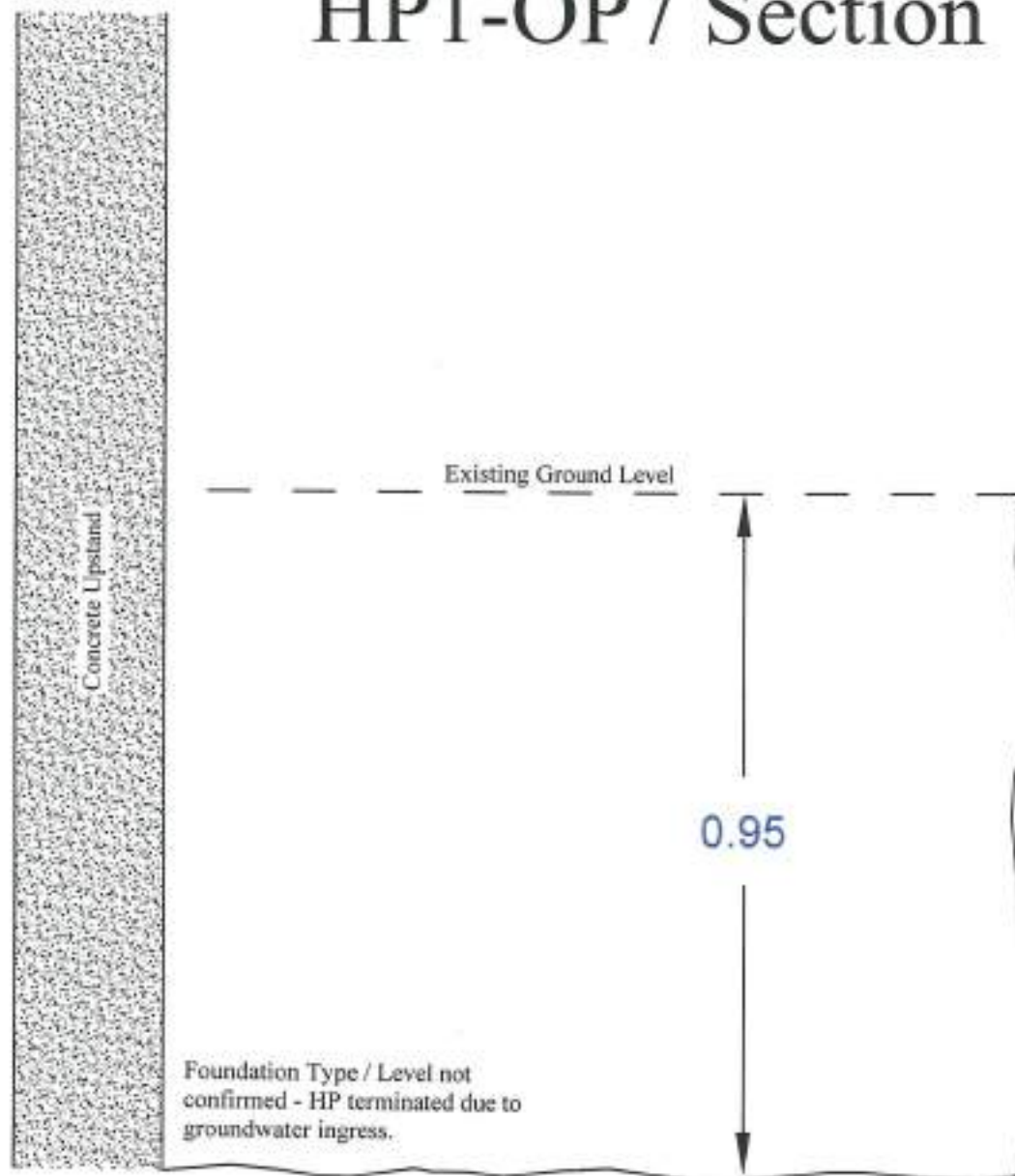
Excavation Method:- Hand Excavated, GL - 0.95m	Dimensions: 1.00m Depth 0.95m	Scale 1:13
--	----------------------------------	---------------

Client: Dumfries & Galloway Council	Logged By BMY / FM
--	-----------------------

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.20 0.20	ES B					MADE GROUND comprising Reddish brown silty to very silty sandy fine to coarse angular to subangular Gravel with high cobble and boulder content
0.50 0.50	ES B					
			0.95	4.00		Trialpit Complete at 0.95 m

Remarks: Trial pit sides stable during excavation. See attached sketch for foundation detail	Log Status
Groundwater: Groundwater encountered at 0.9m	Final

Newton Stewart FPS HP1-OP7 Section



Denotes approximate estimated extent of excavation

Notes:

- All dimensions are in metres unless otherwise specified.
- Background topographical data as provided by Swiss UK Ltd where applicable.

Drawing:

HP1-OP7 Sketch

Drawing No:

HO100006FP0215

Scale:

Not To Scale

Drawn By:

F.Murray

Date: 04.04.17

Checked By:

C.Rodger

Date: 04.04.17

Project:

Newton Stewart FPS

Client:

Dumfries &
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Project Name Newton Stewart FPS	Project No. 17/082	Co-ords: 241597E - 564683N Level: 5.25 m AOD	Date 01/02/2018
------------------------------------	-----------------------	---	--------------------

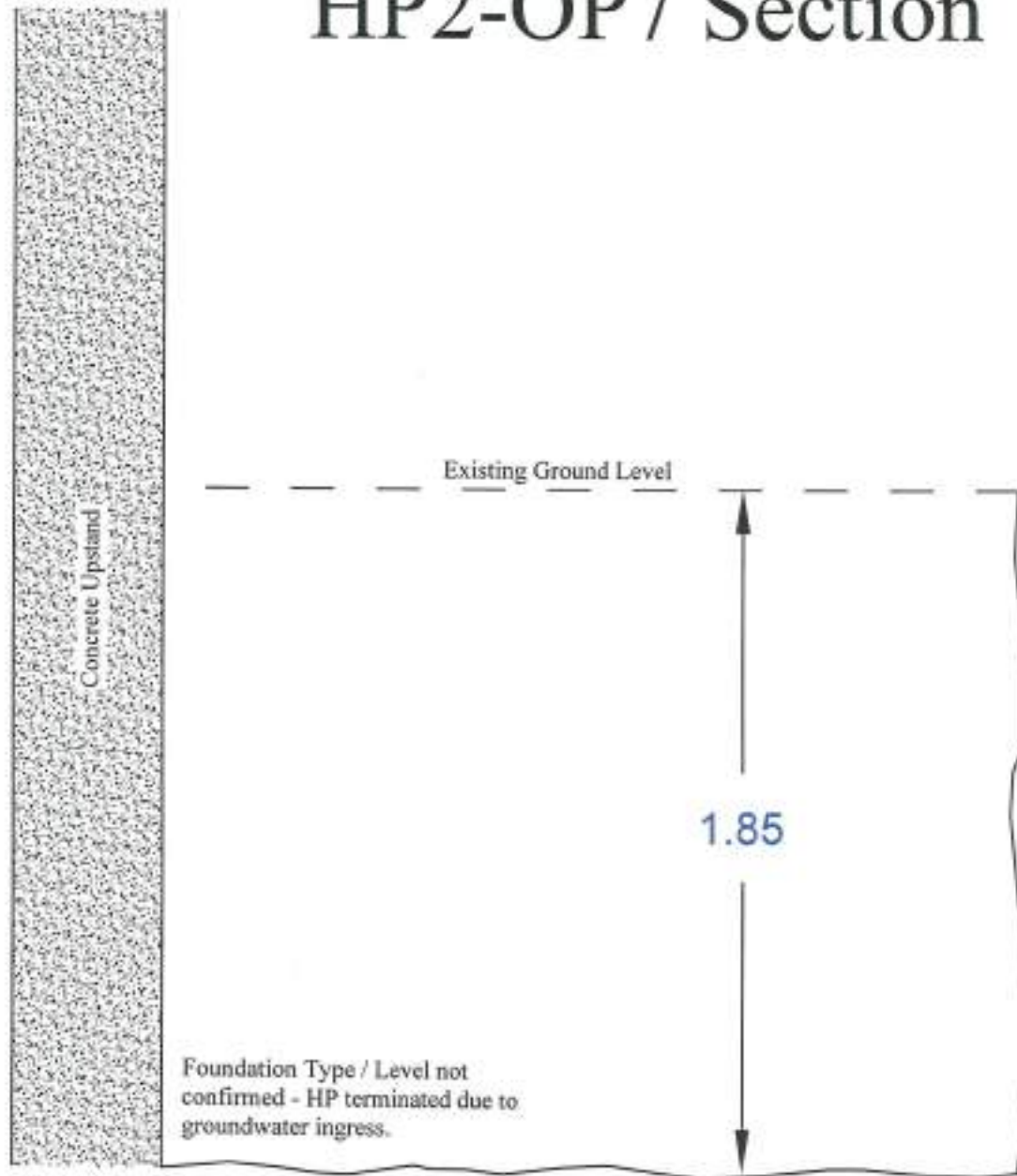
Excavation Method:- JCB 3CX, GL - 1.85m	Dimensions: 3.00m	Scale 1:13
---	-------------------	---------------

Client: Dumfries & Galloway Council	Depth 1.85m	0.80m	Logged By FM
--	-------------	-------	-----------------

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.40	ES		0.50	4.75		MADE GROUND comprising Dark brown silty gravelly fine to coarse Sand with low boulder content, Includes some Glass and leaf debris.
1.00 1.00	ES B					MADE GROUND comprising Reddish brown silty to very silty locally very clayey sandy fine to coarse angular to subangular Gravel with medium cobble and boulder content.
1.80	ES		1.80 1.85	3.45 3.40		MADE GROUND comprising Reddish brown silty gravelly fine to coarse angular Cobbles
Trialpit Complete at 1.85 m						

Remarks:	Trial pit sides stable during excavation Trial pit terminated on engineers instruction See attached sketch for foundation detail	Log Status
Groundwater:	Groundwater encountered at 1.5m	Final

Newton Stewart FPS HP2-OP7 Section



Denotes approximate natural
level of elevation

Notes:

- All dimensions are in metres unless otherwise specified.
- Background topographical data as provided by Geveo UK Ltd where applicable.

Drawing:

HP2-OP7 Sketch

Drawing
No:

HGDCN5775015

Scale:

Not To Scale

Drawn By:

F. Murray

Date:

04.04.17

Checked By:

C. Rodger

Date:

04.04.17

Project:

Newton Stewart FPS

Client:

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APPENDIX IV

Laboratory Testing



LABORATORY REPORT



4043

Contract Number: PSL18/0518

Report Date: 23 February 2018

Client's Reference:

Client Name: Holequest Ltd
Winston Road
Galashiels
TD1 2DA

For the attention of: Craig Rodger

Contract Title: Newton Stewart FPS

Date Received: 1/2/2018
Date Commenced: 1/2/2018
Date Completed: 23/2/2018

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. 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 other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

R Gunson
(Director)

A Watkins
(Director)

R Berriman
(Quality Manager)

L Knight
(Senior Technician)

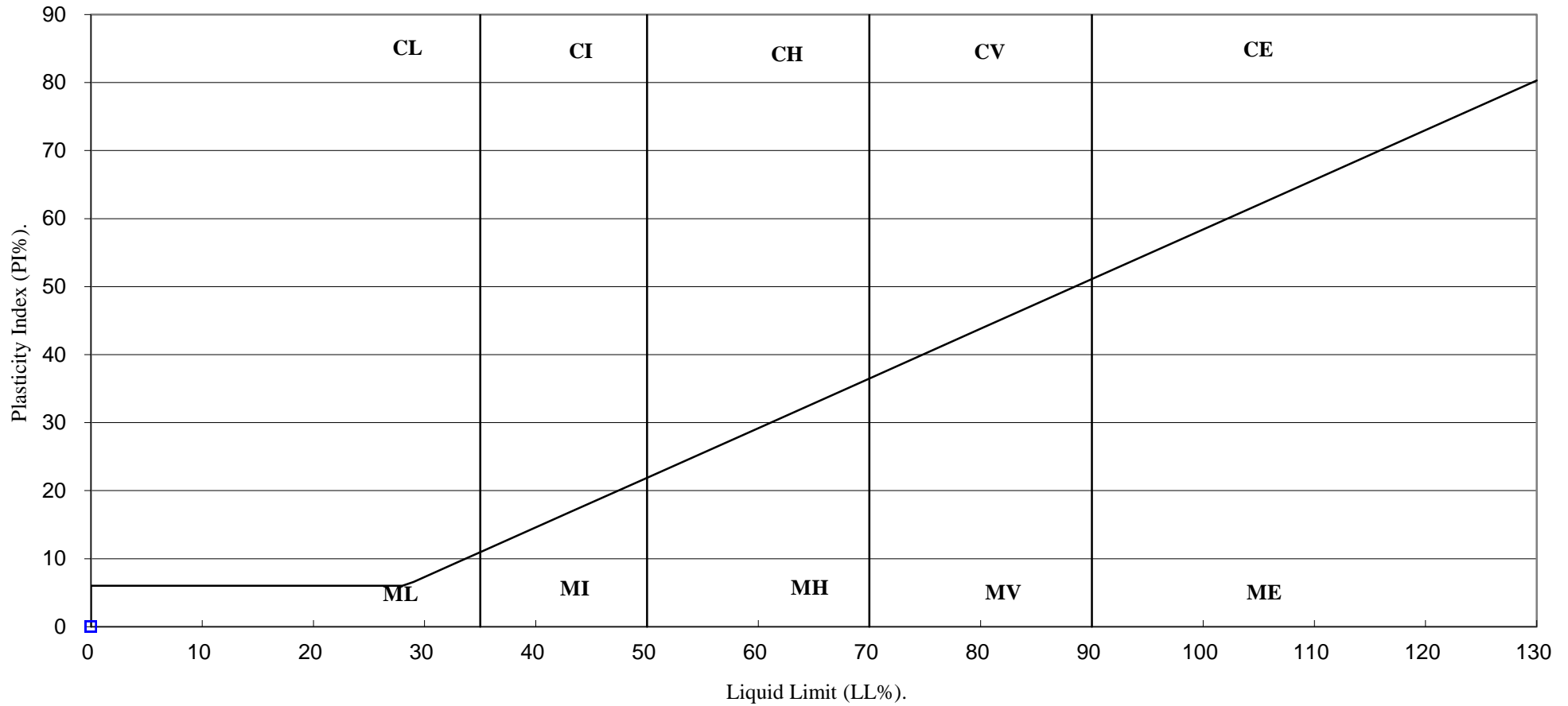
C Marshall
(Laboratory Manager)

A Fry
(Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
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Page 1 of

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



PSL
Professional Soils Laboratory

Newton Stewart FPS

Contract No:

PSL18/0518

Client Ref:

17636

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : 1990

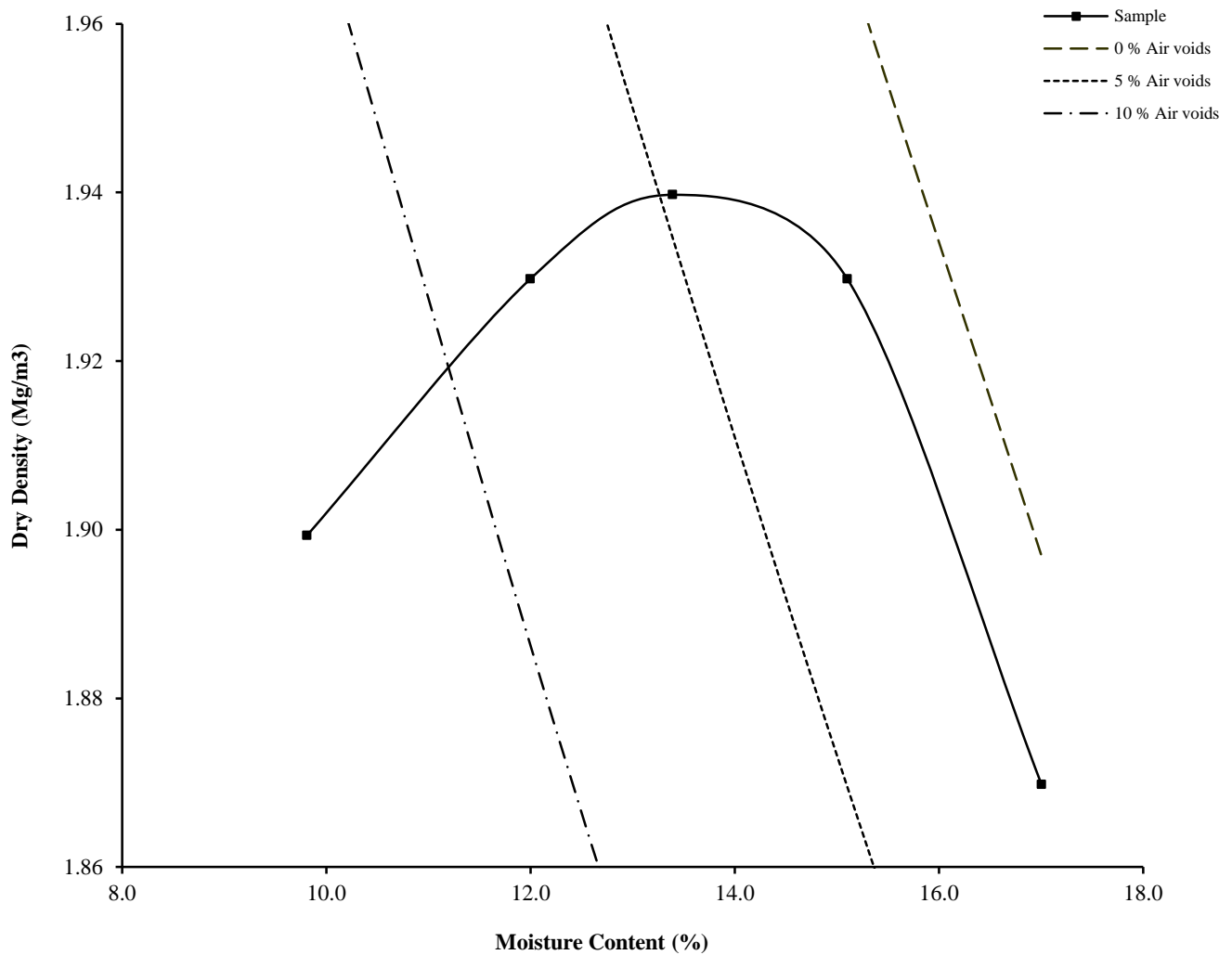
Hole Number: TP7

Top Depth (m) : 1.10

Sample Number:

Base Depth (m) :

Sample Type: BD



Initial Moisture Content:	13	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.80	Assumed	Material Retained on 37.5 mm Test Sieve (%):	4
Maximum Dry Density (Mg/m ³):	1.94		Material Retained on 20.0 mm Test Sieve (%):	9
Optimum Moisture Content (%):	13			
Remarks See summary of soil descriptions.				



Newton Stewart FPS

Contract
PSL18/0518
Client Ref
17636



LABORATORY REPORT



4043

Contract Number: PSL18/0518

Report Date: 23 February 2018

Client's Reference:

Client Name: Holequest Ltd
Winston Road
Galashiels
TD1 2DA

For the attention of: Craig Rodger

Contract Title: Newton Stewart FPS

Date Received: 1/2/2018
Date Commenced: 1/2/2018
Date Completed: 23/2/2018

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. 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 other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

R Gunson
(Director)

A Watkins
(Director)

R Berriman
(Quality Manager)

L Knight
(Senior Technician)

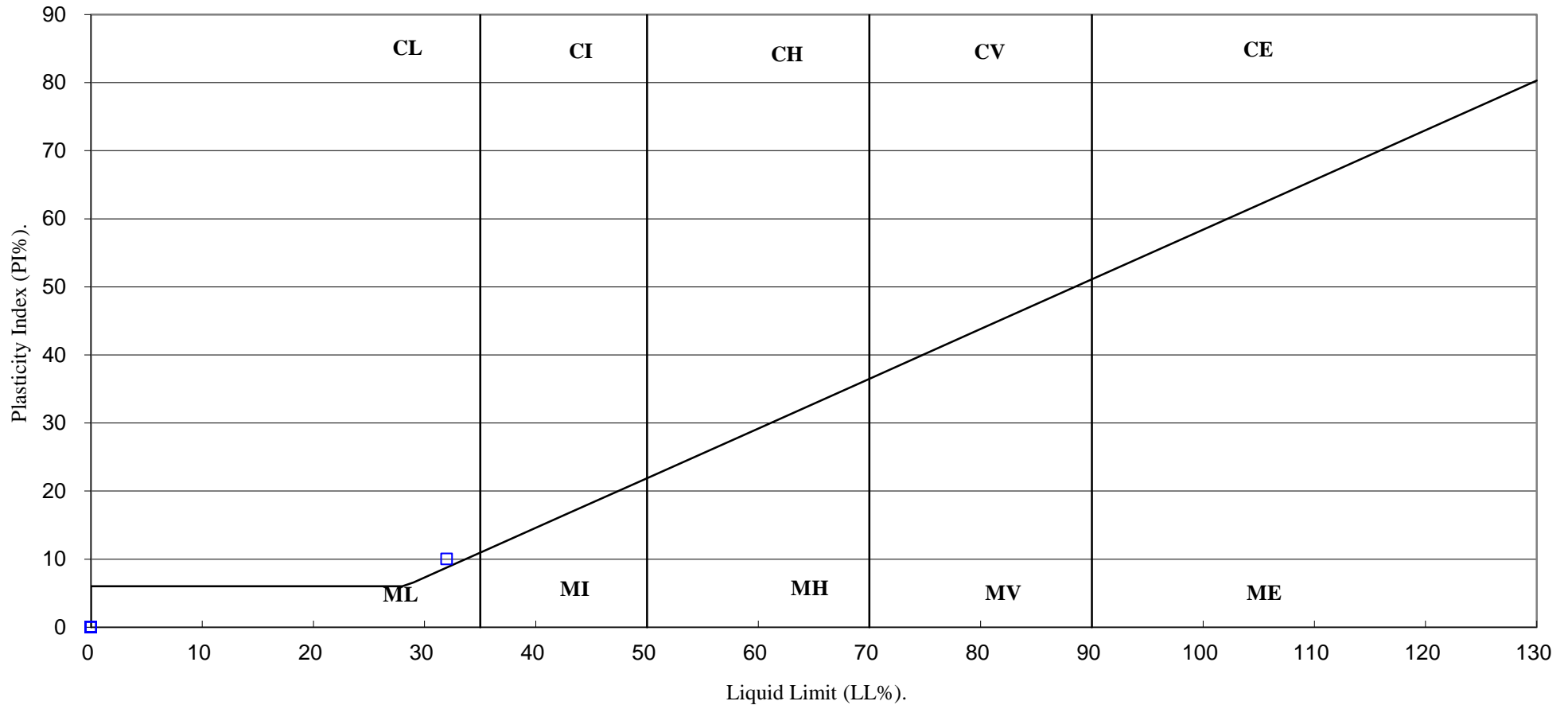
C Marshall
(Laboratory Manager)

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5 – 7 Hexthorpe Road, Hexthorpe,
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Page 1 of

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



4043

PSL
Professional Soils Laboratory

Newton Stewart FPS

Contract No:

PSL18/0518

Client Ref:

17636

PARTICLE SIZE DISTRIBUTION TEST

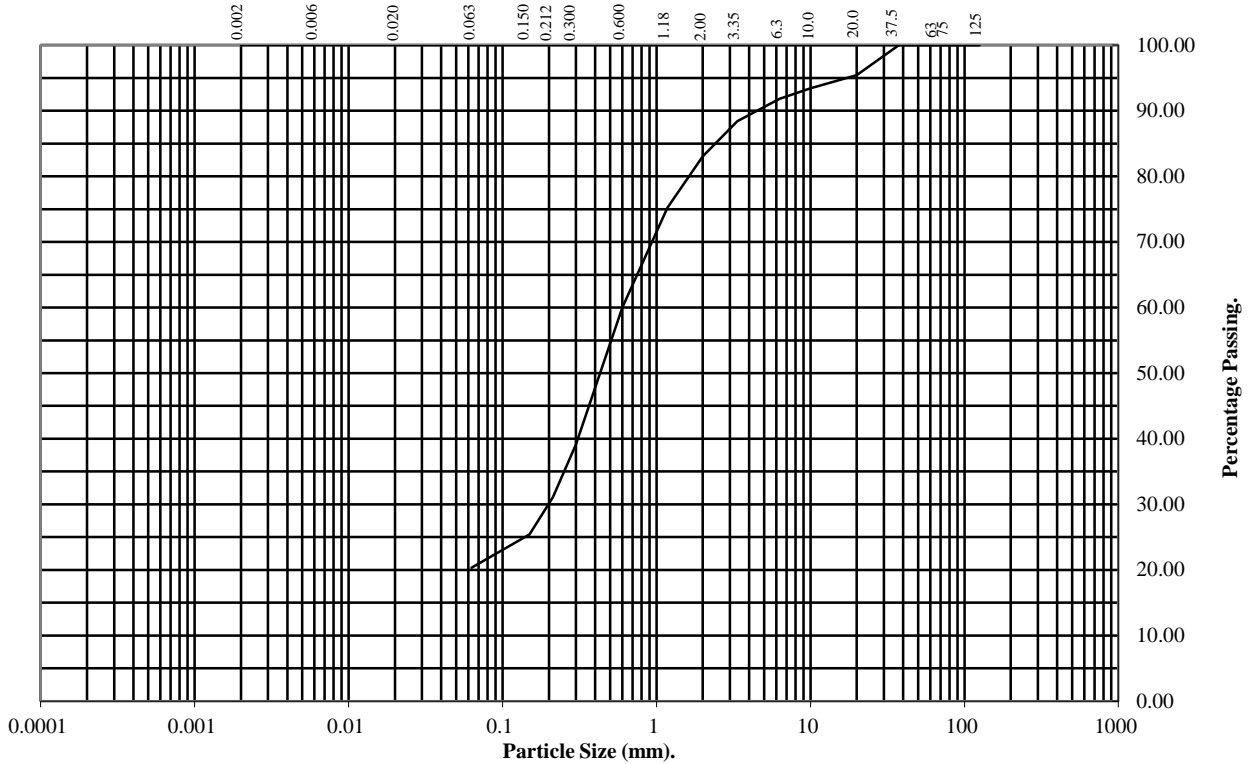
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **TP5** Top Depth (m): **0.70**

Sample Number: Base Depth(m):

Sample Type: **BD**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	95
10	93
6.3	92
3.35	88
2	83
1.18	75
0.6	60
0.3	39
0.212	31
0.15	25
0.063	20

Soil Fraction	Total Percentage
Cobbles	0
Gravel	17
Sand	63
Silt/Clay	20

Remarks:
See Summary of Soil Descriptions



Newton Stewart FPS

Contract No:
PSL18/0518
Client Ref:
17636

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : 1990

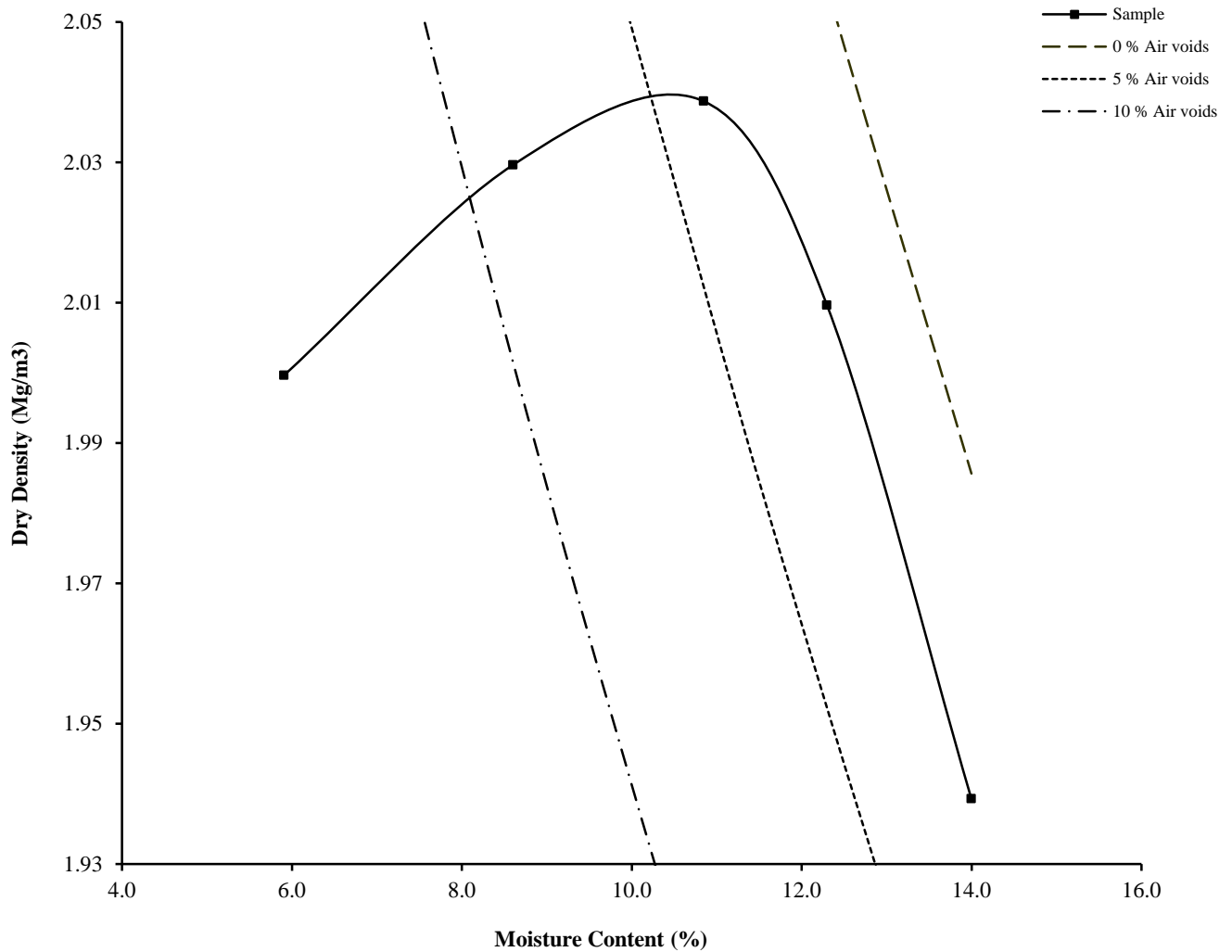
Hole Number: TP6

Top Depth (m) : 0.80

Sample Number:

Base Depth (m) :

Sample Type: BD



Initial Moisture Content:	9.8	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.75	Assumed	Material Retained on 37.5 mm Test Sieve (%):	10
Maximum Dry Density (Mg/m ³):	2.04		Material Retained on 20.0 mm Test Sieve (%):	19
Optimum Moisture Content (%):	10			
Remarks See summary of soil descriptions.				



Newton Stewart FPS

Contract
PSL18/0518
Client Ref
17636



LABORATORY REPORT



4043

Contract Number: PSL18/0518

Report Date: 23 February 2018

Client's Reference:

Client Name: Holequest Ltd
Winston Road
Galashiels
TD1 2DA

For the attention of: Craig Rodger

Contract Title: Newton Stewart FPS

Date Received: 1/2/2018
Date Commenced: 1/2/2018
Date Completed: 23/2/2018

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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Checked and Approved Signatories:

R Gunson
(Director)

A Watkins
(Director)

R Berriman
(Quality Manager)

L Knight
(Senior Technician)

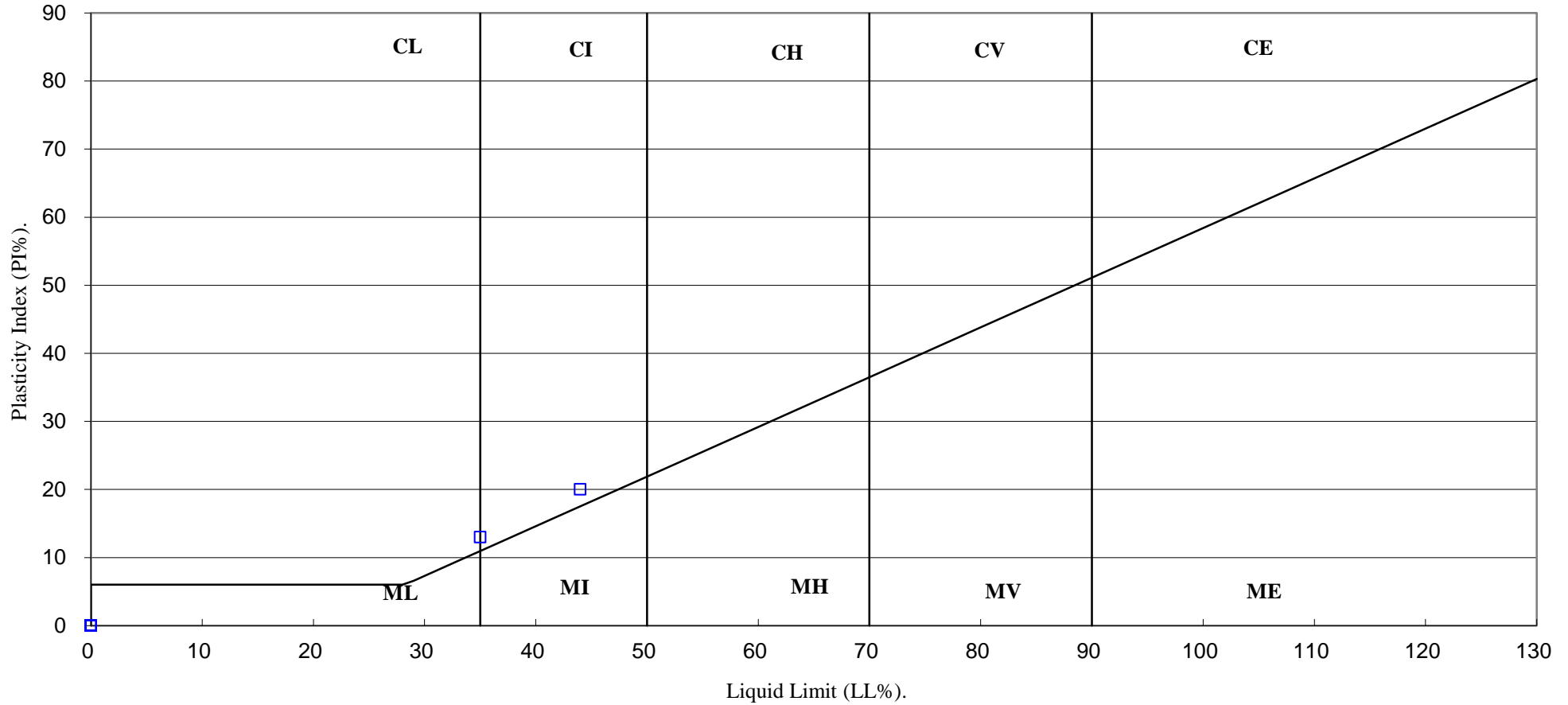
C Marshall
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PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



4043

PSL
Professional Soils Laboratory

Newton Stewart FPS

Contract No:

PSL18/0518

Client Ref:

17636

PARTICLE SIZE DISTRIBUTION TEST

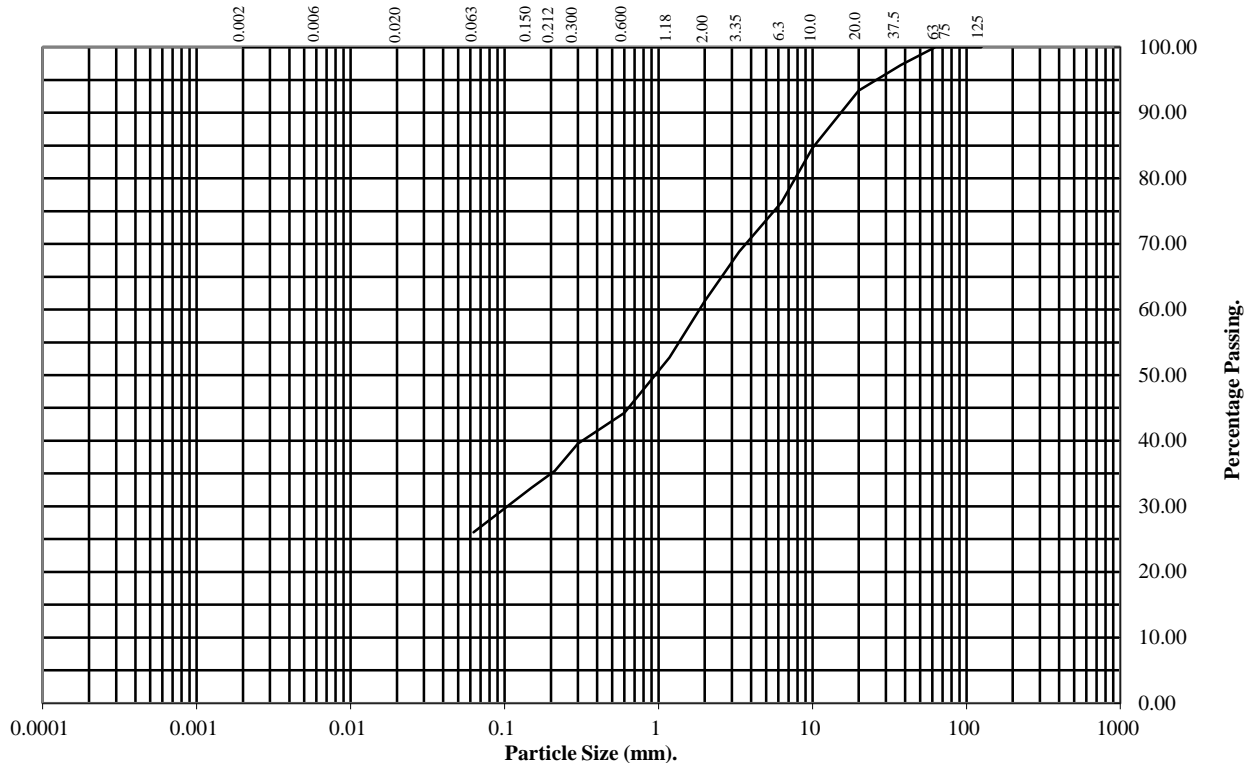
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP1 **Top Depth (m):** 0.80

Sample Number: **Base Depth(m):**

Sample Type: BD



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	97
20	93
10	85
6.3	76
3.35	69
2	61
1.18	53
0.6	44
0.3	40
0.212	35
0.15	33
0.063	26

Soil Fraction	Total Percentage
Cobbles	0
Gravel	39
Sand	35
Silt/Clay	26

Remarks:
See Summary of Soil Descriptions



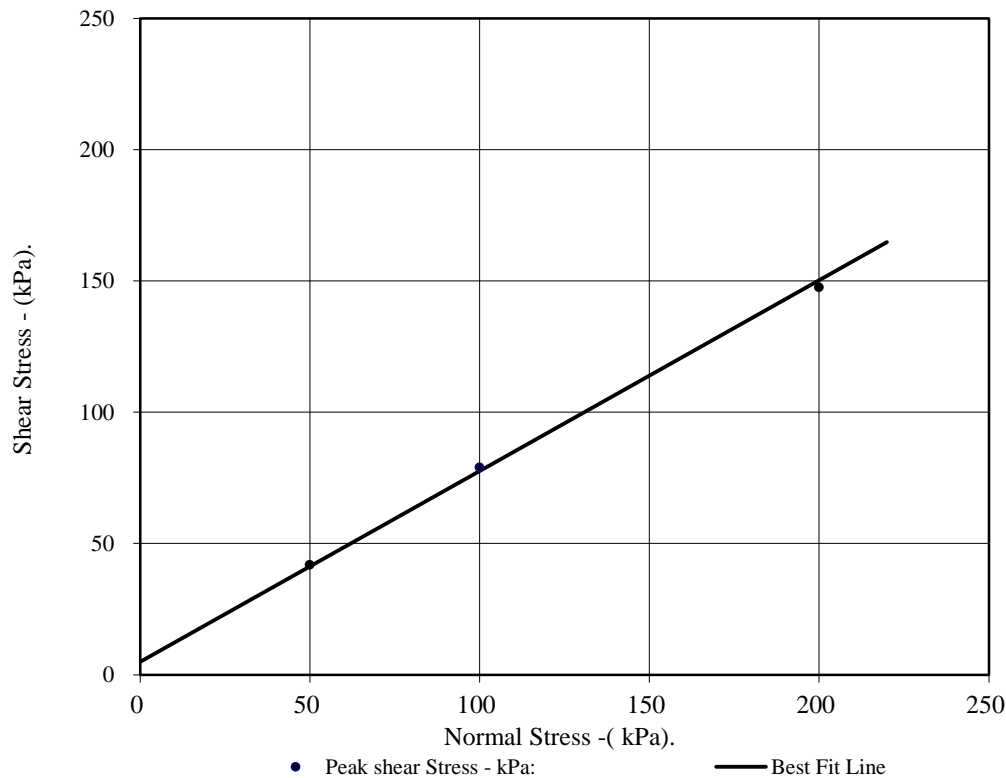
Newton Stewart FPS

Contract No:
PSL18/0518
Client Ref:
17636

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4.5.4

Hole Number:	TP4		Top Depth:	2.50	
Sample Number:			Base Depth:		
Sample Conditions:	Submerged		Sample Type	BD	
Particle Density - Mg/m ³ :	2.65	Assumed	Remarks:		
Sample Preparation:	Remoulded using hand tamped effort. Material tested passing 2mm sieve				
Sample Description:	See summary of soil descriptions.				
STAGE			1	2	3
Initial Conditions					
Height - mm:			19.54	19.54	19.54
Length - mm:			60.03	60.03	60.03
Moisture Content - %:			12	12	12
Bulk Density - Mg/m ³ :			1.99	2.00	2.00
Dry Density - Mg/m ³ :			1.77	1.78	1.78
Voids Ratio:			0.495	0.488	0.488
Normal Pressure- kPa			50	100	200
Consolidation Stage					
Consolidated Height - mm:			19.19	19.10	18.83
Shearing Stage					
Rate of Strain (mm/min)			0.800	0.800	0.800
Displacement at peak shear stress (mm)			9.00	7.00	7.00
Peak shear Stress - kPa:			42	79	148
Final Consolidated Conditions					
Moisture Content - %:			19	19	19
Bulk Density - Mg/m ³ :			2.03	2.05	2.08
Dry Density - Mg/m ³ :			1.70	1.73	1.75
Peak					
Angle of Shearing Resistance:(θ)			36		
Effective Cohesion - kPa:			5		



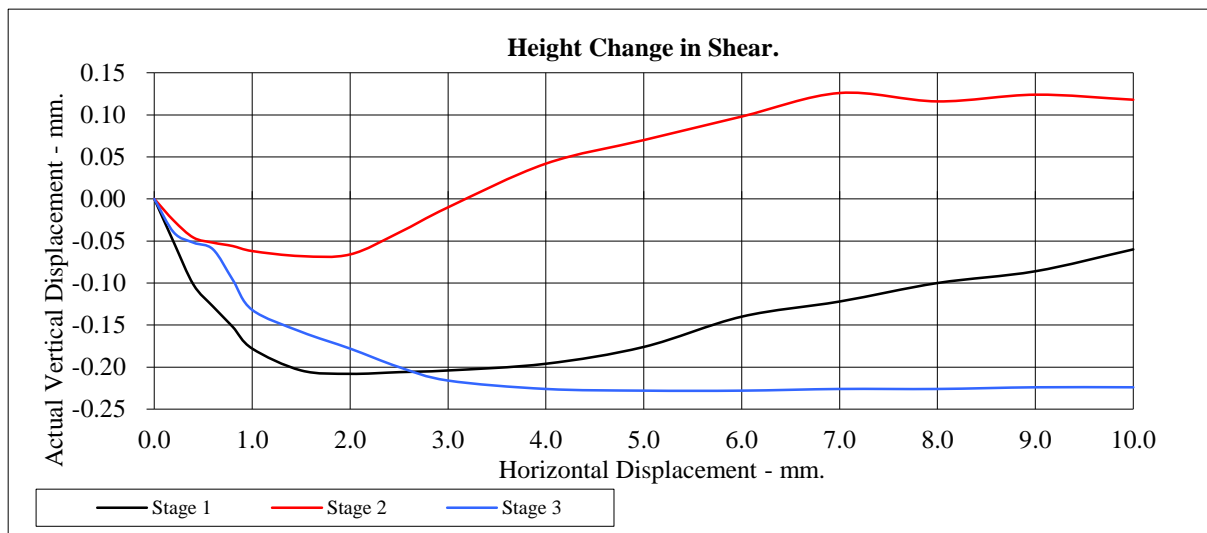
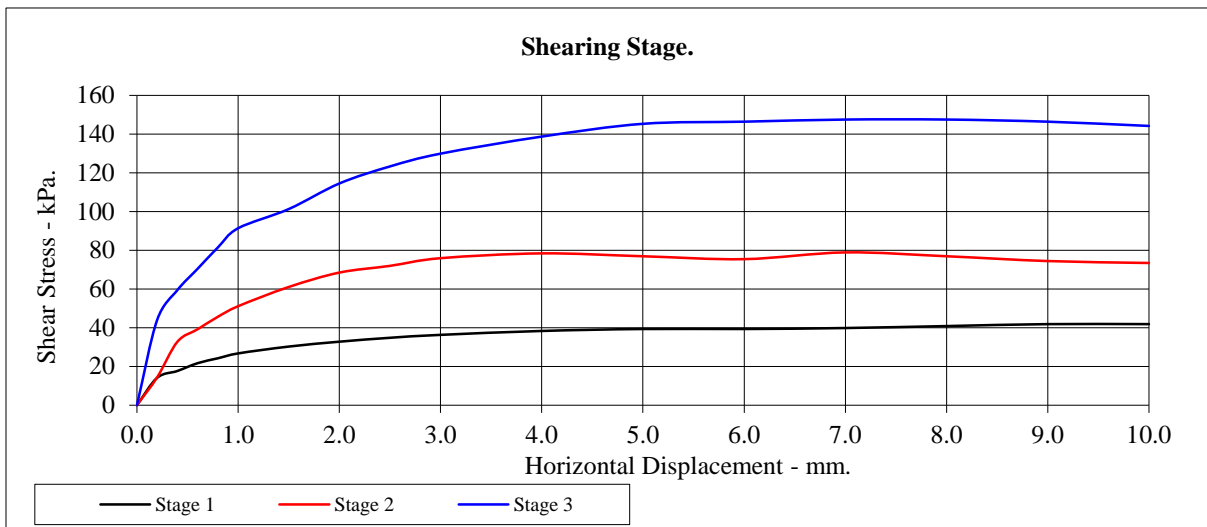
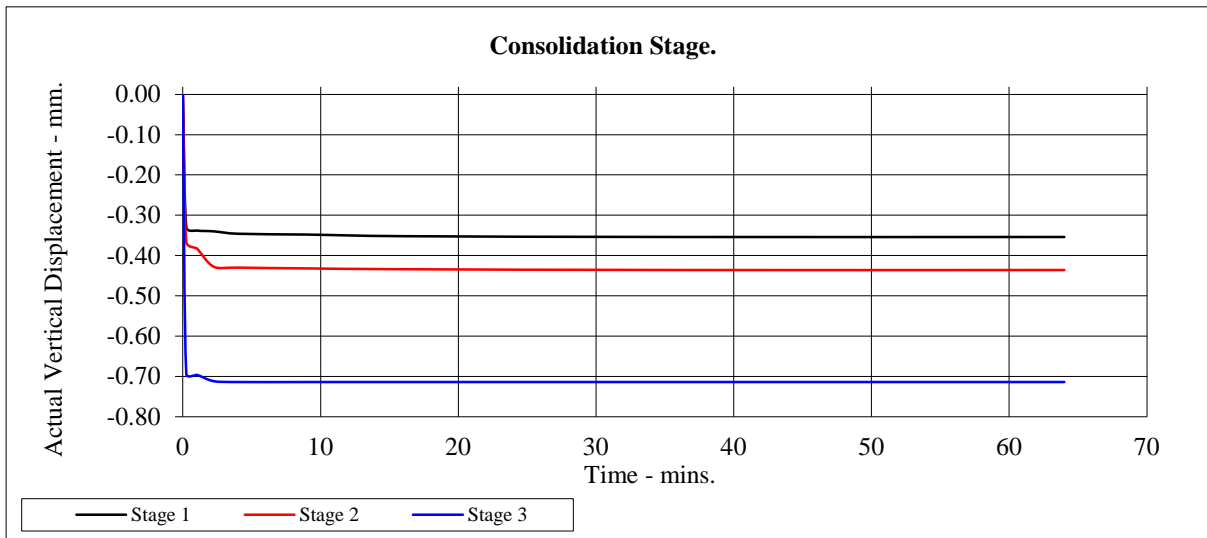
Newton Stewart FOS

Contract No:
PSL18/0518
Client Ref:

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4.5.4

Hole Number:	TP4	Top Depth:	2.50
Sample Number:		Base Depth:	



Newton Stewart FOS

Contract No:
PSL18/0518
Client Ref:



LABORATORY REPORT



4043

Contract Number: PSL18/1203

Report Date: 06 April 2018

Client's Reference: 17/082

Client Name: Holequest
Winston Road
Galashiels
TD1 2DA

For the attention of: Graham

Contract Title: Newton Stewart FPS

Date Received: 14/3/2018

Date Commenced: 14/3/2018

Date Completed: 6/4/2018

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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Checked and Approved Signatories:

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A Watkins
(Director)

R Berriman
(Quality Manager)

L Knight
(Senior Technician)

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SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
TP11-OP7		BD	1.00		Dark brown sandy GRAVEL with cobbles.
TPW1-OP6		BD	0.50		Dark brown sandy slightly clayey silty GRAVEL with cobbles.
TP1-OP6		BD	0.80		MADE GROUND dark brown very sandy clayey gravel.
TP1-OP6		D	1.30		Brown gravelly slightly sandy very silty CLAY.
TP1-OP7		BD	1.00		Brown mottled grey slightly gravelly slightly sandy CLAY.
TP1-OP7		BD	2.00		Brown slightly sandy very silty CLAY.
TP2-OP6		BD	1.40		Brown sandy slightly clayey GRAVEL with cobbles.
TP2-OP7		BD	0.60		Brown slightly gravelly slightly sandy CLAY.
TP2-OP7		BD	1.60		Brown mottled grey slightly sandy CLAY.
TP4-OP6		BD	1.00		Brown mottled grey slightly gravelly very sandy very silty CLAY.
TP7-OP6		BD	1.50		Brown mottled grey very gravelly sandy very silty CLAY.
TP8-OP7		BD	1.80		Brown sandy slightly silty GRAVEL with cobbles.
TP9-OP7		BD	1.80		Brown sandy slightly clayey silty GRAVEL with cobbles.
TP9-OP6		BD	1.00		Brown very gravelly clayey very silty SAND.
TP9-OP6		BD	4.30		Brown mottled grey sandy slightly silty GRAVEL.
TP9-OP6		BD	10.30		Brown very sandy silty GRAVEL.
BH1-OP6		BD	1.60		Brown sandy GRAVEL.
BH1-OP6		BD	2.70		Brown sandy slightly silty GRAVEL.
BH2A-OP6		BD	2.80		Brown very sandy silty GRAVEL.



Newton Stewart FPS

Contract No:
PSL18/1203
Client Ref:
17/082

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH3-OP6		BD	1.20		Brown sandy slightly silty GRAVEL.
BH3-OP6		BD	2.00		Brown gravelly SAND.
BH4-OP6		BD	1.30		Brown slightly gravelly sandy CLAY.
BH4-OP6		U	1.30		Soft brown very silty CLAY.
BH5-OP6		BD	1.30		Grey sandy slightly silty GRAVEL.
BH5-OP6		BD	10.30		Brown slightly gravelly slightly clayey SAND.
BH5-OP6		BD	11.80		Brown slightly gravelly very sandy CLAY.
BH7-OP6		U80	2.80		Very soft brown mottled grey very gravelly sandy CLAY.
BH7-OP6		BD	2.80		Brown mottled grey sandy clayey GRAVEL.
BH7-OP6		BD	4.30		Brown mottled grey very sandy slightly silty GRAVEL.
BH7-OP6		BD	8.80		Grey slightly gravelly sandy CLAY.
BH8-OP6		BD	1.30		Brown very sandy clayey silty GRAVEL.
BH8-OP6		BD	4.30		Brown very sandy slightly clayey silty GRAVEL.
BH9-OP6		BD	0.30		Brown slightly gravelly slightly sandy CLAY.
BH9-OP6		U	1.30		Very soft brown slightly gravelly sandy CLAY with some organic material.
BH9-OP6		BD	1.30		Brown very gravelly sandy CLAY with some organic material.
BH11-OP6		BD	1.30		Brown gravelly slightly clayey SAND.
BH11-OP6		BD	2.80		Brown mottled grey very gravelly very sandy CLAY.
BH12-OP6		BD	1.30		Brown very sandy silty GRAVEL.



Newton Stewart FPS

Contract No:
PSL18/1203
Client Ref:
17/082



SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

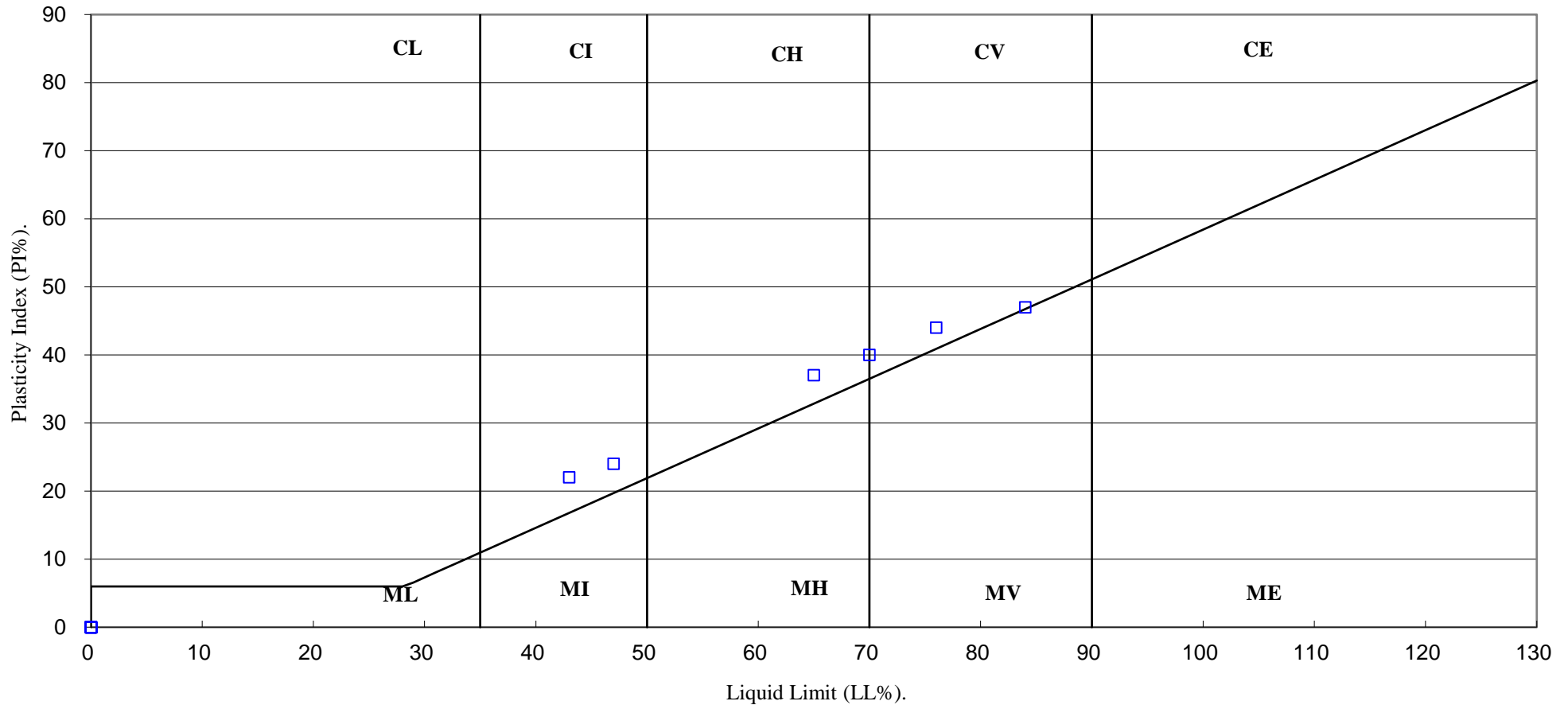
Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % <small>Clause 3.2</small>	Linear Shrinkage % <small>Clause 6.5</small>	Particle Density Mg/m ³ <small>Clause 8.2</small>	Liquid Limit % <small>Clause 4.3/4</small>	Plastic Limit % <small>Clause 5.3</small>	Plasticity Index % <small>Clause 5.4</small>	Passing .425mm %	Remarks
TP1-OP6		D	1.30		35			84	37	47	78	Very high plasticity CV.
TP1-OP7		BD	1.00		43			65	28	37	93	High plasticity CH.
TP2-OP7		BD	0.60		32			70	30	40	93	Very high plasticity CV.
TP4-OP6		BD	1.00		29							
BH1-OP6		BD	1.60		5.1				NP			
BH4-OP6		BD	1.30		31			47	23	24	92	Intermediate plasticity CI.
BH5-OP6		BD	10.30		20				NP			
BH7-OP6		BD	2.80		17				NP			
BH7-OP6		BD	8.80		37			43	21	22	97	Intermediate plasticity CI.
BH9-OP6		BD	0.30		41			76	32	44	91	Very high plasticity CV.
BH13-OP6		BD	4.30		12				NP			

SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.

 4043		Newton Stewart FPS	Contract No:
			PSL18/1203
			Client Ref:
			17/082

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



PSL
Professional Soils Laboratory

Newton Stewart FPS

Contract No:

PSL18/1203

Client Ref:

17/082

PARTICLE SIZE DISTRIBUTION TEST

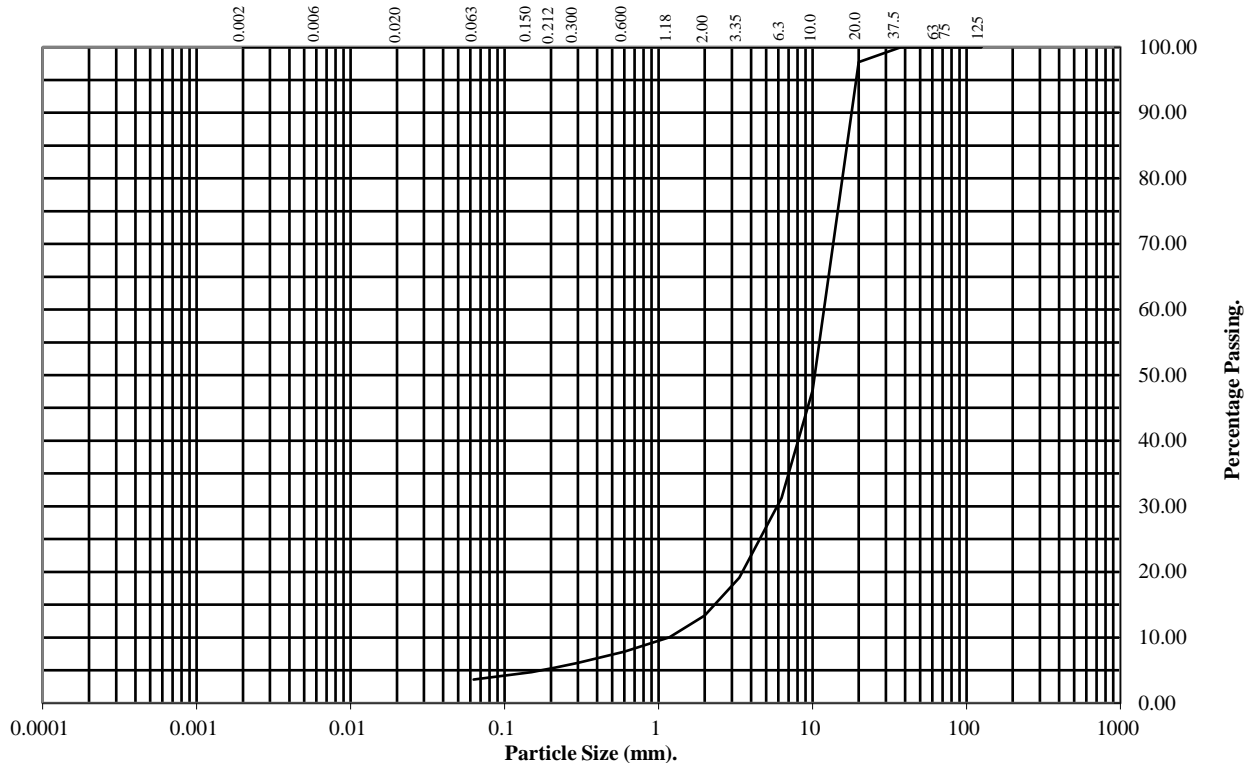
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH1-OP6** **Top Depth (m):** **2.70**

Sample Number: **Base Depth(m):**

Sample Type: **BD**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	48
6.3	31
3.35	19
2	13
1.18	10
0.6	8
0.3	6
0.212	5
0.15	5
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	87
Sand	9
Silt/Clay	4

Remarks:
See Summary of Soil Descriptions



Newton Stewart FPS

Contract No:
PSL18/1203
Client Ref:
17/082

PARTICLE SIZE DISTRIBUTION TEST

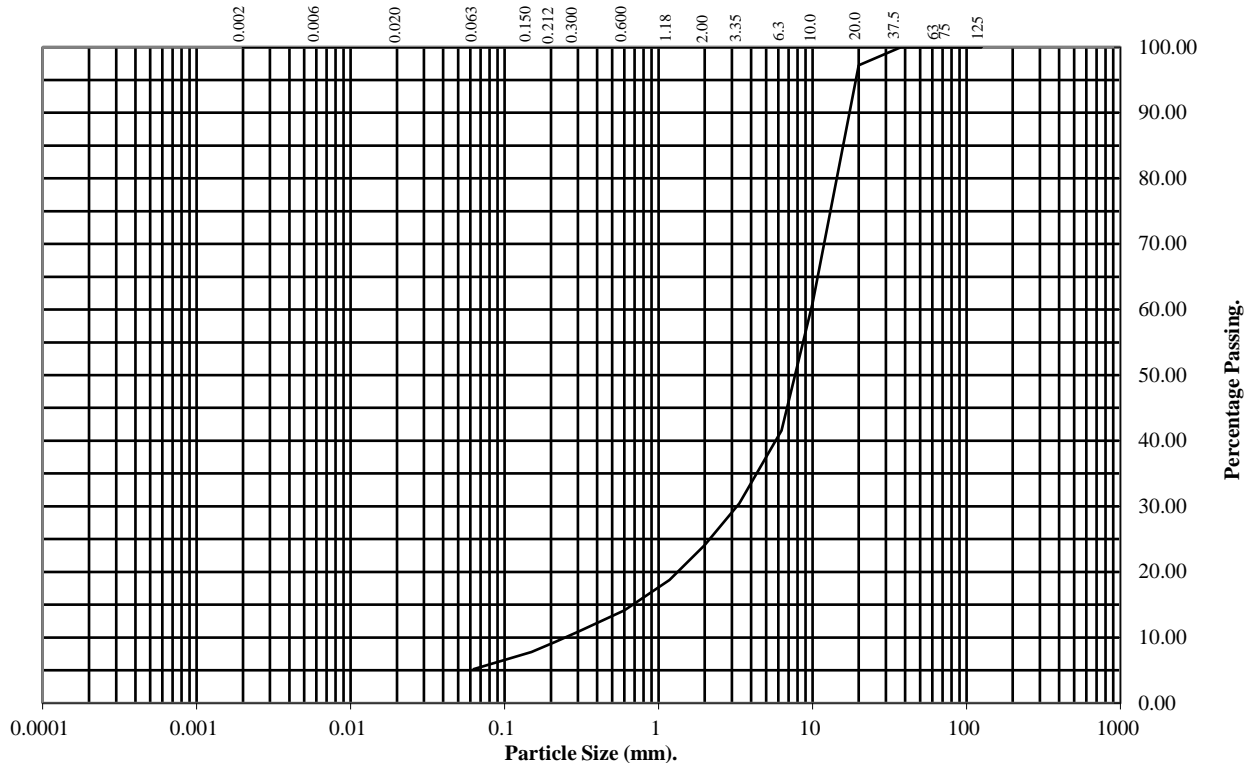
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH1-OP7** **Top Depth (m):** **1.30**

Sample Number: **Base Depth(m):**

Sample Type: **BD**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	61
6.3	42
3.35	30
2	24
1.18	19
0.6	14
0.3	11
0.212	9
0.15	8
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	76
Sand	19
Silt/Clay	5

Remarks:
See Summary of Soil Descriptions



Newton Stewart FPS

Contract No:
PSL18/1203
Client Ref:
17/082

PARTICLE SIZE DISTRIBUTION TEST

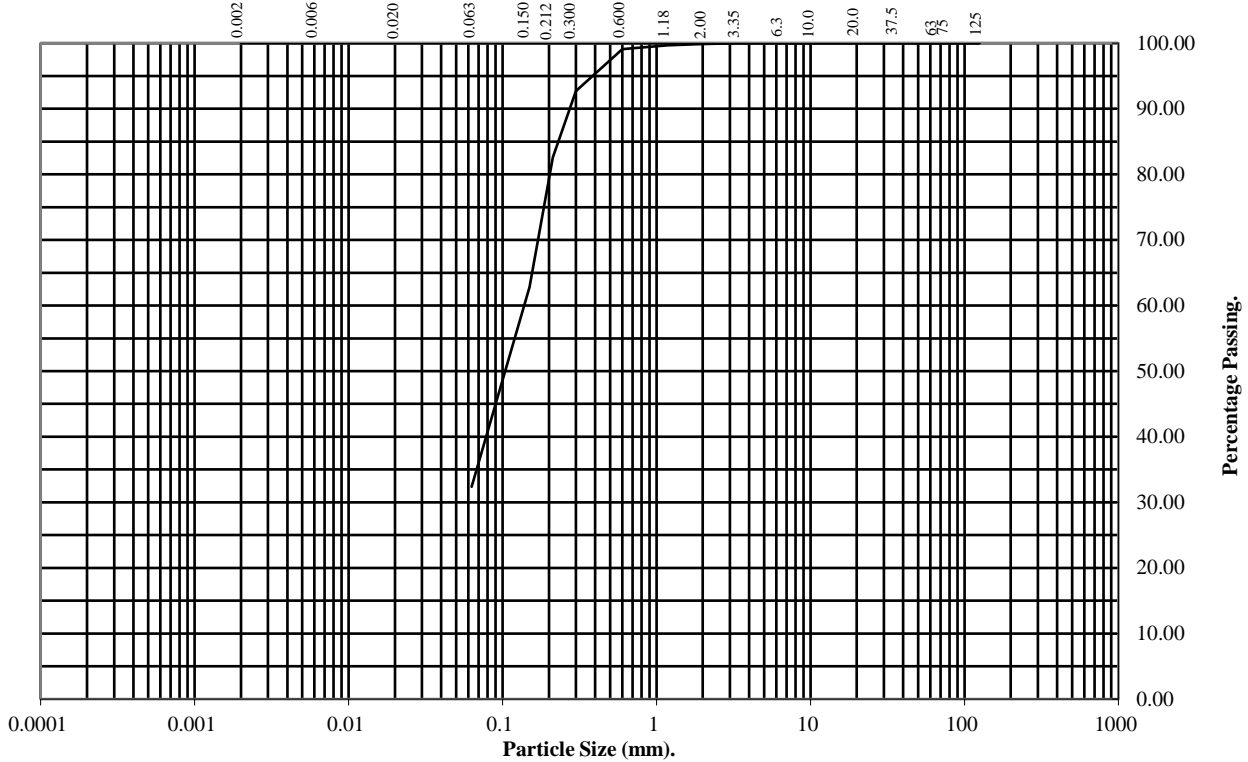
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH1-OP7** **Top Depth (m):** **5.80**

Sample Number: **Base Depth(m):**

Sample Type: **BD**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	99
0.3	93
0.212	83
0.15	63
0.063	32

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	68
Silt/Clay	32

Remarks:
See Summary of Soil Descriptions



Newton Stewart FPS

Contract No:
PSL18/1203
Client Ref:
17/082

PARTICLE SIZE DISTRIBUTION TEST

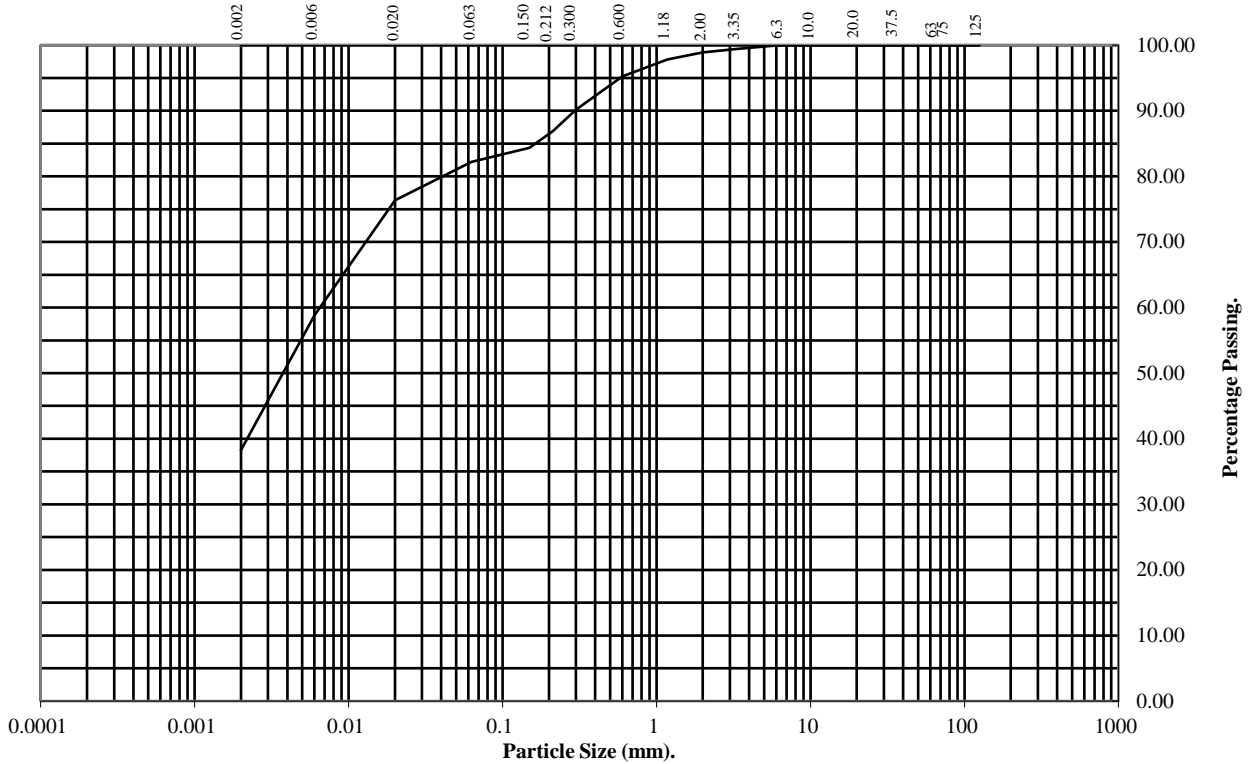
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: **BH4-OP6** **Top Depth (m):** **1.30**

Sample Number: **Base Depth(m):**

Sample Type: **BD**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	99
1.18	98
0.6	95
0.3	90
0.212	87
0.15	84
0.063	82

Particle Diameter	Percentage Passing
0.02	76
0.006	59
0.002	38

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	17
Silt	44
Clay	38

Remarks:
See Summary of Soil Descriptions



Newton Stewart FPS

Contract No:
PSL18/1203
Client Ref:
17/082

PARTICLE SIZE DISTRIBUTION TEST

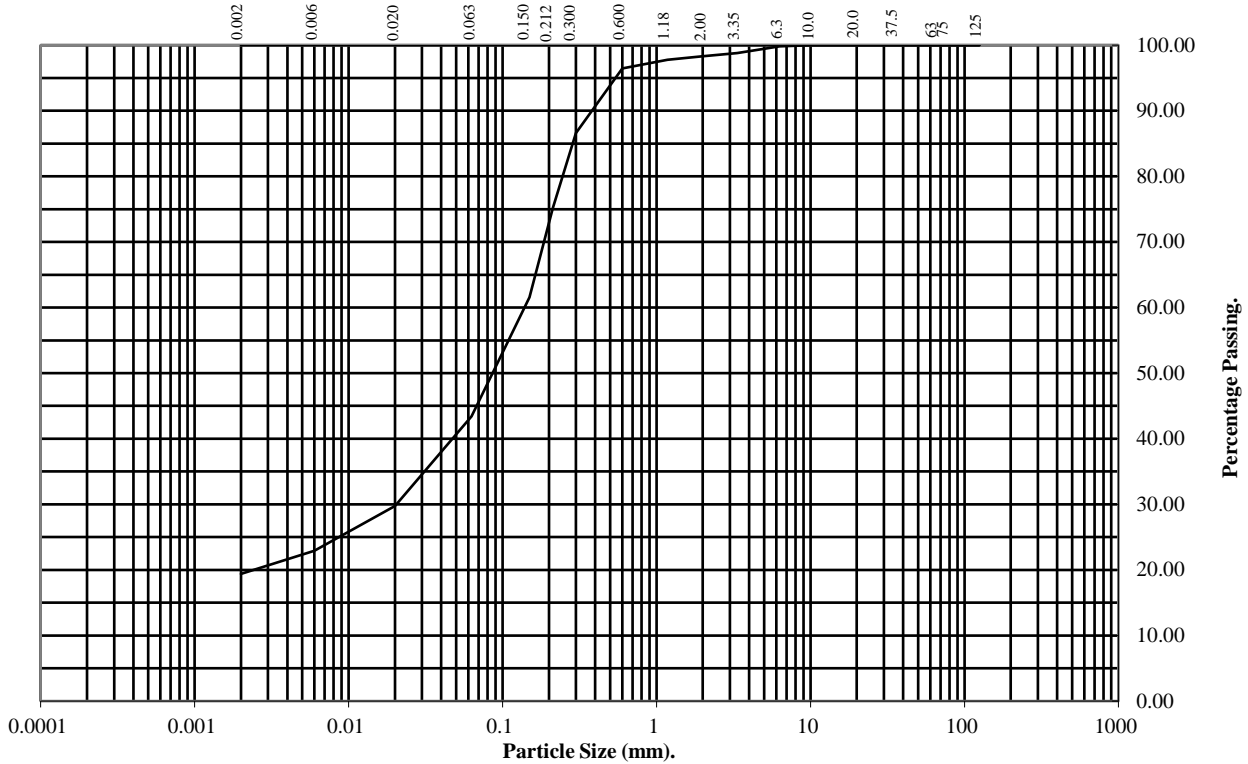
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: **BH5-OP6** **Top Depth (m):** **11.80**

Sample Number: **Base Depth(m):**

Sample Type: **BD**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	98
1.18	98
0.6	96
0.3	87
0.212	75
0.15	62
0.063	43

Particle Diameter	Percentage Passing
0.02	30
0.006	23
0.002	19

Soil Fraction	Total Percentage
Cobbles	0
Gravel	2
Sand	55
Silt	24
Clay	19

Remarks:
See Summary of Soil Descriptions



Newton Stewart FPS

Contract No:
PSL18/1203
Client Ref:
17/082

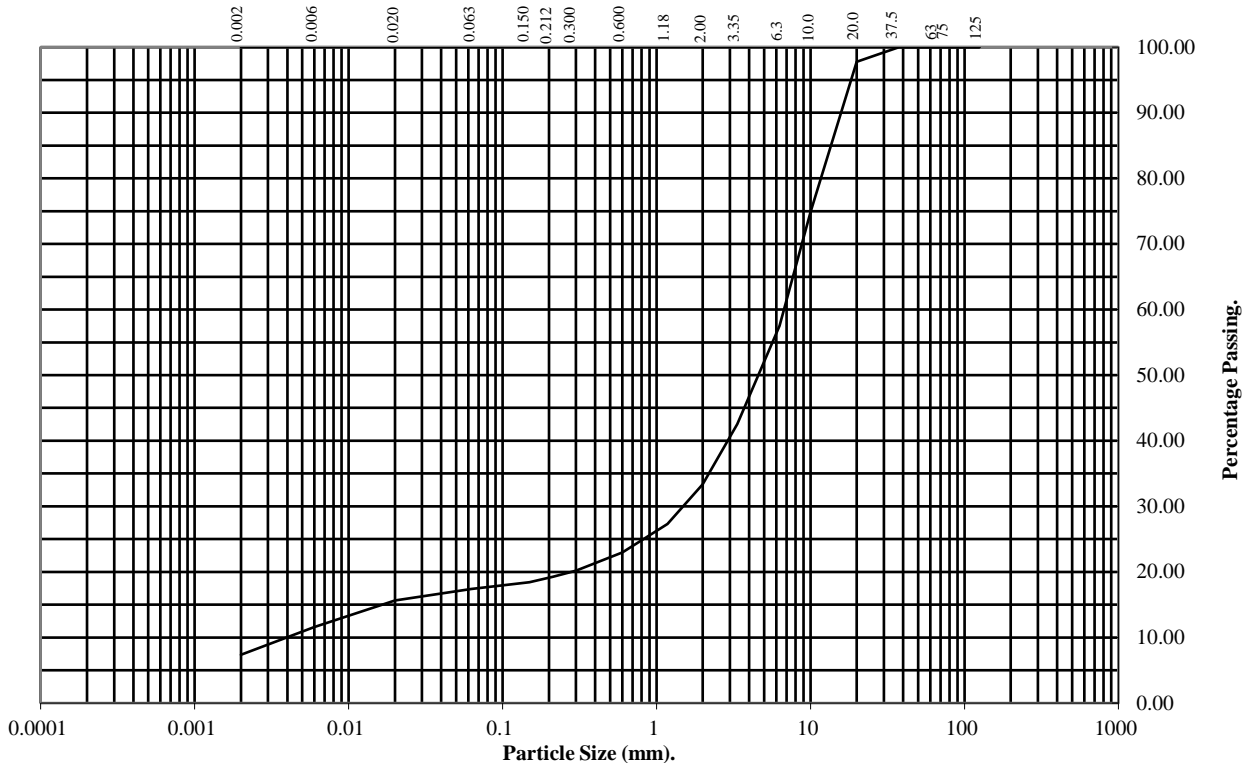
PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: **BH7-OP6** **Top Depth (m):** **2.80**

Sample Number: **Base Depth(m):**

Sample Type: **BD**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	75
6.3	58
3.35	43
2	33
1.18	27
0.6	23
0.3	20
0.212	19
0.15	18
0.063	17

Particle Diameter	Percentage Passing
0.02	16
0.006	12
0.002	7

Soil Fraction	Total Percentage
Cobbles	0
Gravel	67
Sand	16
Silt	10
Clay	7

Remarks:
See Summary of Soil Descriptions



Newton Stewart FPS

Contract No:
PSL18/1203
Client Ref:
17/082

PARTICLE SIZE DISTRIBUTION TEST

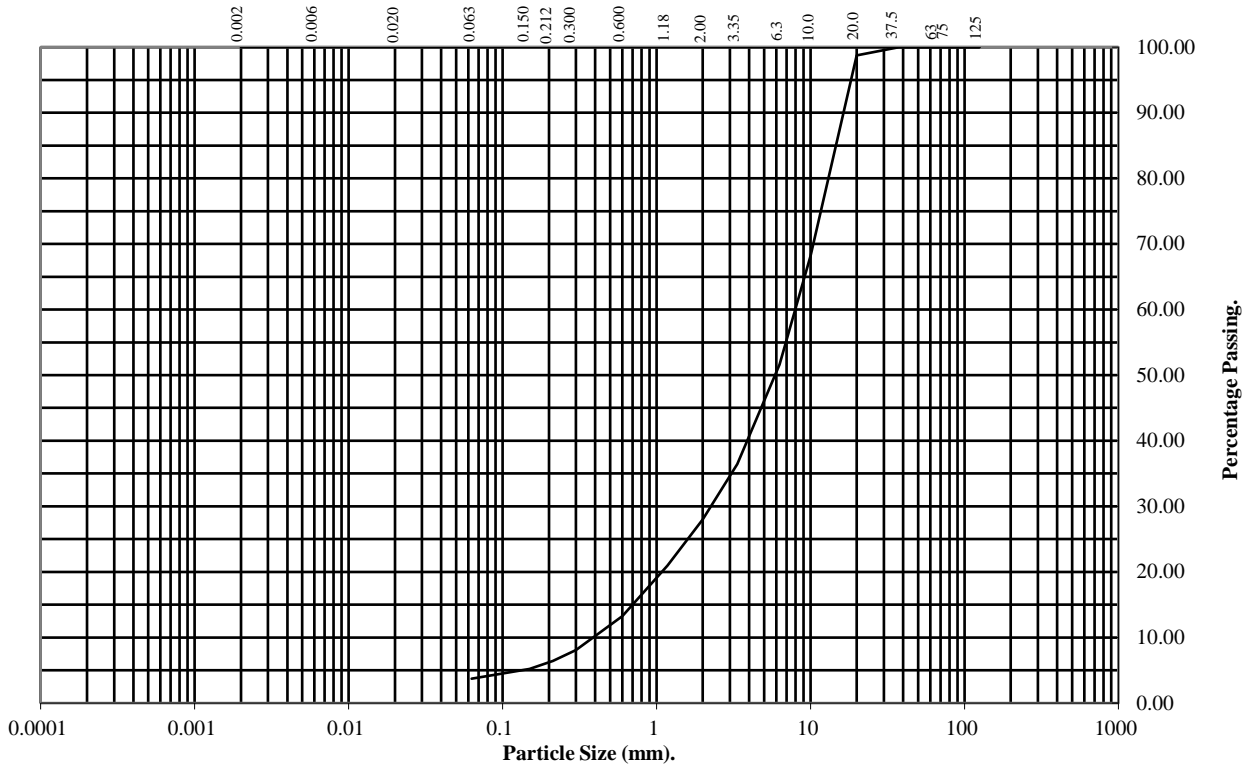
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH7-OP6** **Top Depth (m):** **4.30**

Sample Number: **Base Depth(m):**

Sample Type: **BD**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	99
10	68
6.3	52
3.35	36
2	28
1.18	21
0.6	13
0.3	8
0.212	6
0.15	5
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	72
Sand	24
Silt/Clay	4

Remarks:
See Summary of Soil Descriptions



Newton Stewart FPS

Contract No:
PSL18/1203
Client Ref:
17/082

PARTICLE SIZE DISTRIBUTION TEST

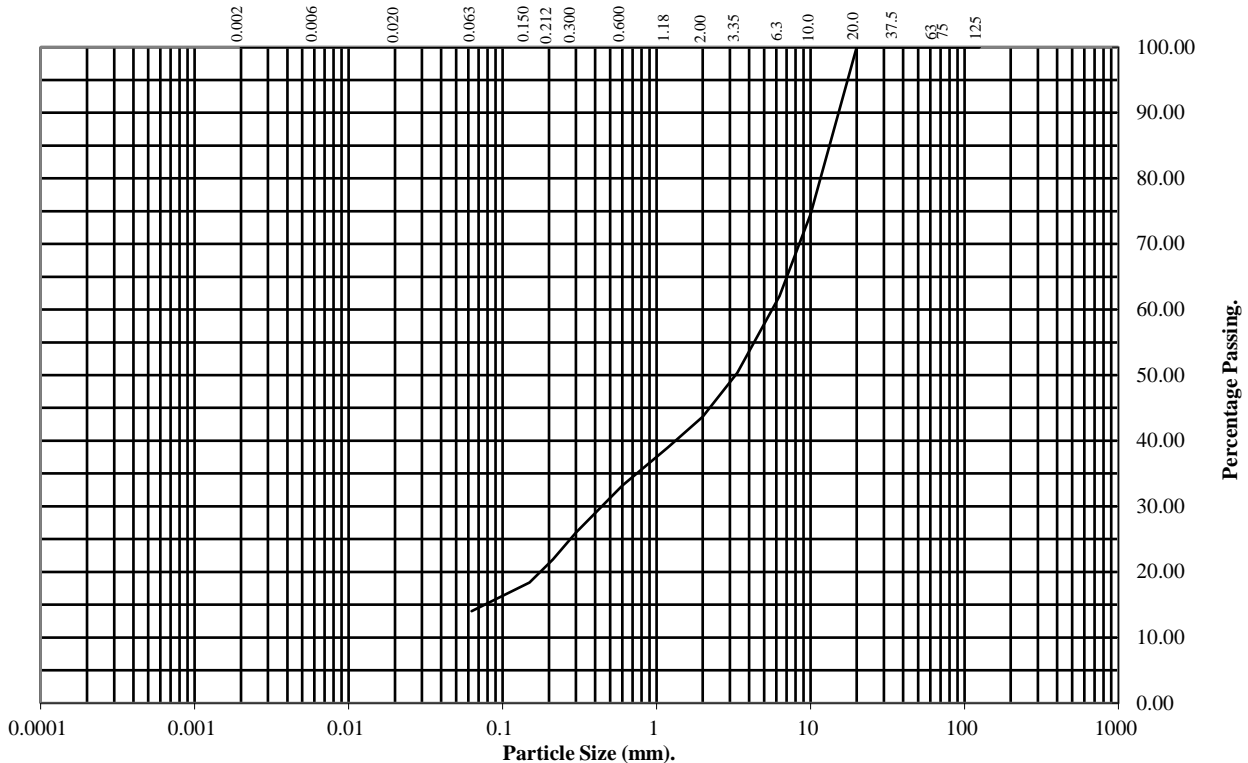
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH8-OP6** **Top Depth (m):** **1.30**

Sample Number: **Base Depth(m):**

Sample Type: **BD**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	75
6.3	62
3.35	50
2	44
1.18	39
0.6	33
0.3	26
0.212	22
0.15	18
0.063	14

Soil Fraction	Total Percentage
Cobbles	0
Gravel	56
Sand	30
Silt/Clay	14

Remarks:
See Summary of Soil Descriptions



Newton Stewart FPS

Contract No:
PSL18/1203
Client Ref:
17/082

PARTICLE SIZE DISTRIBUTION TEST

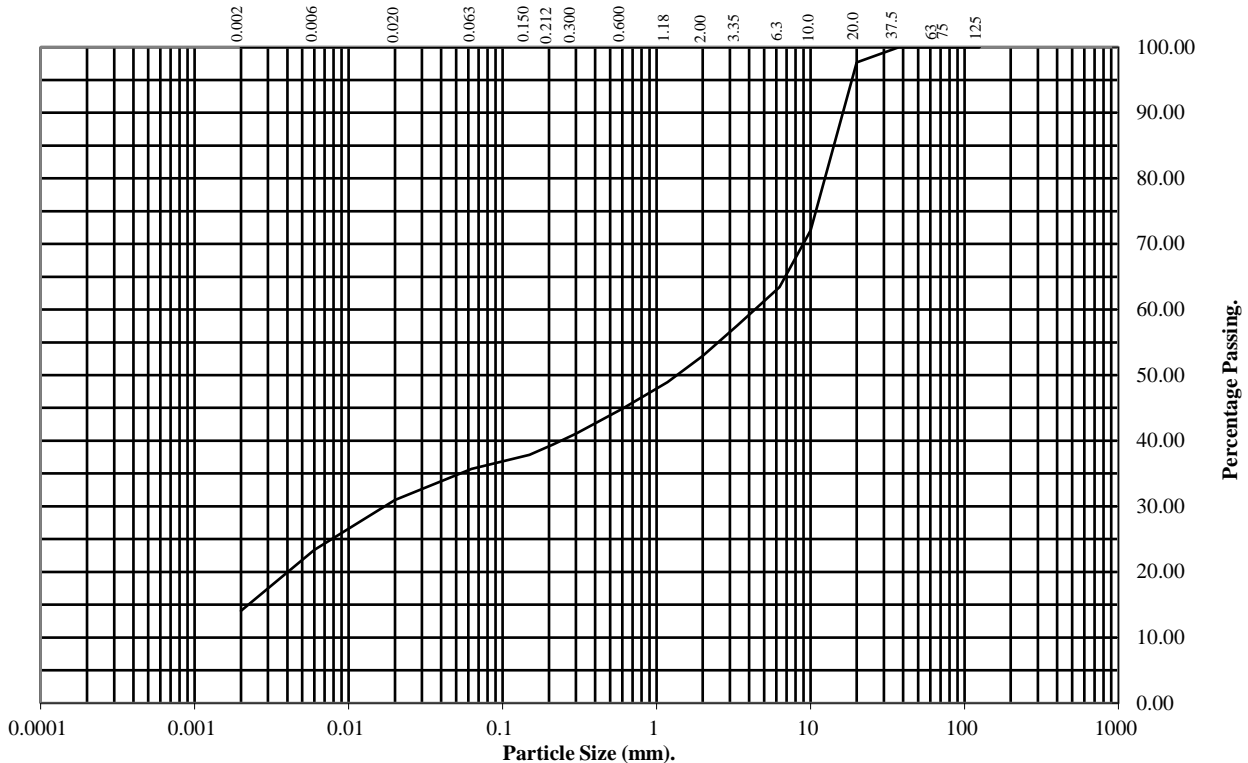
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: **BH9-OP6** **Top Depth (m):** **1.30**

Sample Number: **Base Depth(m):**

Sample Type: **BD**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	72
6.3	63
3.35	58
2	53
1.18	49
0.6	45
0.3	41
0.212	39
0.15	38
0.063	36

Particle Diameter	Percentage Passing
0.02	31
0.006	23
0.002	14

Soil Fraction	Total Percentage
Cobbles	0
Gravel	47
Sand	17
Silt	22
Clay	14

Remarks:
See Summary of Soil Descriptions



Newton Stewart FPS

Contract No:
PSL18/1203
Client Ref:
17/082

PARTICLE SIZE DISTRIBUTION TEST

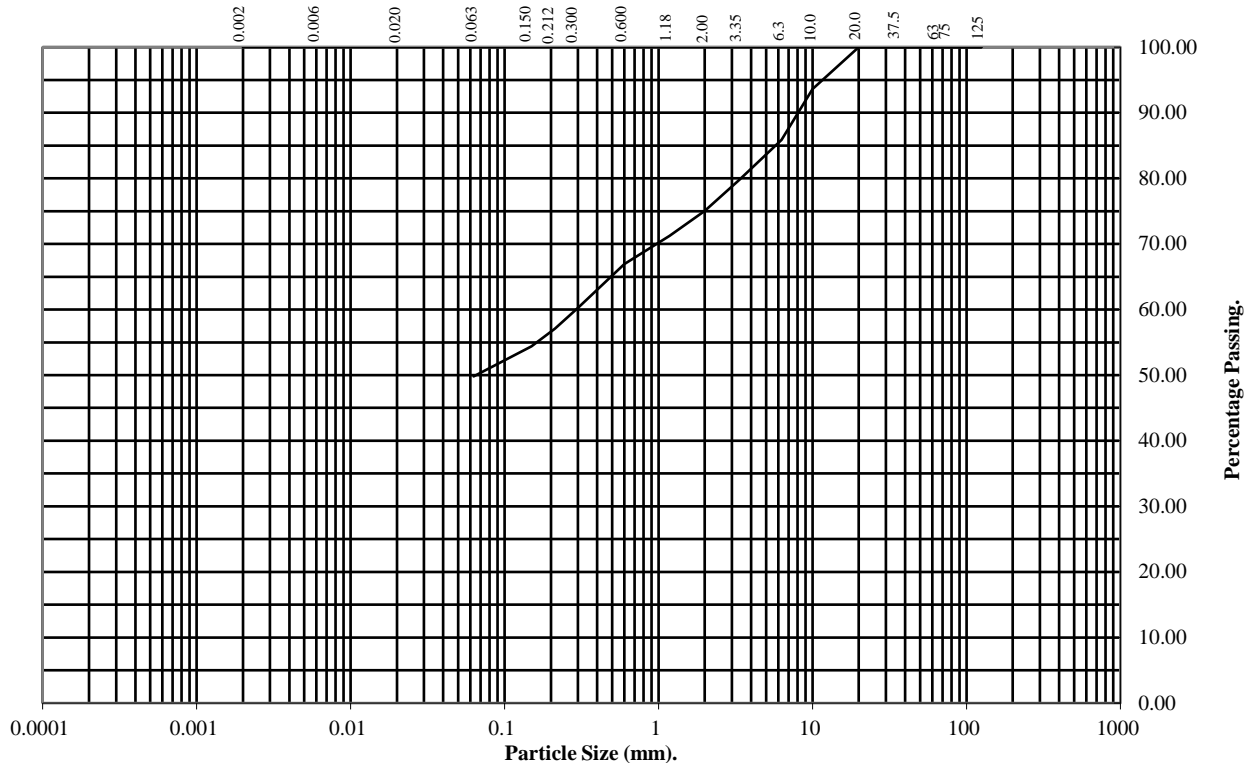
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH11-OP6** **Top Depth (m):** **2.80**

Sample Number: **Base Depth(m):**

Sample Type: **BD**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	94
6.3	86
3.35	80
2	75
1.18	71
0.6	67
0.3	60
0.212	57
0.15	54
0.063	50

Soil Fraction	Total Percentage
Cobbles	0
Gravel	25
Sand	25
Silt/Clay	50

Remarks:
See Summary of Soil Descriptions



Newton Stewart FPS

Contract No:
PSL18/1203
Client Ref:
17/082

PARTICLE SIZE DISTRIBUTION TEST

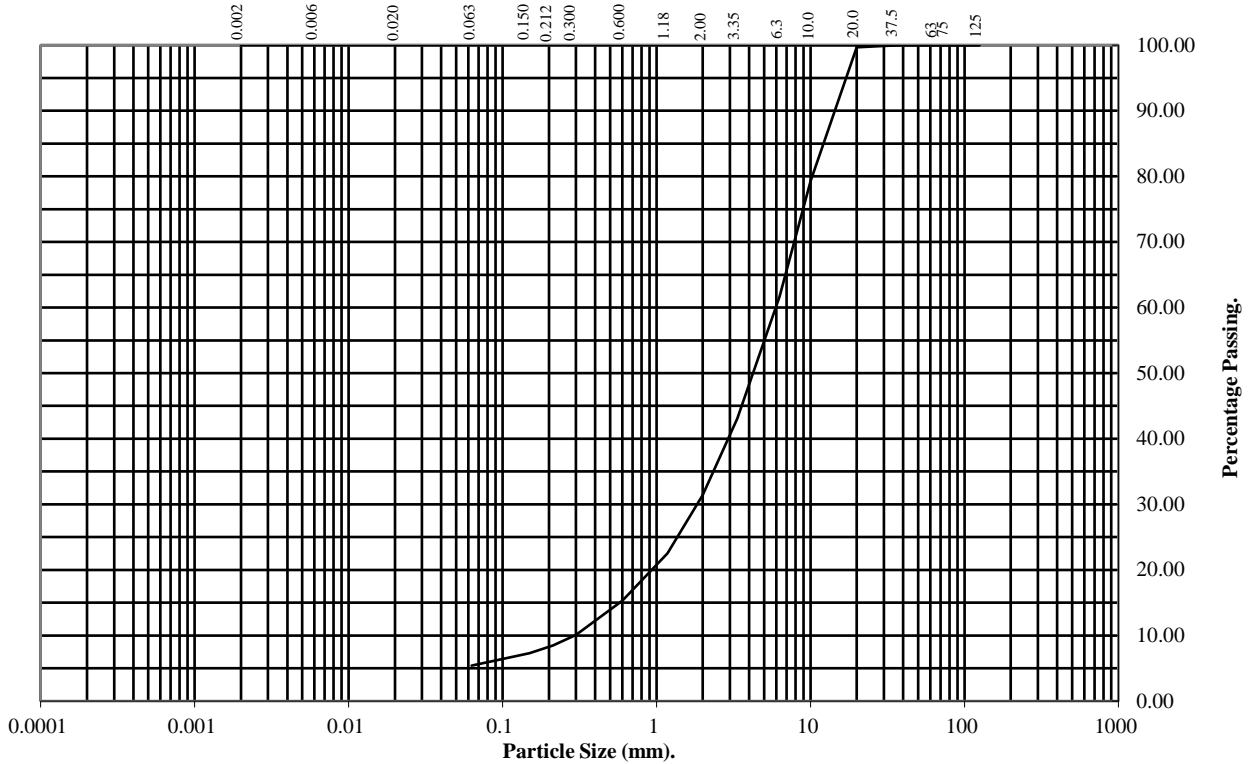
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH12-OP6** **Top Depth (m):** **1.30**

Sample Number: **Base Depth(m):**

Sample Type: **BD**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	79
6.3	62
3.35	43
2	31
1.18	23
0.6	15
0.3	10
0.212	8
0.15	7
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	69
Sand	26
Silt/Clay	5

Remarks:
See Summary of Soil Descriptions



Newton Stewart FPS

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PSL18/1203
Client Ref:
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PARTICLE SIZE DISTRIBUTION TEST

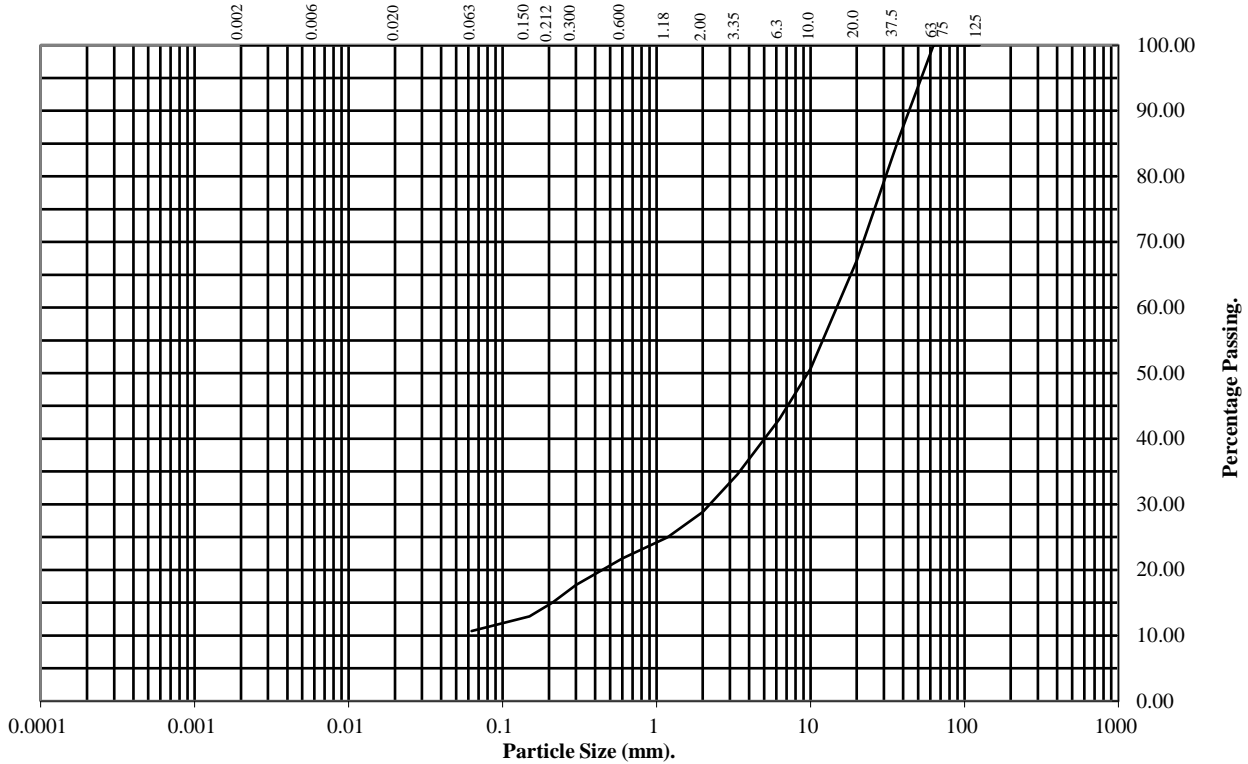
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH13-OP6** **Top Depth (m):** **1.30**

Sample Number: **Base Depth(m):**

Sample Type: **BD**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	86
20	67
10	51
6.3	43
3.35	35
2	29
1.18	25
0.6	22
0.3	18
0.212	15
0.15	13
0.063	11

Soil Fraction	Total Percentage
Cobbles	0
Gravel	71
Sand	18
Silt/Clay	11

Remarks:
See Summary of Soil Descriptions



Newton Stewart FPS

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PARTICLE SIZE DISTRIBUTION TEST

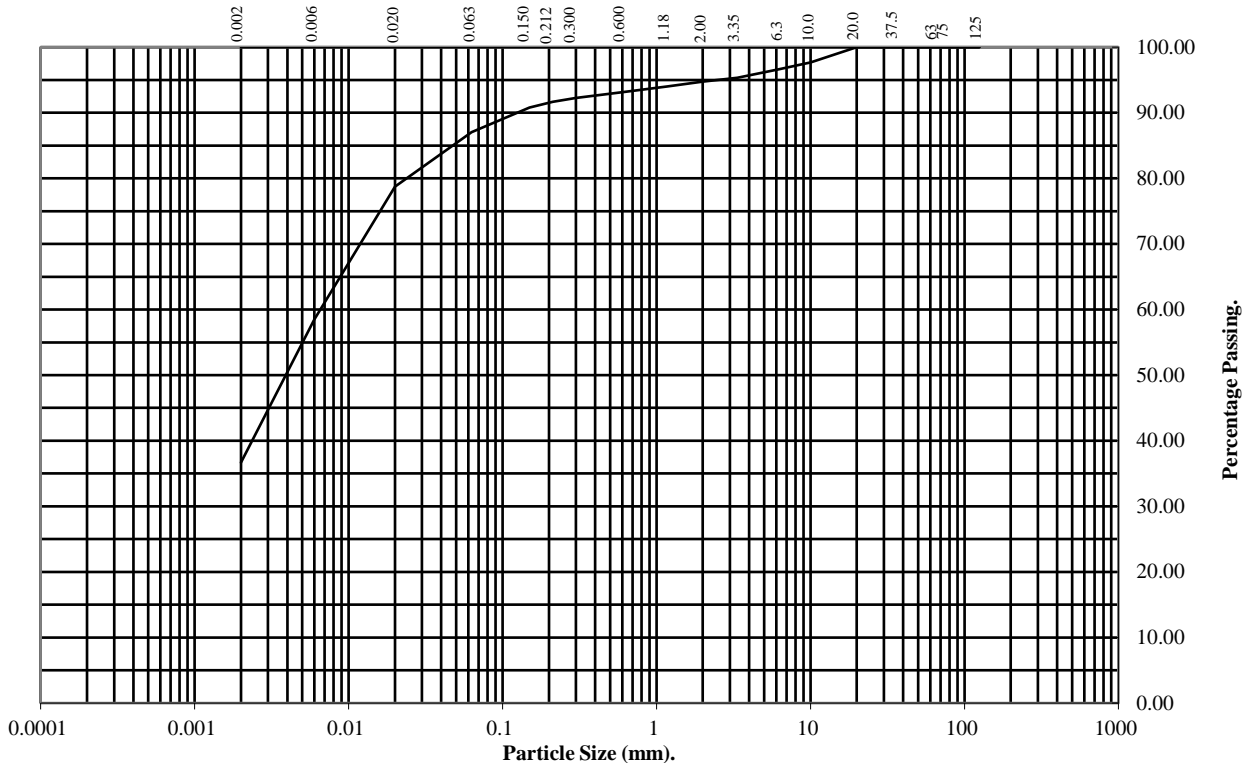
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: **BH13-OP6** **Top Depth (m):** **5.80**

Sample Number: **Base Depth(m):**

Sample Type: **BD**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	98
6.3	97
3.35	95
2	95
1.18	94
0.6	93
0.3	92
0.212	92
0.15	91
0.063	87

Particle Diameter	Percentage Passing
0.02	79
0.006	58
0.002	37

Soil Fraction	Total Percentage
Cobbles	0
Gravel	5
Sand	8
Silt	50
Clay	37

Remarks:
See Summary of Soil Descriptions



Newton Stewart FPS

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PARTICLE SIZE DISTRIBUTION TEST

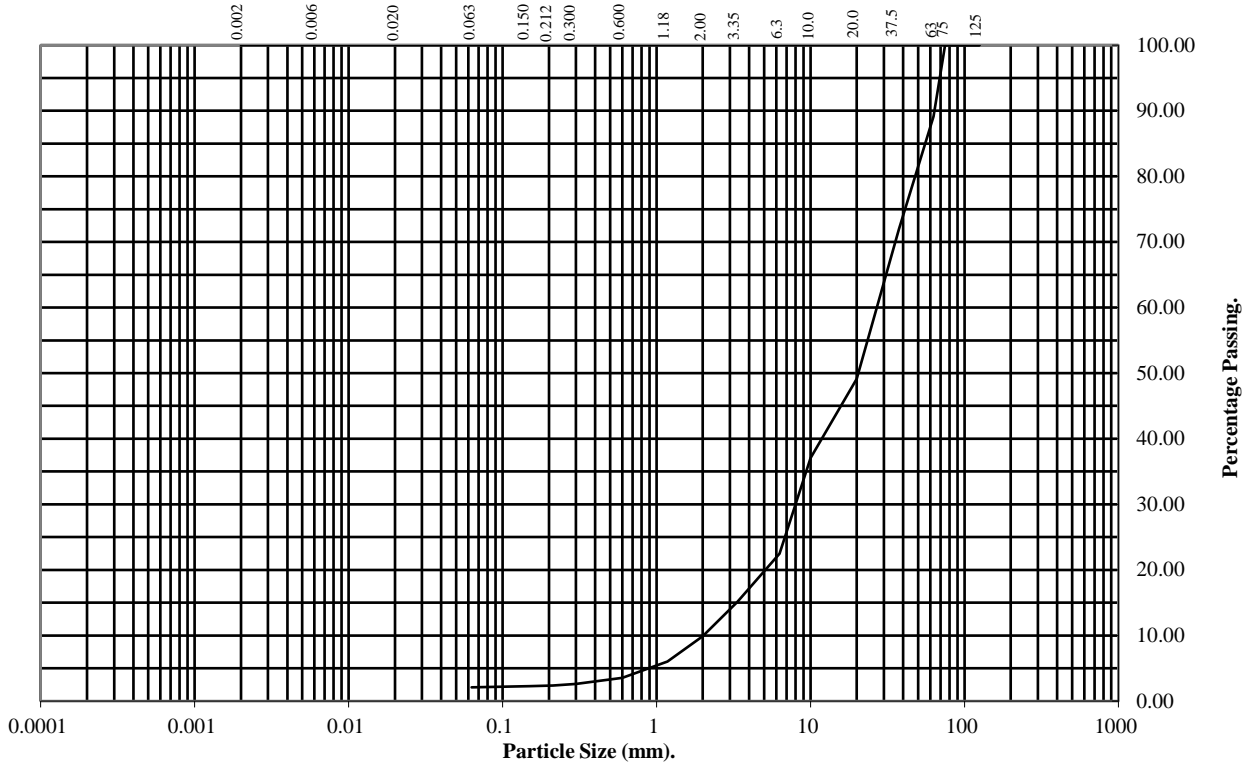
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH14-OP6** **Top Depth (m):** **2.00**

Sample Number: **Base Depth(m):**

Sample Type: **BD**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	89
37.5	72
20	49
10	37
6.3	22
3.35	15
2	10
1.18	6
0.6	4
0.3	3
0.212	2
0.15	2
0.063	2

Soil Fraction	Total Percentage
Cobbles	11
Gravel	79
Sand	8
Silt/Clay	2

Remarks:
See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

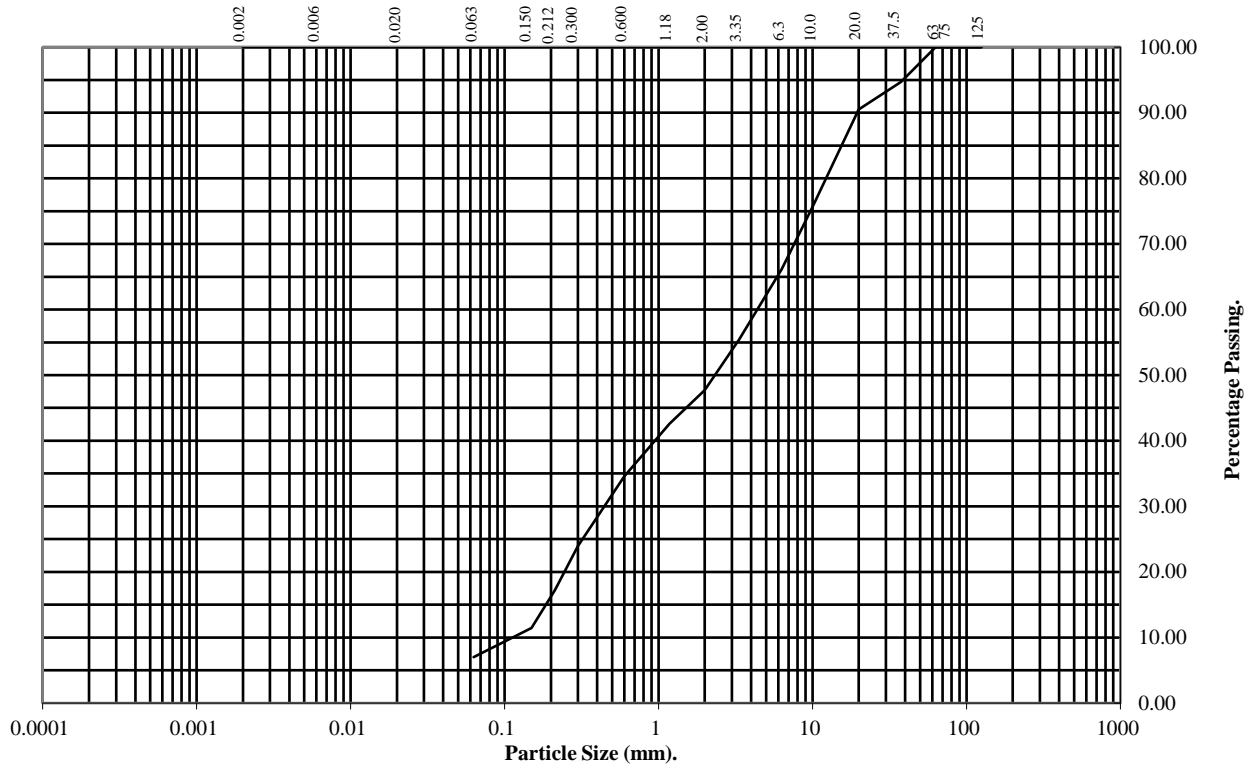
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP1-OP6 **Top Depth (m):** 0.80

Sample Number: **Base Depth(m):**

Sample Type: BD



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	95
20	91
10	76
6.3	66
3.35	55
2	48
1.18	43
0.6	35
0.3	24
0.212	17
0.15	11
0.063	7

Soil Fraction	Total Percentage
Cobbles	0
Gravel	52
Sand	41
Silt/Clay	7

Remarks:
See Summary of Soil Descriptions



Newton Stewart FPS

Contract No:
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PARTICLE SIZE DISTRIBUTION TEST

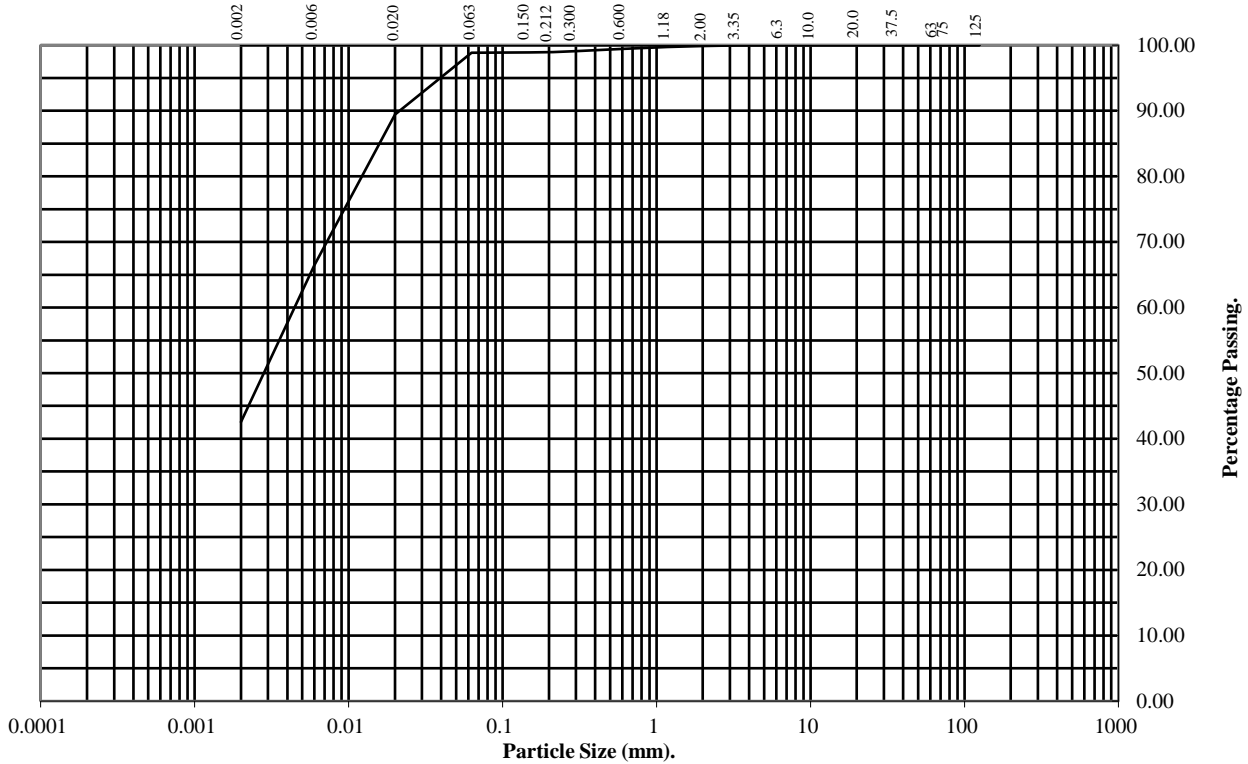
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: TP1-OP7 **Top Depth (m):** 2.00

Sample Number: **Base Depth(m):**

Sample Type: BD



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	99
0.3	99
0.212	99
0.15	99
0.063	99

Particle Diameter	Percentage Passing
0.02	89
0.006	66
0.002	43

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	1
Silt	56
Clay	43

Remarks:
See Summary of Soil Descriptions



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Contract No:
PSL18/1203
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PARTICLE SIZE DISTRIBUTION TEST

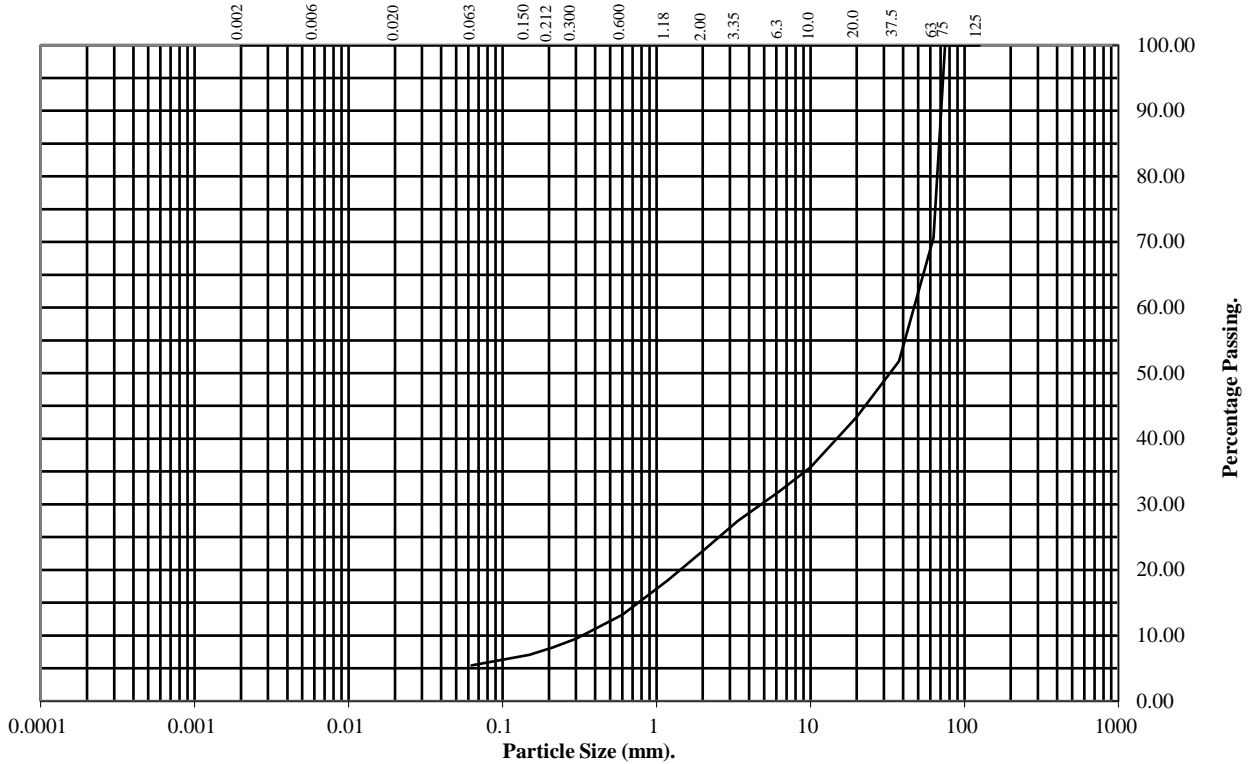
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP2-OP6 **Top Depth (m):** 1.40

Sample Number: **Base Depth(m):**

Sample Type: BD



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	71
37.5	52
20	43
10	36
6.3	32
3.35	27
2	23
1.18	18
0.6	13
0.3	10
0.212	8
0.15	7
0.063	5

Soil Fraction	Total Percentage
Cobbles	29
Gravel	48
Sand	18
Silt/Clay	5

Remarks:
See Summary of Soil Descriptions



Newton Stewart FPS

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Client Ref:
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PARTICLE SIZE DISTRIBUTION TEST

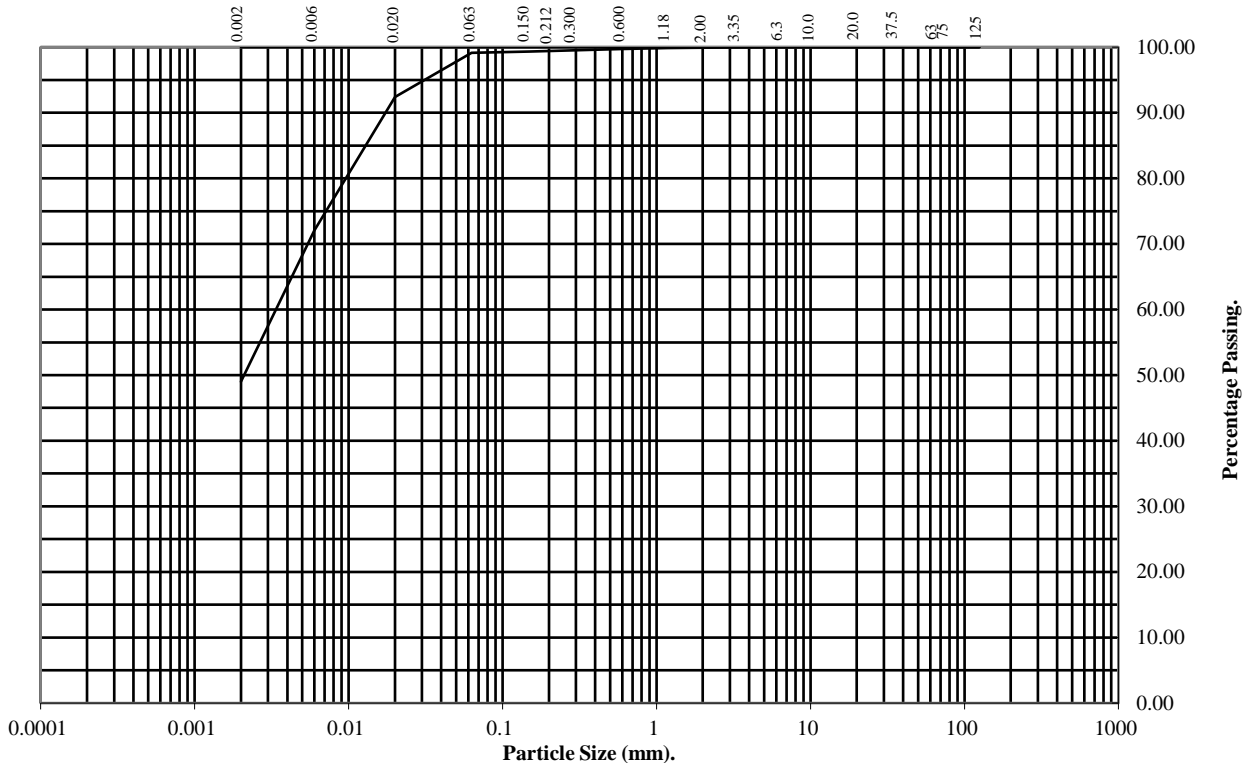
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: TP2-OP7 **Top Depth (m):** 1.60

Sample Number: **Base Depth(m):**

Sample Type: BD



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	100
0.212	99
0.15	99
0.063	99

Particle Diameter	Percentage Passing
0.02	92
0.006	72
0.002	49

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	1
Silt	50
Clay	49

Remarks:
See Summary of Soil Descriptions



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Contract No:
PSL18/1203
Client Ref:
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PARTICLE SIZE DISTRIBUTION TEST

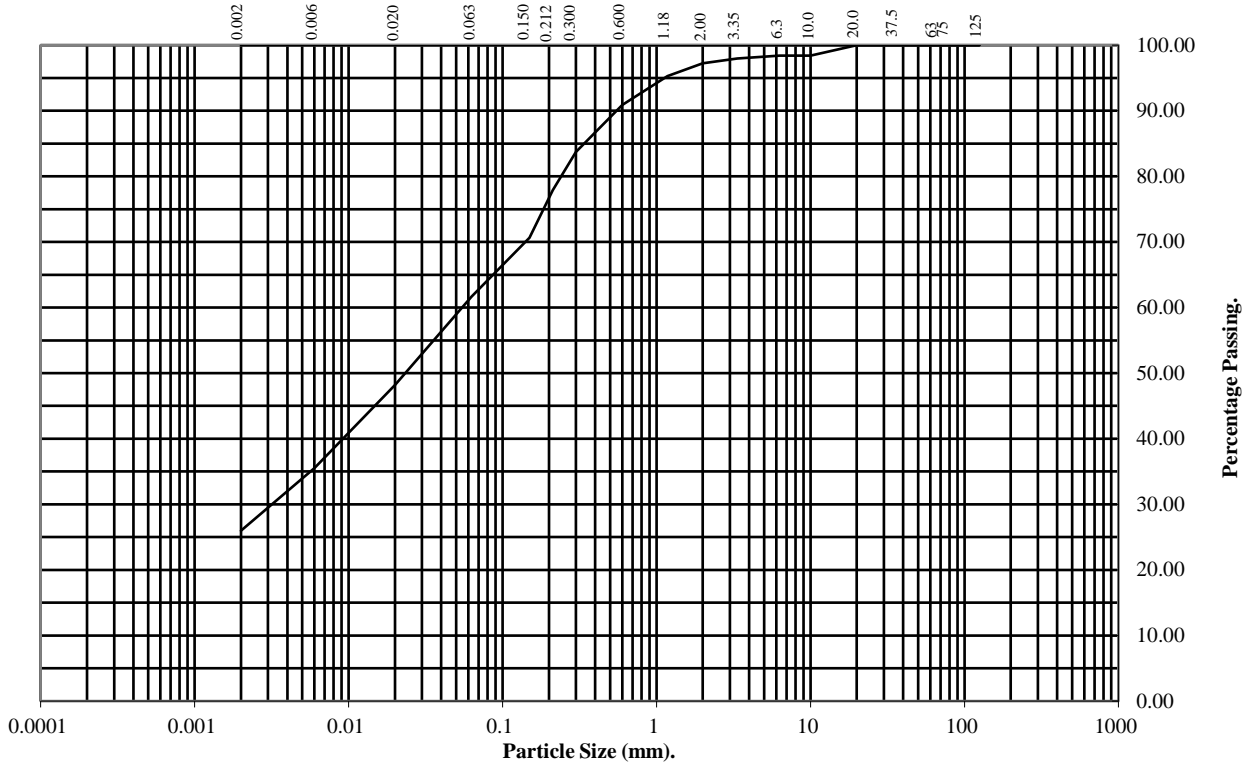
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: TP4-OP6 **Top Depth (m):** 1.00

Sample Number: **Base Depth(m):**

Sample Type: BD



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	98
6.3	98
3.35	98
2	97
1.18	95
0.6	91
0.3	84
0.212	78
0.15	71
0.063	62

Particle Diameter	Percentage Passing
0.02	48
0.006	36
0.002	26

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	35
Silt	36
Clay	26

Remarks:
See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

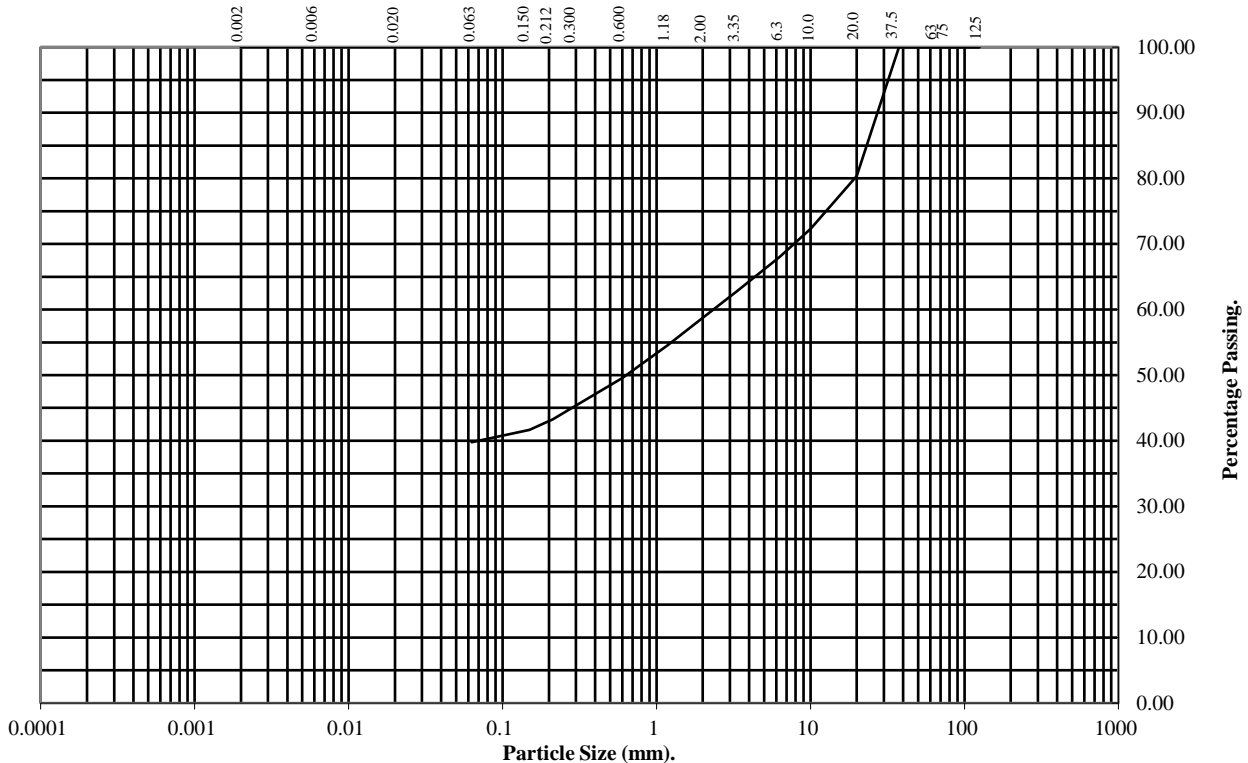
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP7-OP6 **Top Depth (m):** 1.50

Sample Number: **Base Depth(m):**

Sample Type: BD



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	80
10	72
6.3	68
3.35	63
2	59
1.18	55
0.6	50
0.3	45
0.212	43
0.15	42
0.063	40

Soil Fraction	Total Percentage
Cobbles	0
Gravel	41
Sand	19
Silt/Clay	40

Remarks:
See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

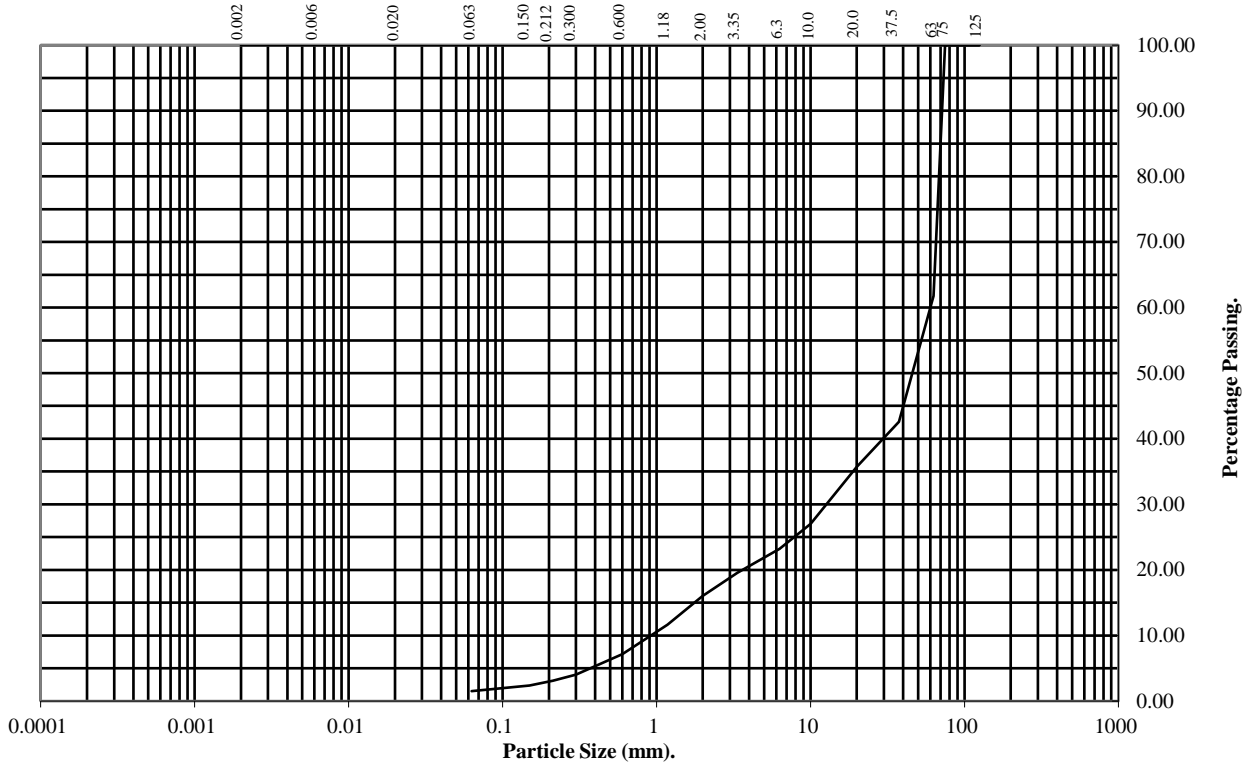
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP8-OP7 **Top Depth (m):** 1.80

Sample Number: **Base Depth(m):**

Sample Type: BD



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	62
37.5	43
20	36
10	27
6.3	23
3.35	20
2	16
1.18	12
0.6	7
0.3	4
0.212	3
0.15	2
0.063	2

Soil Fraction	Total Percentage
Cobbles	38
Gravel	46
Sand	14
Silt/Clay	2

Remarks:
See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

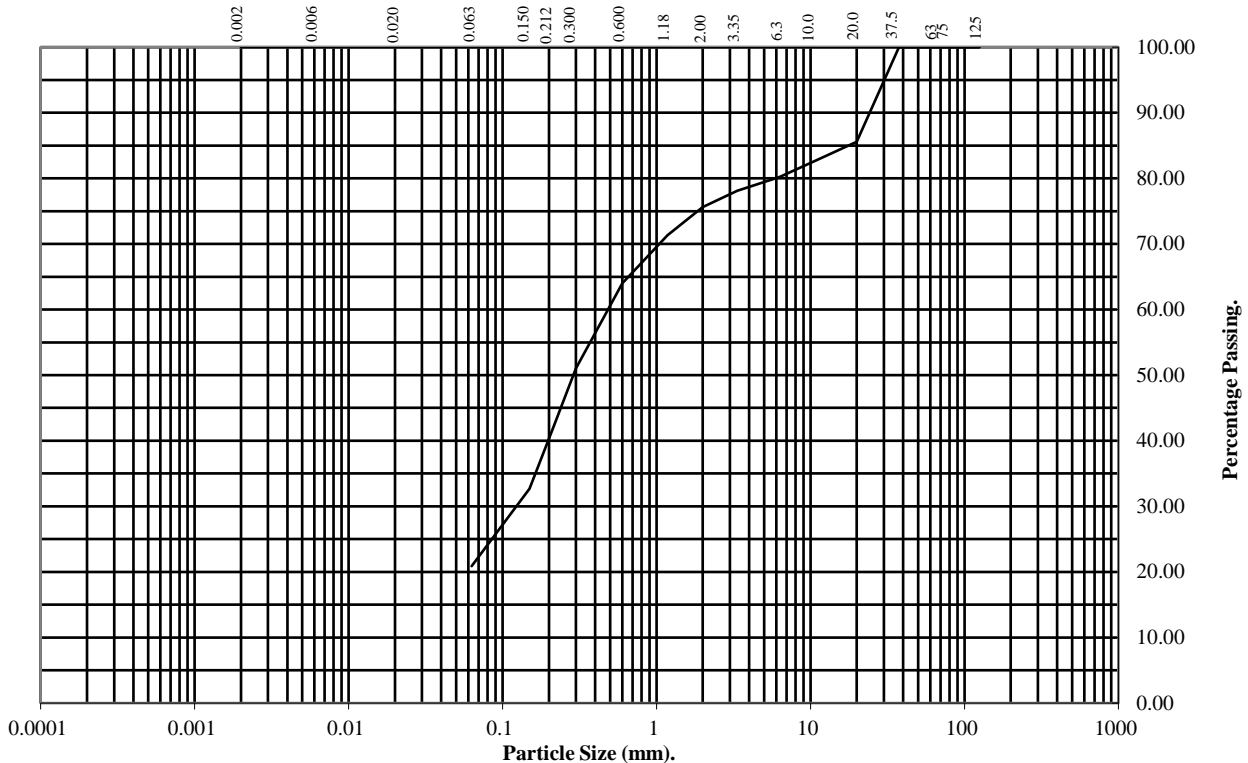
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP9-OP6 **Top Depth (m):** 1.00

Sample Number: **Base Depth(m):**

Sample Type: BD



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	86
10	82
6.3	80
3.35	78
2	76
1.18	71
0.6	64
0.3	51
0.212	42
0.15	33
0.063	21

Soil Fraction	Total Percentage
Cobbles	0
Gravel	24
Sand	55
Silt/Clay	21

Remarks:
See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

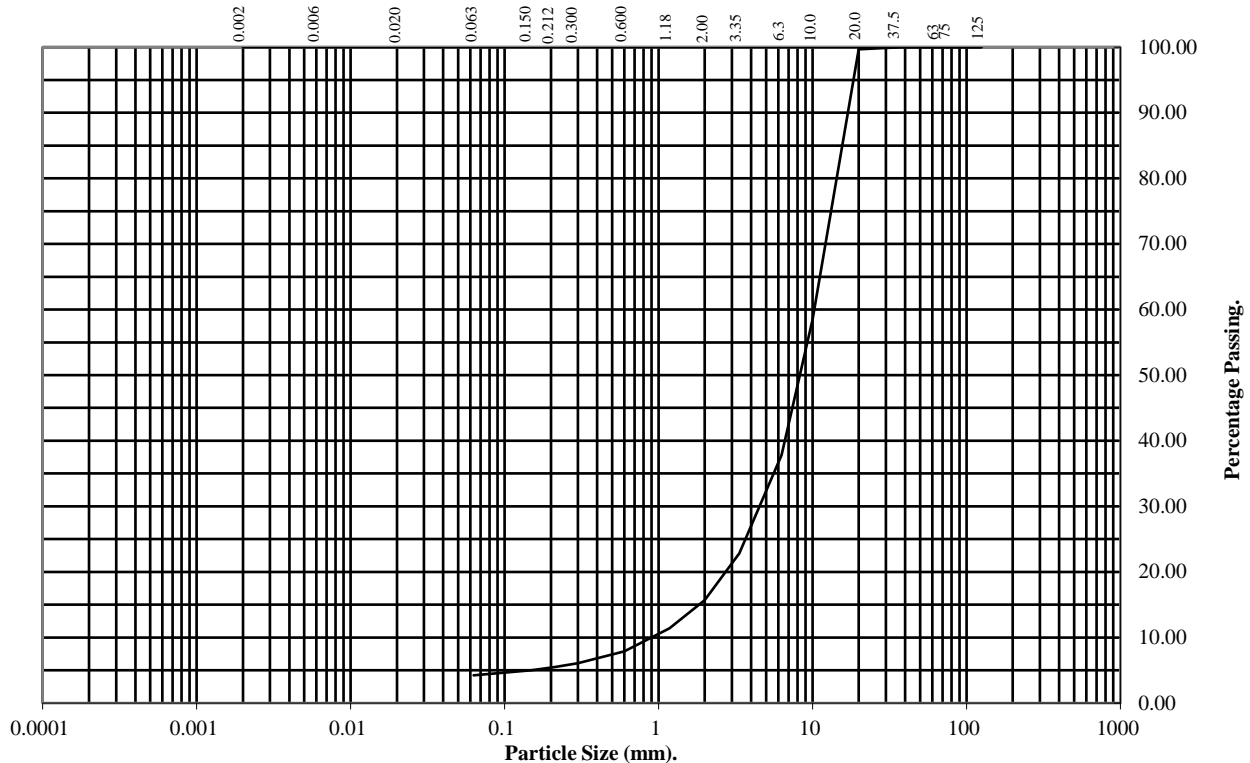
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP9-OP6 **Top Depth (m):** 4.30

Sample Number: **Base Depth(m):**

Sample Type: BD



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	58
6.3	38
3.35	23
2	16
1.18	11
0.6	8
0.3	6
0.212	6
0.15	5
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	84
Sand	12
Silt/Clay	4

Remarks:
See Summary of Soil Descriptions



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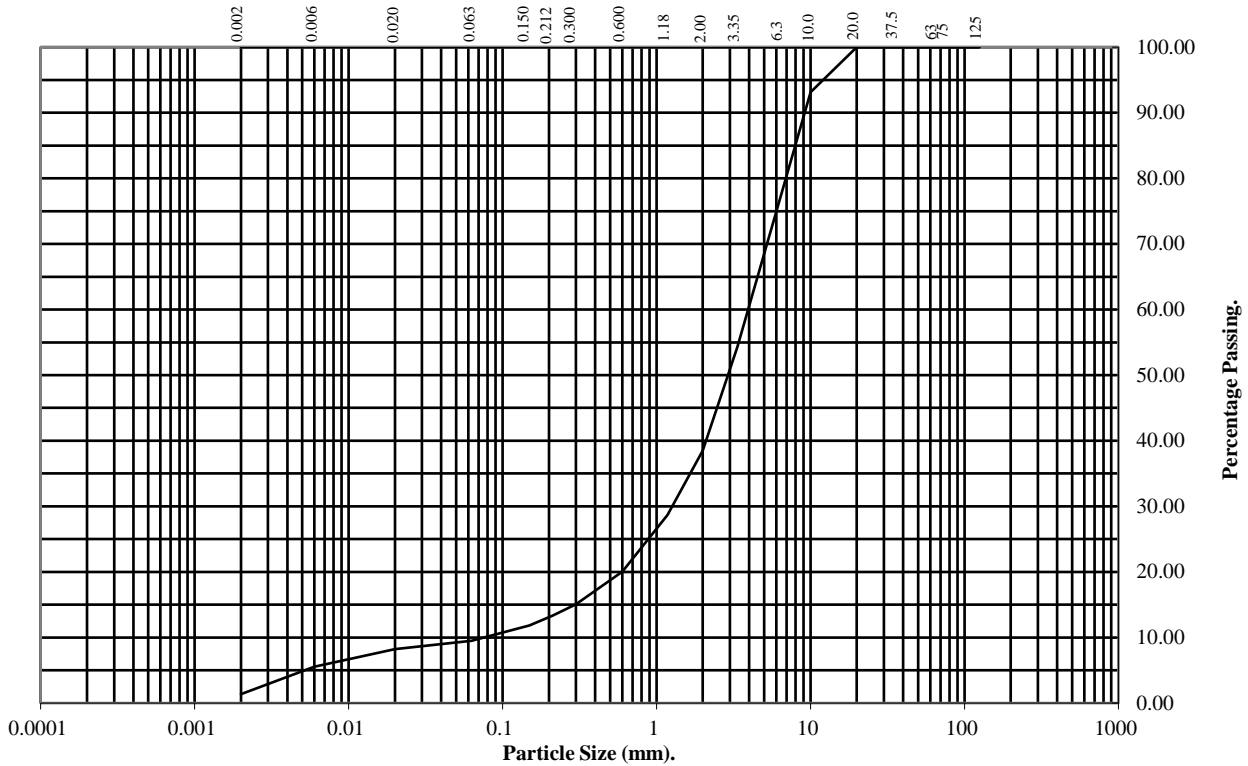
PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: TP9-OP6 **Top Depth (m):** 10.30

Sample Number: **Base Depth(m):**

Sample Type: BD



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	93
6.3	77
3.35	54
2	38
1.18	29
0.6	20
0.3	15
0.212	13
0.15	12
0.063	10

Particle Diameter	Percentage Passing
0.02	8
0.006	6
0.002	1

Soil Fraction	Total Percentage
Cobbles	0
Gravel	62
Sand	28
Silt	9
Clay	1

Remarks:
See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

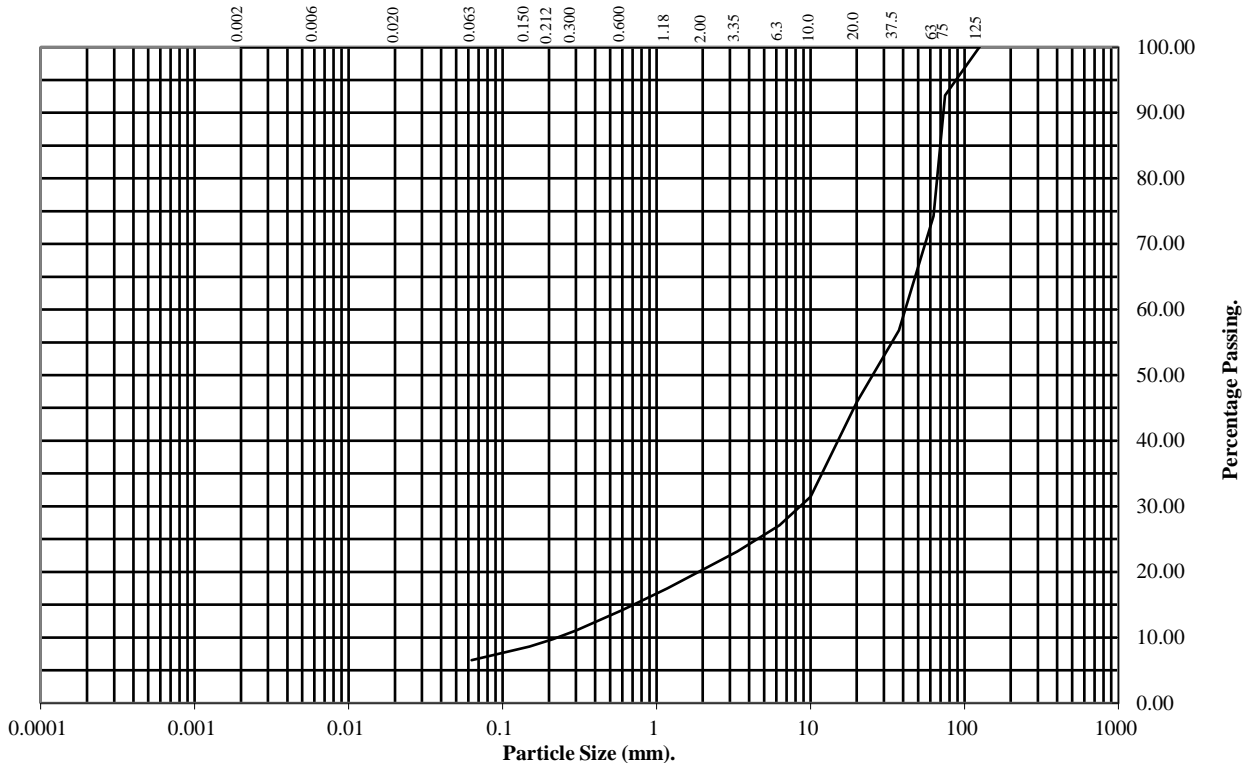
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP9-OP7 **Top Depth (m):** 1.80

Sample Number: **Base Depth(m):**

Sample Type: BD



BS Test Sieve (mm)	Percentage Passing
125	100
75	93
63	74
37.5	57
20	46
10	31
6.3	27
3.35	23
2	20
1.18	18
0.6	14
0.3	11
0.212	10
0.15	9
0.063	7

Soil Fraction	Total Percentage
Cobbles	26
Gravel	54
Sand	13
Silt/Clay	7

Remarks:
See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

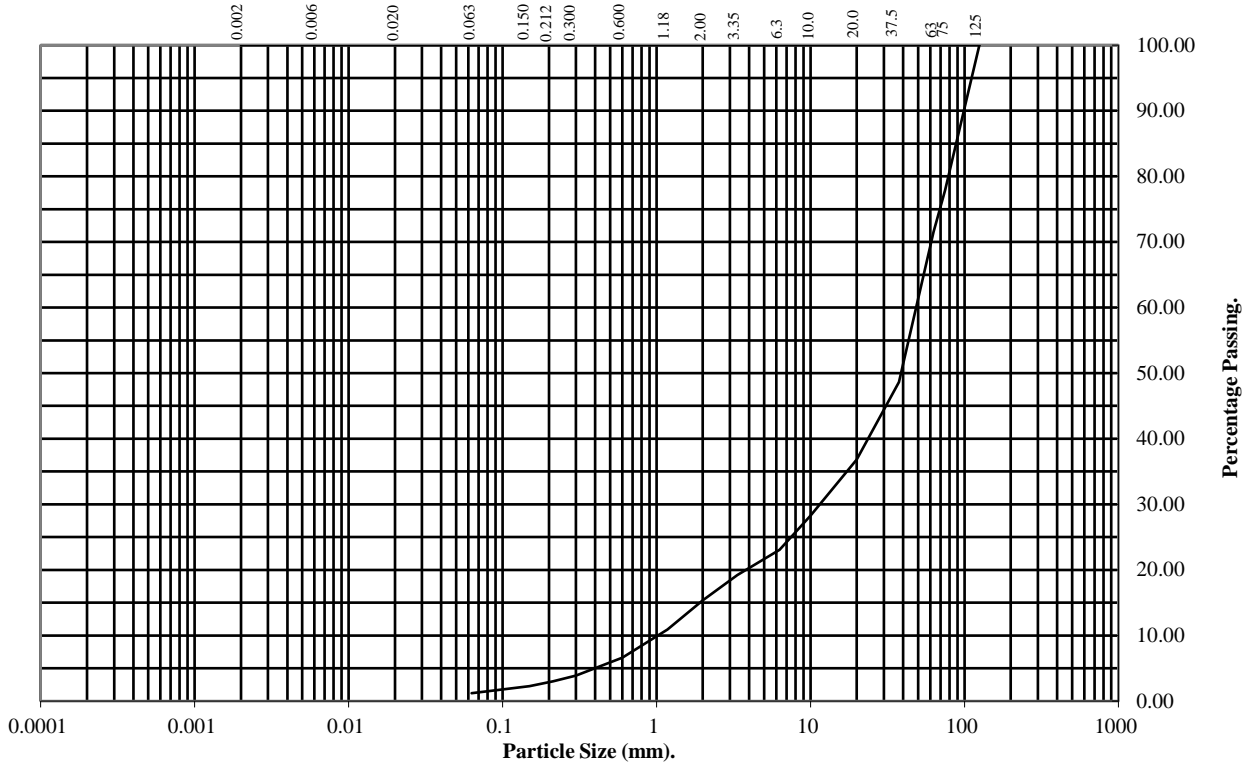
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP11-OP7 **Top Depth (m):** 2.00

Sample Number: **Base Depth(m):**

Sample Type: BD



BS Test Sieve (mm)	Percentage Passing
125	100
75	78
63	71
37.5	49
20	37
10	28
6.3	23
3.35	19
2	15
1.18	11
0.6	7
0.3	4
0.212	3
0.15	2
0.063	1

Soil Fraction	Total Percentage
Cobbles	29
Gravel	56
Sand	14
Silt/Clay	1

Remarks:
See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

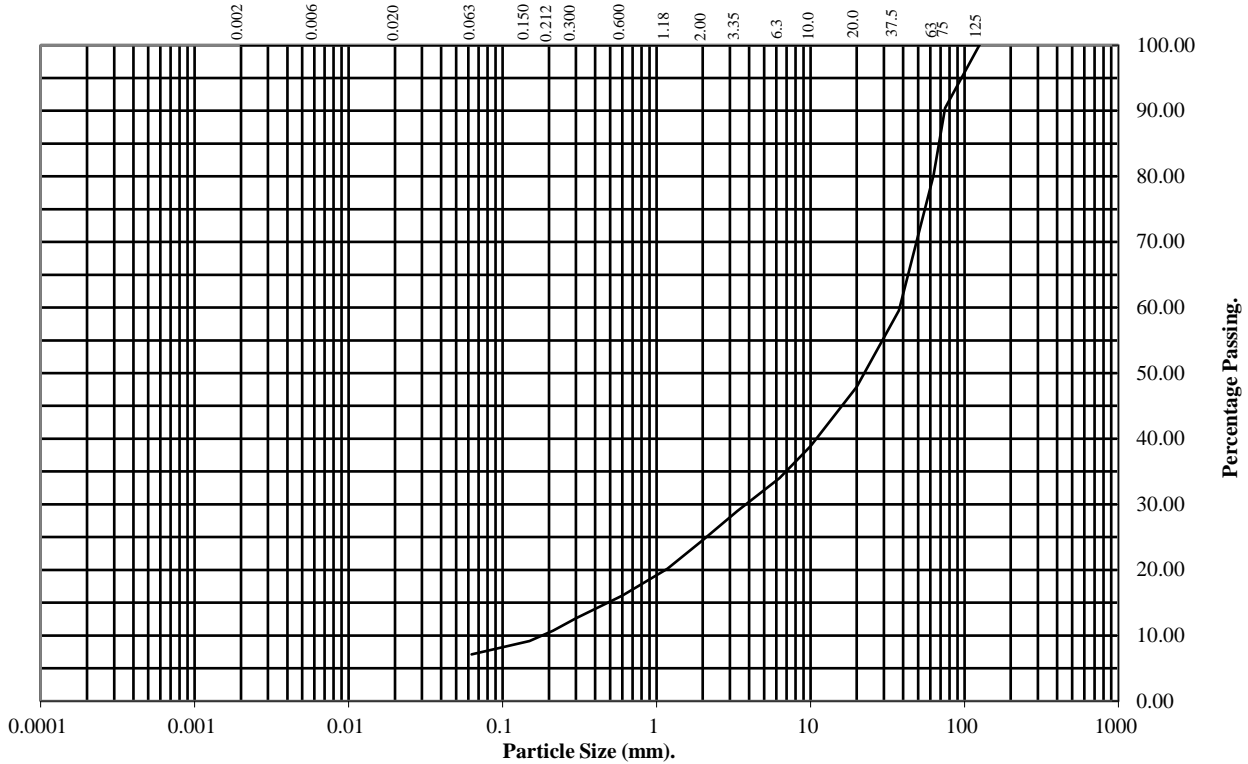
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TPW1-OP6 **Top Depth (m):** 0.50

Sample Number: **Base Depth(m):**

Sample Type: BD



BS Test Sieve (mm)	Percentage Passing
125	100
75	90
63	80
37.5	60
20	48
10	39
6.3	34
3.35	29
2	25
1.18	20
0.6	16
0.3	13
0.212	11
0.15	9
0.063	7

Soil Fraction	Total Percentage
Cobbles	20
Gravel	55
Sand	18
Silt/Clay	7

Remarks:
See Summary of Soil Descriptions



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DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : 1990

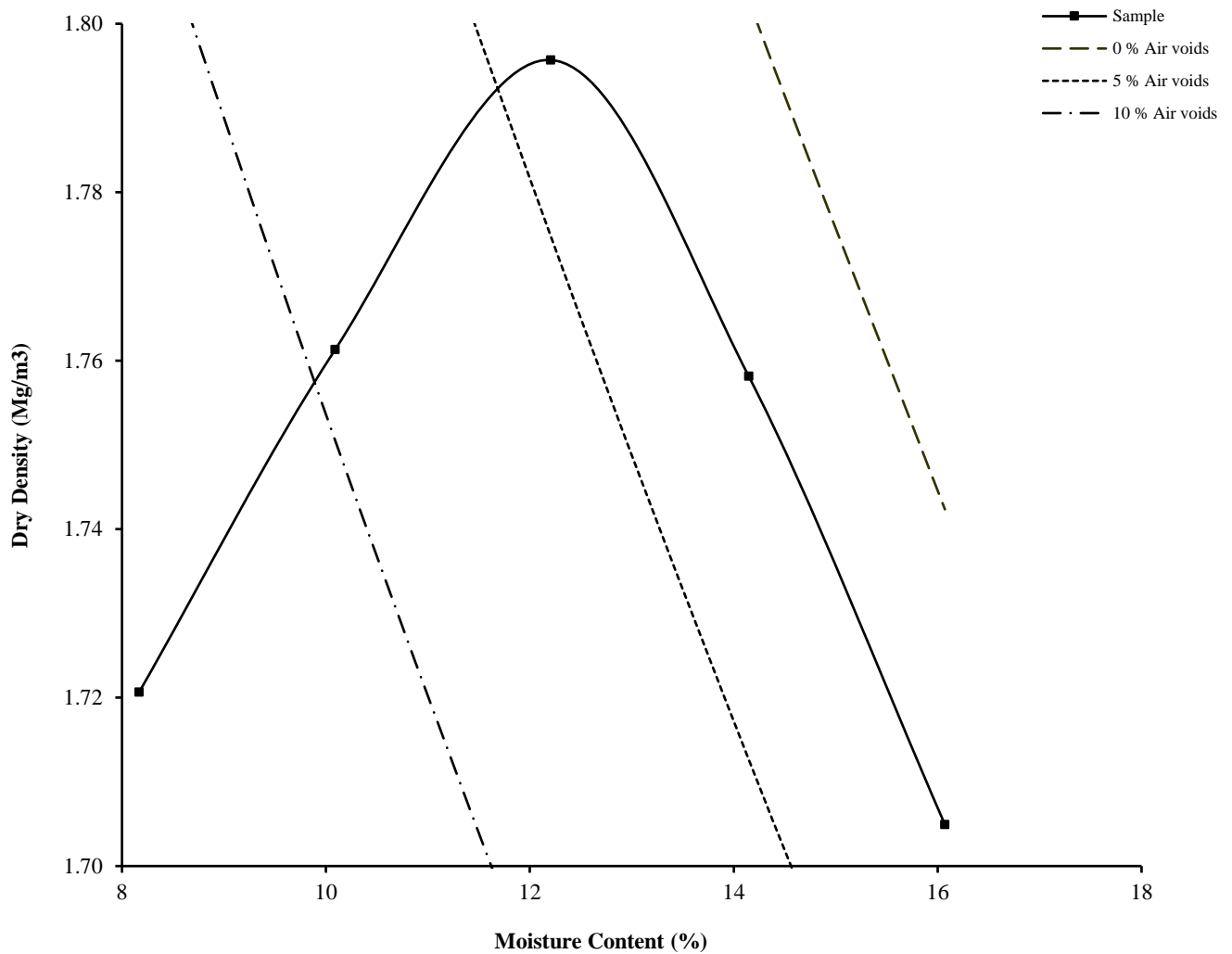
Hole Number: **BH1-OP7**

Top Depth (m) : **2.80**

Sample Number:

Base Depth (m) :

Sample Type: **BD**



Initial Moisture Content:	20	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.42	Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m ³):	1.80		Material Retained on 20.0 mm Test Sieve (%):	0
Optimum Moisture Content (%):	12			
Remarks See summary of soil descriptions.				



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UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

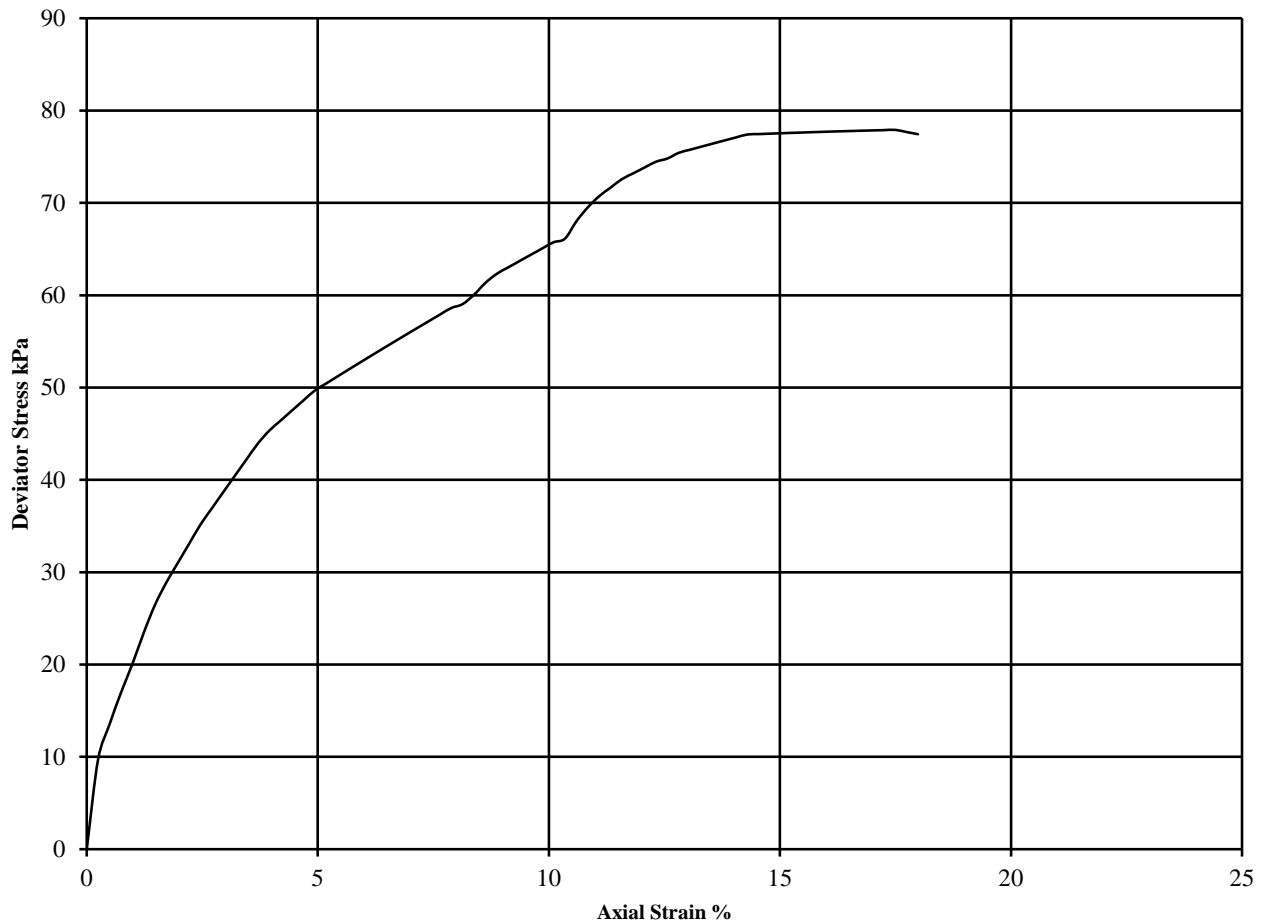
WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number: **BH4-OP6** Top Depth (m): **1.30**

Sample Number: Base Depth (m):

Sample Type **U**



Diameter (mm):		102		Height (mm):		207		Test:		UU Multistage		Remarks		
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa)	0.36	0.35	0.34	See summary of soil descriptions	
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$								
	1	33	1.89	1.42	15	59	30	8.1						
					30	66	33	10.3						
				60	78	39	17.5	Plastic						



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UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

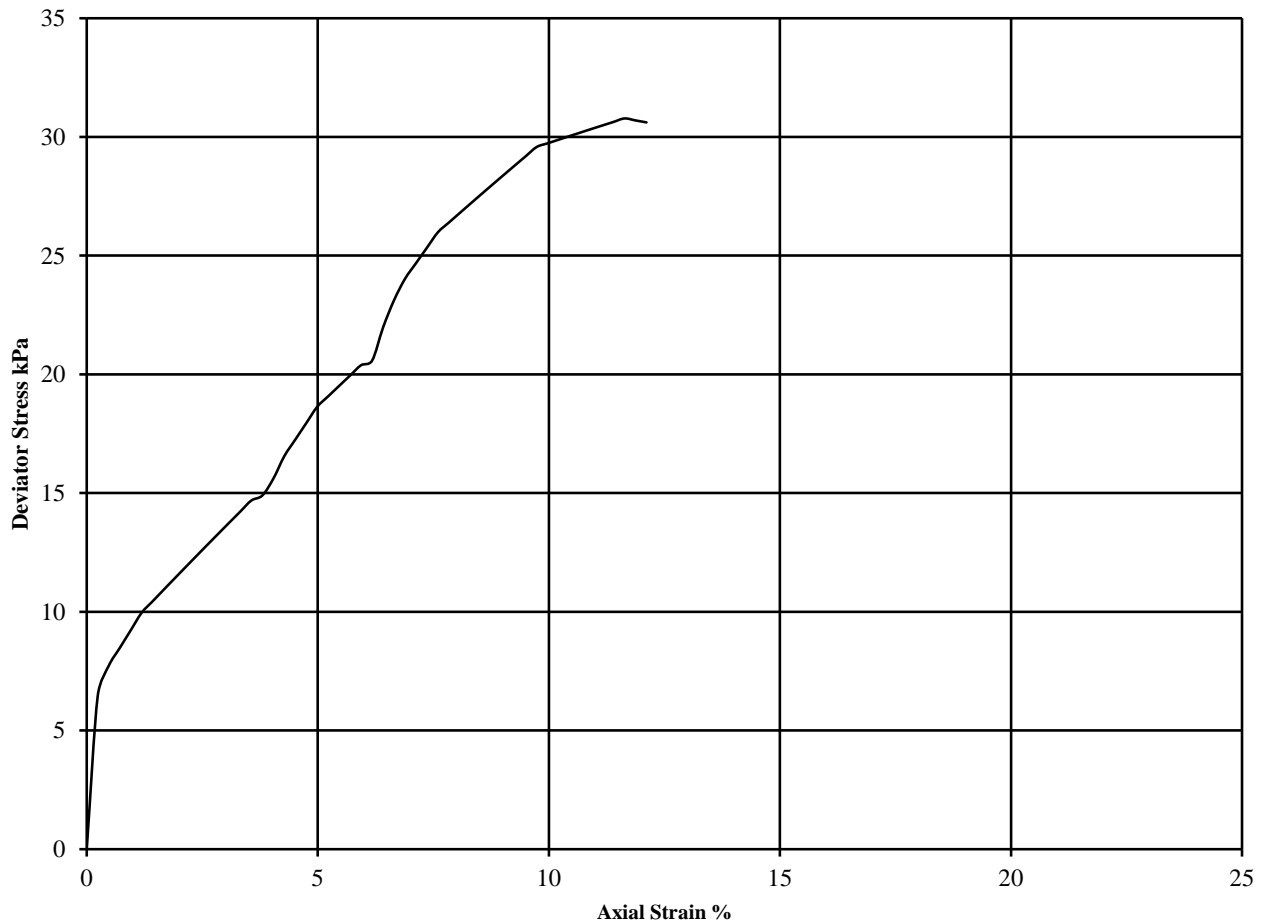
WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number: **BH7-OP6** Top Depth (m): **2.80**

Sample Number: Base Depth (m):

Sample Type **U80**



Diameter (mm):		76		Height (mm):		160		Test:		UU Multistage		Remarks	
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa) 0.49 0.48 0.47 See summary of soil descriptions				
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$							
	1	32	1.88	1.43	30	15	7	3.8					
					60	21	10	6.2					
				120	31	15	11.6	Plastic					



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UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

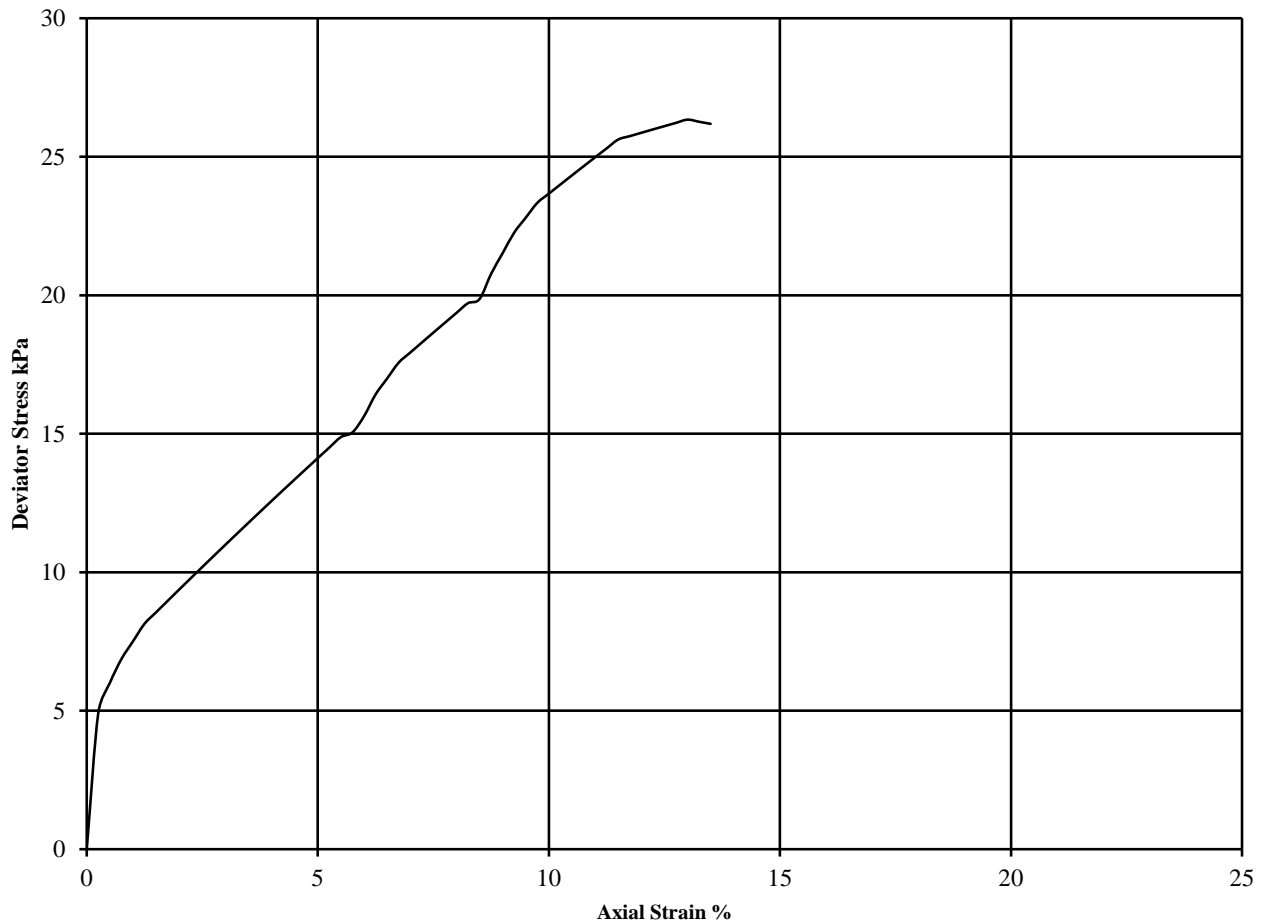
WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number: **BH9-OP6** Top Depth (m): **1.30**

Sample Number: Base Depth (m):

Sample Type **U80**



Diameter (mm):		101		Height (mm):		202		Test:	UU Multistage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure			
1	44	1.76	1.23	15	15	8	5.8		Undisturbed Sample		
				30	20	10	8.5		Sample taken from top of tube		
				60	26	13	13.0	Plastic	Rate of strain = 2 %/min		
									Latex Membrane used 0.2 mm thick		
									Membrane Correction applied (kPa)		
									0.37	0.36	0.35
									See summary of soil descriptions		



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UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

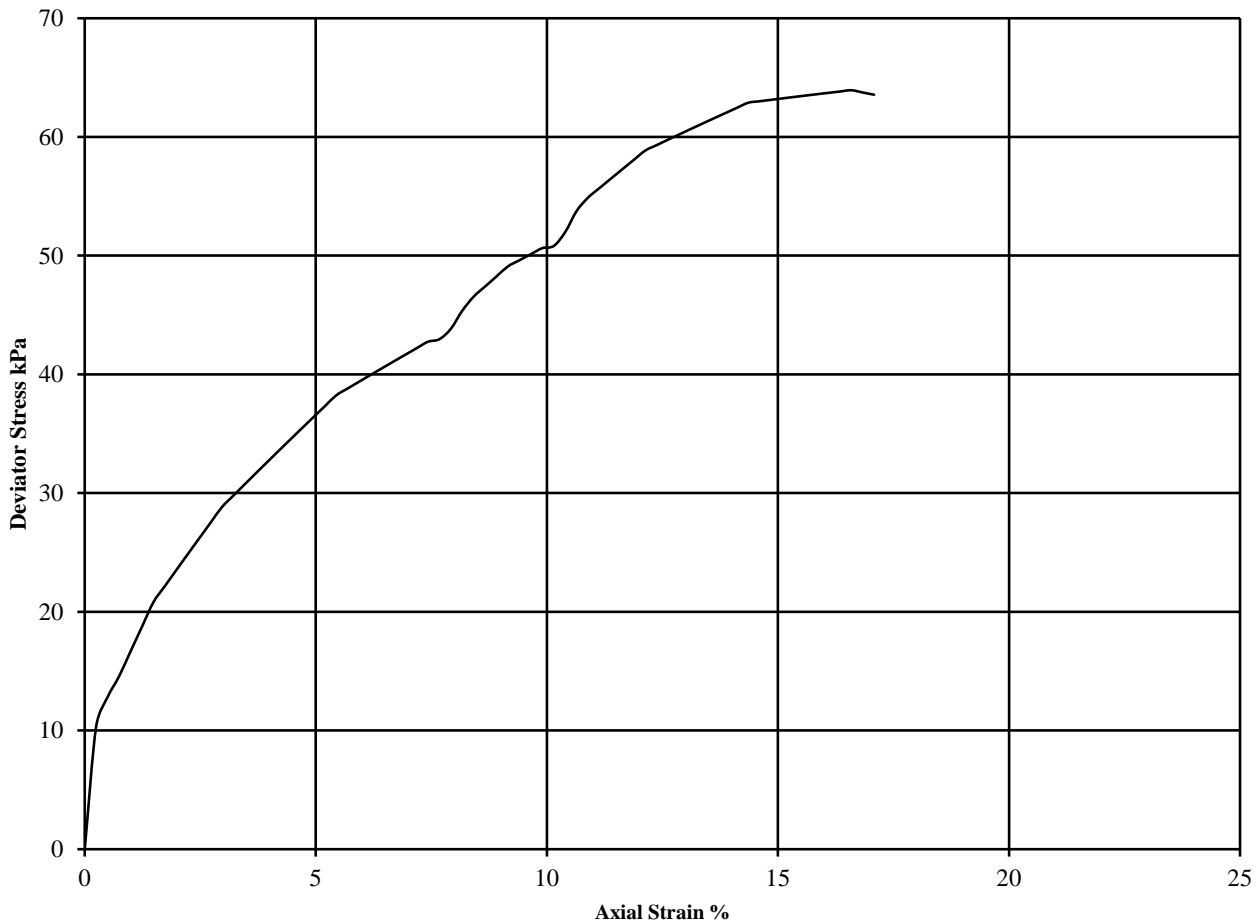
WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number: **BH13-OP6** Top Depth (m): **7.30**

Sample Number: Base Depth (m):

Sample Type **U**



Diameter (mm):		102		Height (mm):		206		Test:	UU Multistage		Remarks	
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa) 0.36 0.35 0.34 See summary of soil descriptions			
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$						
	1	35	1.97	1.46	35	43	21	7.7				
					75	51	25	10.2				
				150	64	32	16.6	Plastic				



Newton Stewart FPS

Contract No:
PSL18/1203
Client Ref:
17/082

ONE DIMENSIONAL CONSOLIDATION TEST

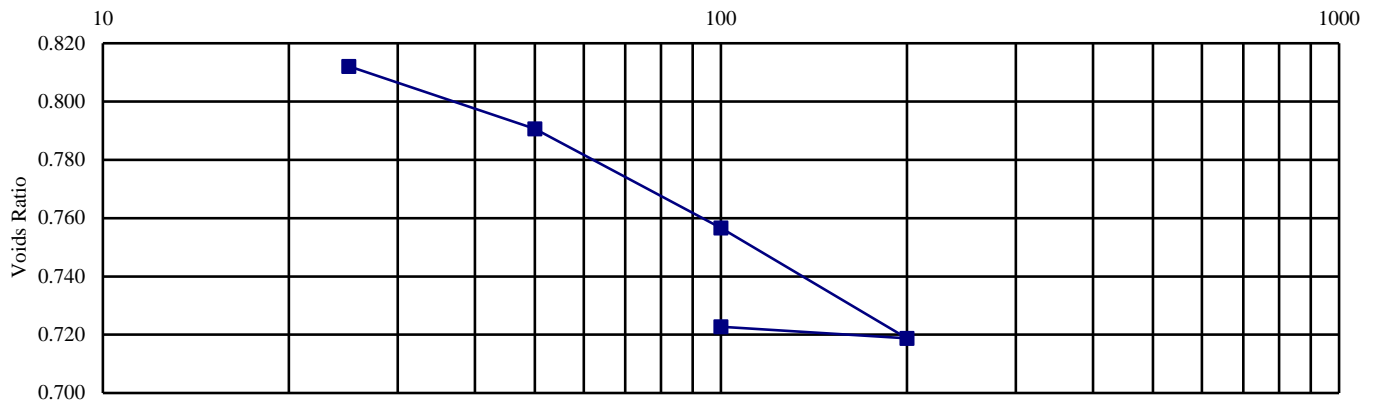
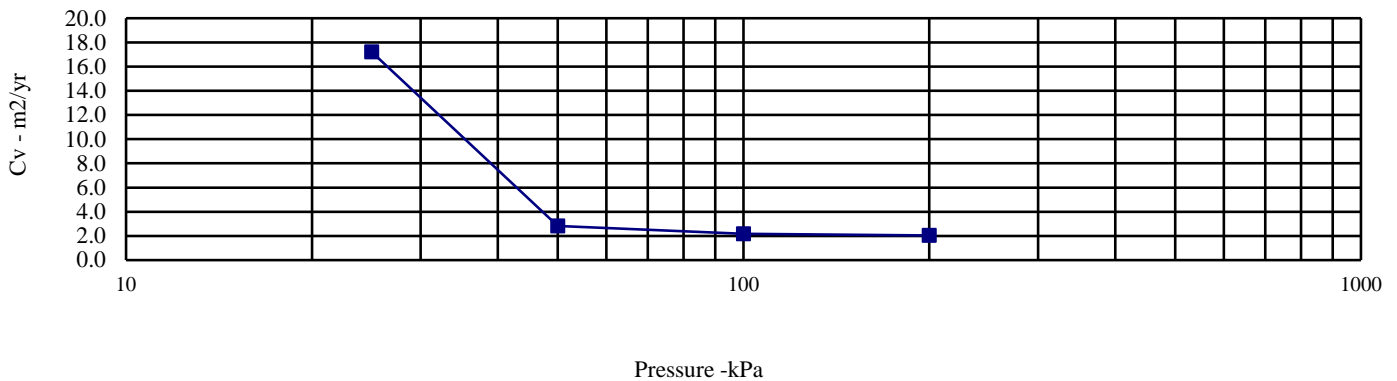
BS 1377: Part 5: 1990: Clause 3

Hole Number: **BH4-OP6** Top Depth (m): **1.30**

Sample Number: Base Depth (m) :

Sample Type: **U**

Initial Conditions		Pressure Range		Mv	Cv	Specimen location	
Moisture Content (%):	33	kPa		m2/MN	m2/yr	within tube:	Top
Bulk Density (Mg/m3):	1.91	0	25	0.776	17.209	Method used to	
Dry Density (Mg/m3):	1.43	25	50	0.474	2.818	determine CV:	T90
Voids Ratio:	0.848	50	100	0.380	2.174	Nominal temperature	
Degree of saturation:	104.0	100	200	0.216	2.039	during test ' C:	20
Height (mm):	19.896	200	100	0.023	-	Remarks:	
Diameter (mm)	75.058	See summary of soil descriptions					
Particle Density (Mg/m3):	2.65						
Assumed							



Newton Stewart FPS

Contract No:
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ONE DIMENSIONAL CONSOLIDATION TEST

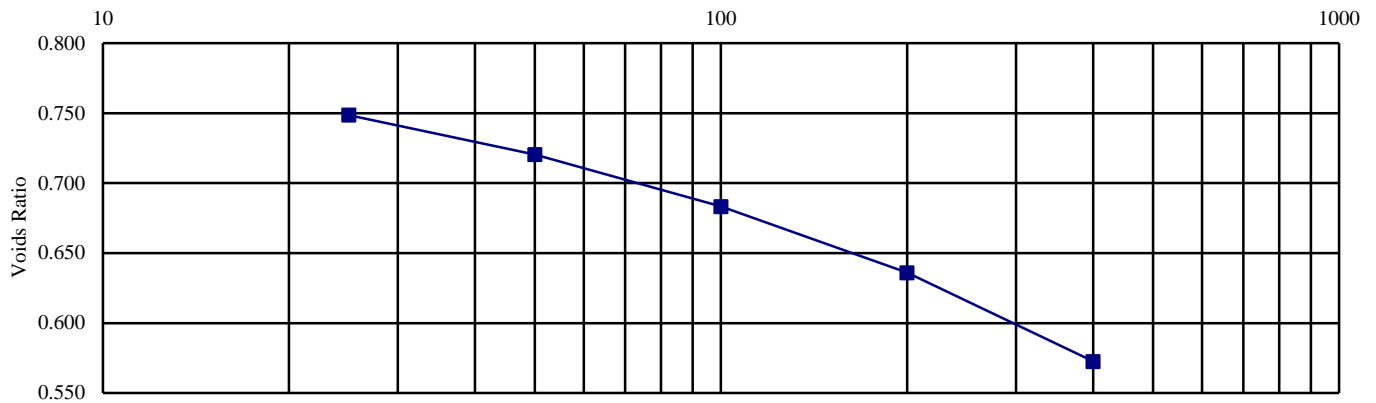
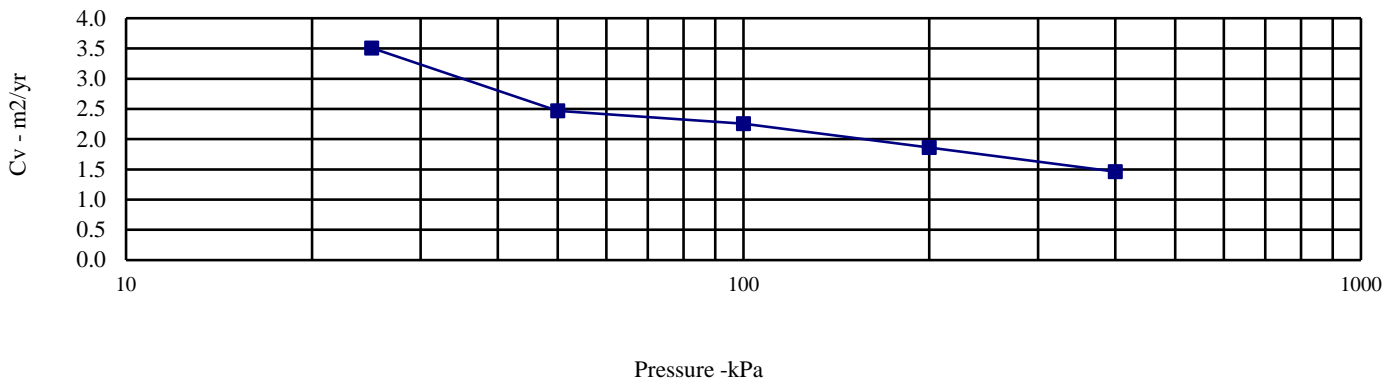
BS 1377: Part 5: 1990: Clause 3

Hole Number: **BH7-OP6** Top Depth (m): **2.80**

Sample Number: Base Depth (m) :

Sample Type: **U80**

Initial Conditions		Pressure Range		Mv	Cv	Specimen location	
Moisture Content (%):	32	kPa		m2/MN	m2/yr	within tube:	Top
Bulk Density (Mg/m3):	1.90	0	25	1.917	3.508	Method used to	
Dry Density (Mg/m3):	1.44	25	50	0.647	2.468	determine CV:	T90
Voids Ratio:	0.837	50	100	0.431	2.258	Nominal temperature	
Degree of saturation:	100.8	100	200	0.281	1.860	during test ' C:	20
Height (mm):	19.884	200	400	0.194	1.463	Remarks:	
Diameter (mm)	75.22	See summary of soil descriptions					
Particle Density (Mg/m3):	2.65						
Assumed							



Newton Stewart FPS

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ONE DIMENSIONAL CONSOLIDATION TEST

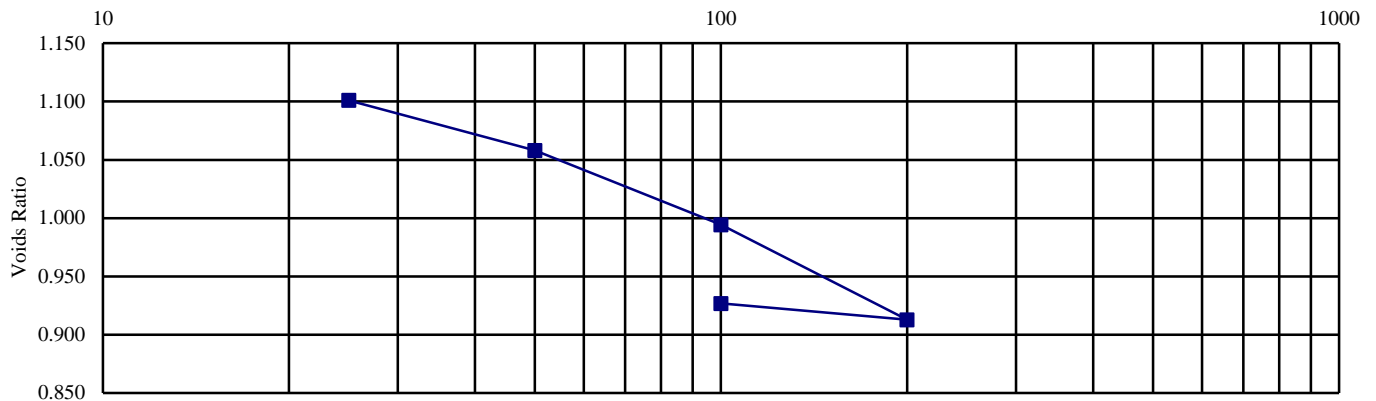
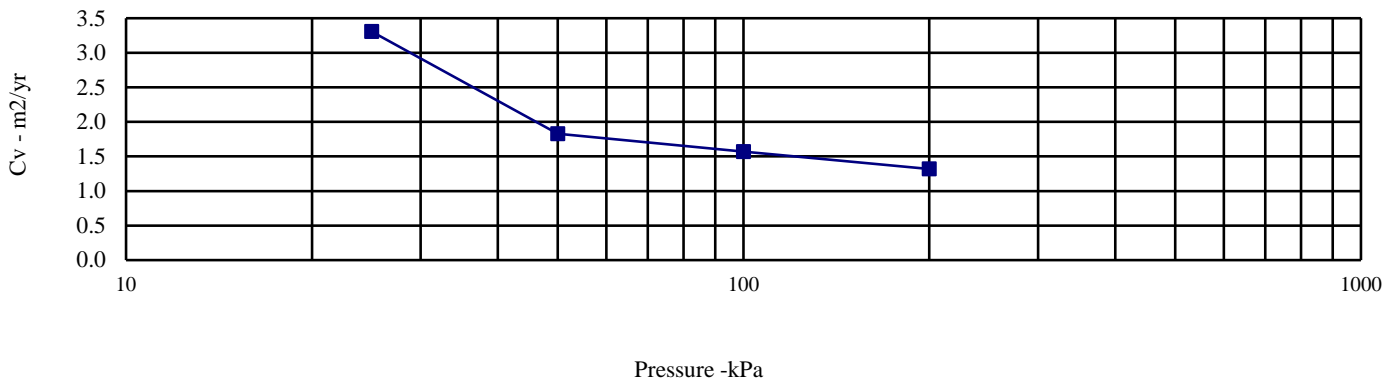
BS 1377: Part 5: 1990: Clause 3

Hole Number: **BH9-OP6** Top Depth (m): **1.30**

Sample Number: Base Depth (m) :

Sample Type: **U**

Initial Conditions		Pressure Range		Mv	Cv	Specimen location	
Moisture Content (%):	44	kPa		m2/MN	m2/yr	within tube:	Top
Bulk Density (Mg/m3):	1.77	0	25	1.014	3.306	Method used to	
Dry Density (Mg/m3):	1.23	25	50	0.817	1.828	determine CV:	T90
Voids Ratio:	1.156	50	100	0.619	1.569	Nominal temperature	
Degree of saturation:	100.5	100	200	0.409	1.318	during test ' C:	20
Height (mm):	19.836	200	100	0.073	-	Remarks:	
Diameter (mm)	75.06	See summary of soil descriptions					
Particle Density (Mg/m3):	2.65						
Assumed							



Newton Stewart FPS

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ONE DIMENSIONAL CONSOLIDATION TEST

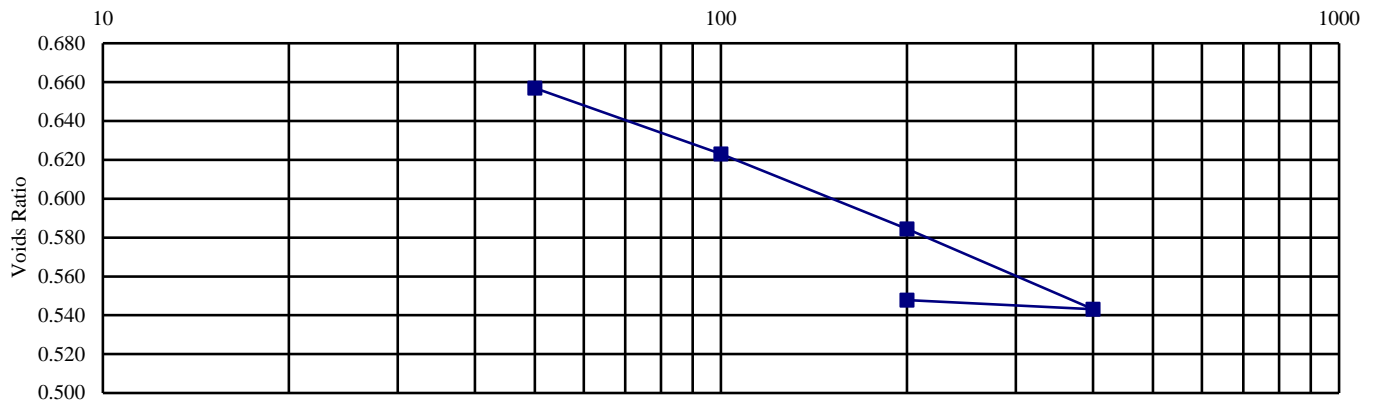
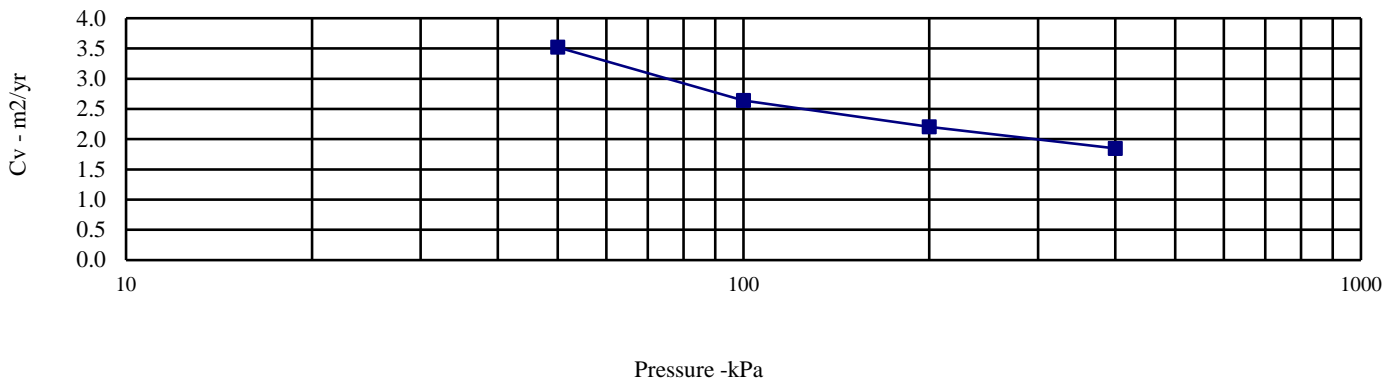
BS 1377: Part 5: 1990: Clause 3

Hole Number: BH13-OP6 **Top Depth (m):** 7.30

Sample Number: **Base Depth (m) :**

Sample Type: U

Initial Conditions		Pressure Range		Mv	Cv	Specimen location	
Moisture Content (%):	35	kPa		m ² /MN	m ² /yr	within tube:	Top
Bulk Density (Mg/m ³):	1.96	0	50	1.747	3.519	Method used to	
Dry Density (Mg/m ³):	1.46	50	100	0.409	2.638	determine CV:	T90
Voids Ratio:	0.815	100	200	0.238	2.205	Nominal temperature	
Degree of saturation:	112.5	200	400	0.130	1.848	during test ' C:	20
Height (mm):	19.876	400	200	0.015	-	Remarks:	
Diameter (mm)	75.02	See summary of soil descriptions					
Particle Density (Mg/m ³):	2.65						
Assumed							



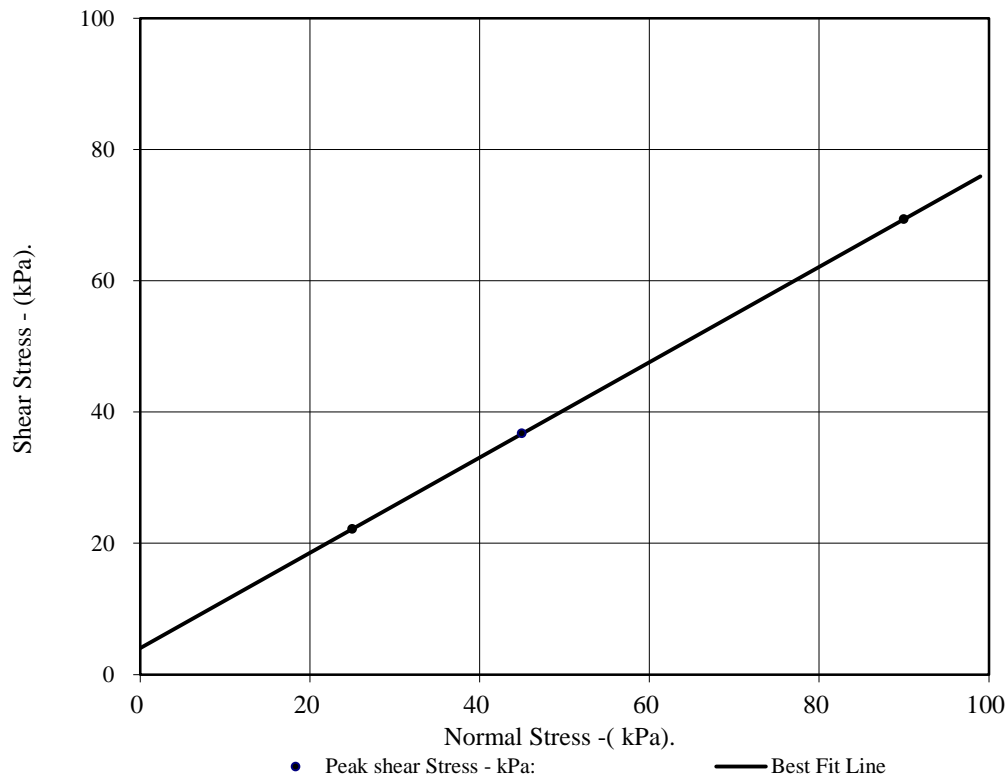
Newton Stewart FPS

Contract No:
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Client Ref:
17/082

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4.5.4

Hole Number:	BH3-OP6		Top Depth:	2.00	
Sample Number:			Base Depth:		
Sample Conditions:	Submerged		Sample Type	BD	
Particle Density - Mg/m ³ :	2.65	Assumed	Remarks:		
Sample Preparation:	Remoulded using 2.5kg effort. Material tested passing 2mm sieve				
Sample Description:	See summary of soil descriptions.				
STAGE			1	2	3
Initial Conditions					
Height - mm:			19.54	19.54	19.54
Length - mm:			60.03	60.03	60.03
Moisture Content - %:			14	14	14
Bulk Density - Mg/m ³ :			1.75	1.75	1.76
Dry Density - Mg/m ³ :			1.53	1.53	1.54
Voids Ratio:			0.728	0.731	0.719
Normal Pressure- kPa			25	45	90
Consolidation Stage					
Consolidated Height - mm:			19.25	18.70	18.54
Shearing Stage					
Rate of Strain (mm/min)			0.600	0.600	0.600
Displacement at peak shear stress (mm)			9.00	9.00	5.00
Peak shear Stress - kPa:			22	37	69
Final Consolidated Conditions					
Moisture Content - %:			21	22	20
Bulk Density - Mg/m ³ :			1.77	1.82	1.85
Dry Density - Mg/m ³ :			1.46	1.50	1.54
Peak					
Angle of Shearing Resistance:(θ)			36		
Effective Cohesion - kPa:			4		



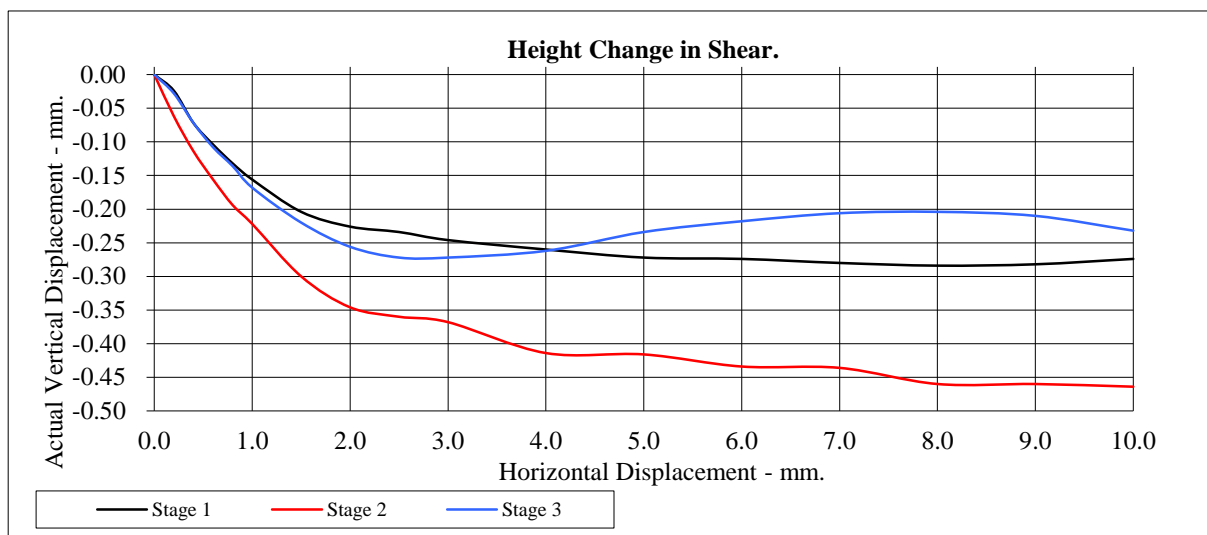
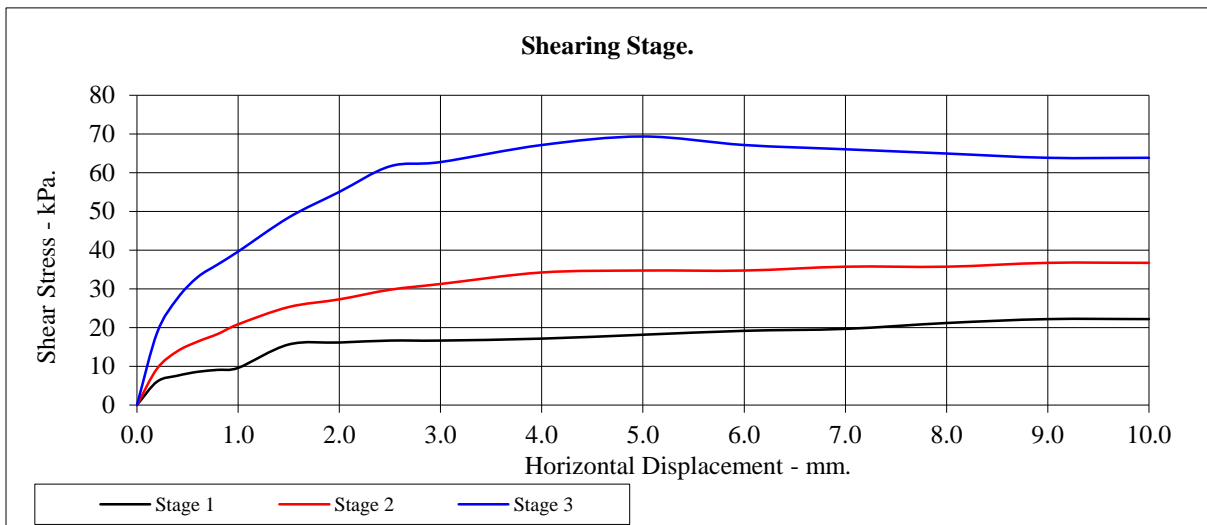
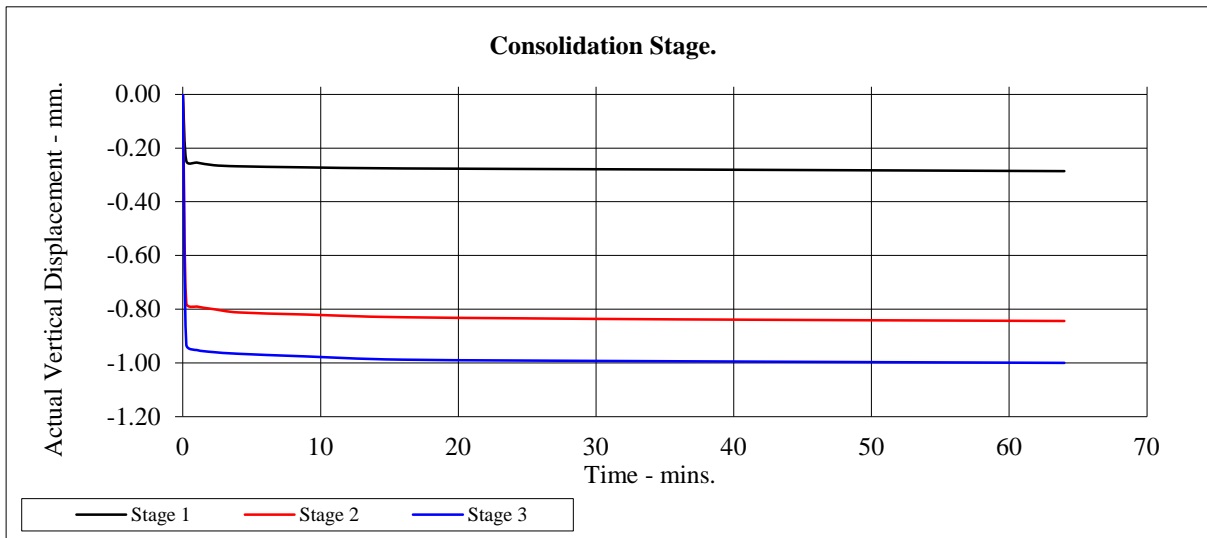
Newton Stewart FPS

Contract No:
PSL18/1203
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17/082

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4.5.4

Hole Number:	BH3-OP6	Top Depth:	2.00
Sample Number:		Base Depth:	



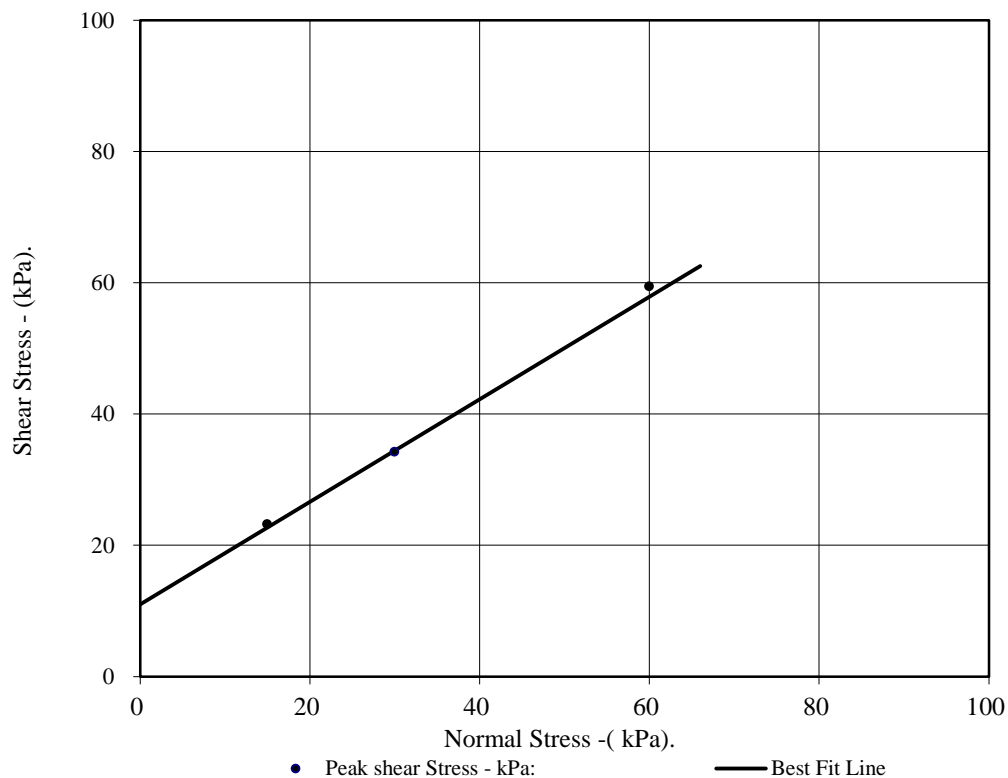
Newton Stewart FPS

Contract No:	PSL18/1203
Client Ref:	17/082

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4.5.4

Hole Number:	BH11-OP6		Top Depth:	1.30	
Sample Number:			Base Depth:		
Sample Conditions:	Submerged		Sample Type	BD	
Particle Density - Mg/m ³ :	2.65	Assumed	Remarks:		
Sample Preparation:	Remoulded using 2.5kg effort. Material tested passing 2mm sieve				
Sample Description:	See summary of soil descriptions.				
STAGE			1	2	3
Initial Conditions					
Height - mm:			19.54	19.54	19.54
Length - mm:			60.03	60.03	60.03
Moisture Content - %:			22	22	22
Bulk Density - Mg/m ³ :			2.03	2.04	2.04
Dry Density - Mg/m ³ :			1.66	1.67	1.67
Voids Ratio:			0.598	0.590	0.583
Normal Pressure- kPa			15	30	60
Consolidation Stage					
Consolidated Height - mm:			18.42	17.49	17.41
Shearing Stage					
Rate of Strain (mm/min)			0.600	0.600	0.600
Displacement at peak shear stress (mm)			5.00	5.00	6.00
Peak shear Stress - kPa:			23	34	59
Final Consolidated Conditions					
Moisture Content - %:			22	21	20
Bulk Density - Mg/m ³ :			2.15	2.27	2.29
Dry Density - Mg/m ³ :			1.77	1.87	1.91
Peak					
Angle of Shearing Resistance:(θ)			38		
Effective Cohesion - kPa:			11		



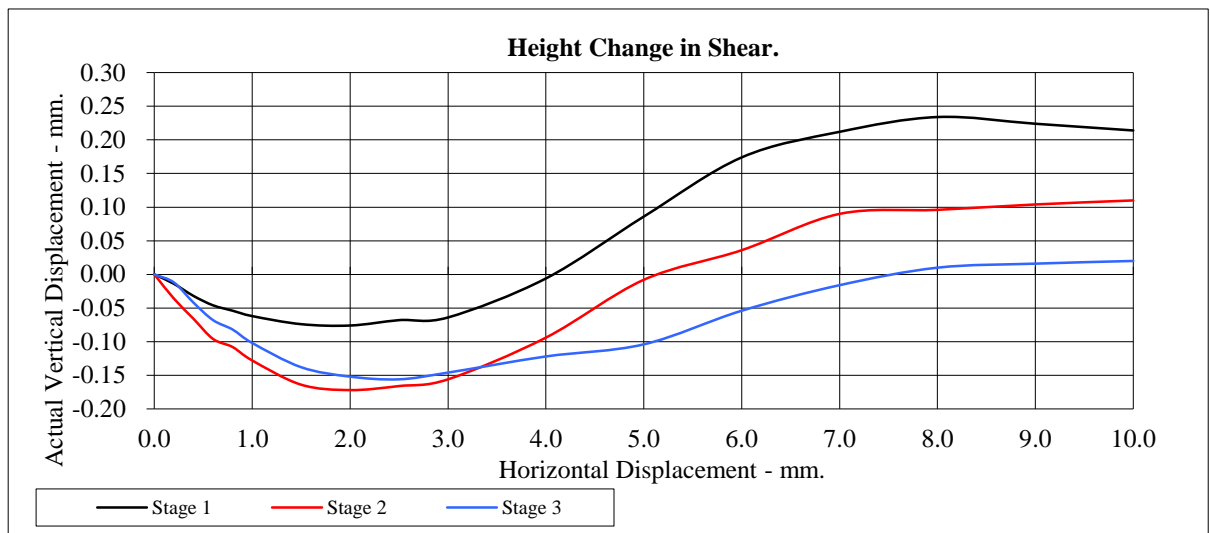
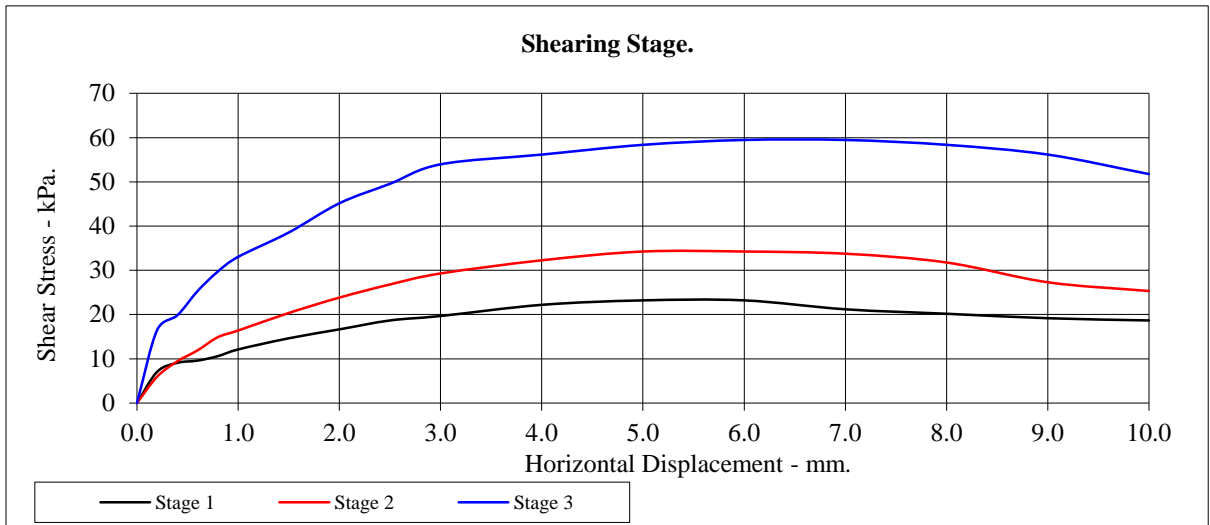
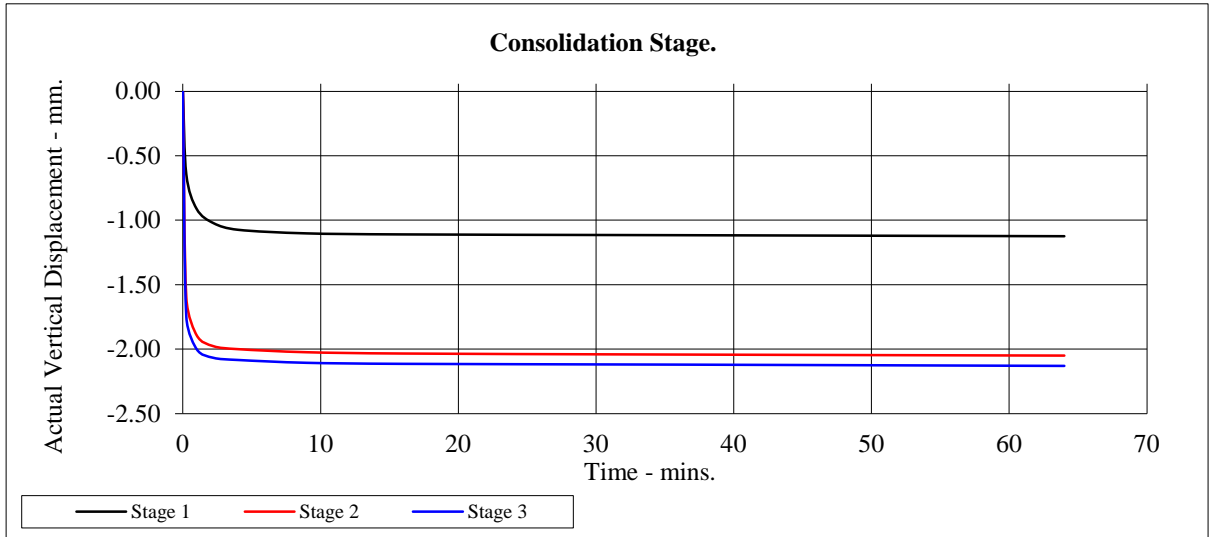
Newton Stewart FPS

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CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4.5.4

Hole Number:	BH11-OP6	Top Depth:	1.30
Sample Number:		Base Depth:	



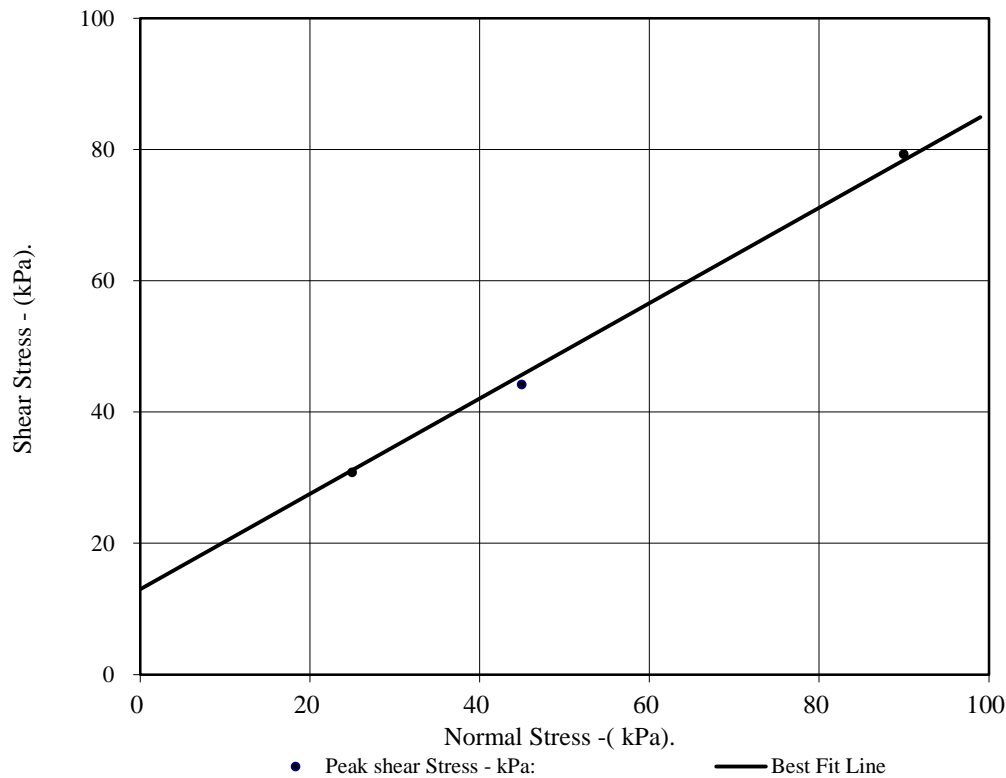
Newton Stewart FPS

Contract No:	PSL18/1203
Client Ref:	17/082

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4.5.4

Hole Number:	BH1-OP7		Top Depth:	4.30	
Sample Number:			Base Depth:		
Sample Conditions:	Submerged		Sample Type	BD	
Particle Density - Mg/m ³ :	2.65	Assumed	Remarks:		
Sample Preparation:	Remoulded using 2.5kg effort. Material tested passing 2mm sieve				
Sample Description:	See summary of soil descriptions.				
STAGE			1	2	3
Initial Conditions					
Height - mm:			19.54	19.54	19.54
Length - mm:			60.03	60.03	60.03
Moisture Content - %:			20	20	20
Bulk Density - Mg/m ³ :			2.07	2.04	2.04
Dry Density - Mg/m ³ :			1.72	1.70	1.70
Voids Ratio:			0.539	0.562	0.555
Normal Pressure- kPa			25	45	90
Consolidation Stage					
Consolidated Height - mm:			19.28	18.66	18.59
Shearing Stage					
Rate of Strain (mm/min)			0.600	0.600	0.600
Displacement at peak shear stress (mm)			3.00	3.00	3.00
Peak shear Stress - kPa:			31	44	79
Final Consolidated Conditions					
Moisture Content - %:			19	18	18
Bulk Density - Mg/m ³ :			2.09	2.13	2.15
Dry Density - Mg/m ³ :			1.76	1.80	1.82
Peak					
Angle of Shearing Resistance:(θ)			36		
Effective Cohesion - kPa:			13		



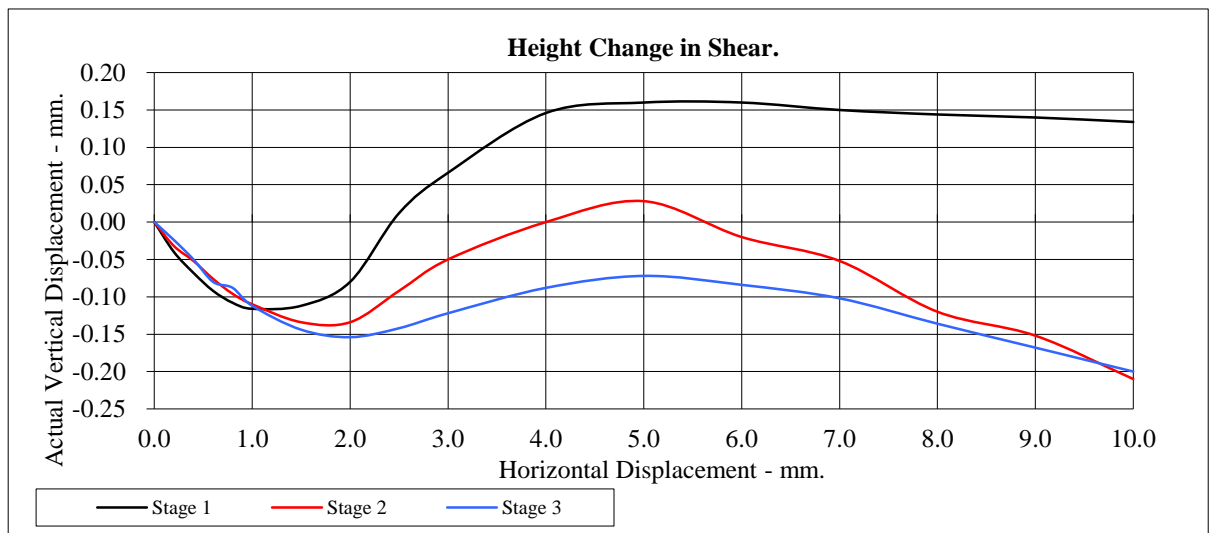
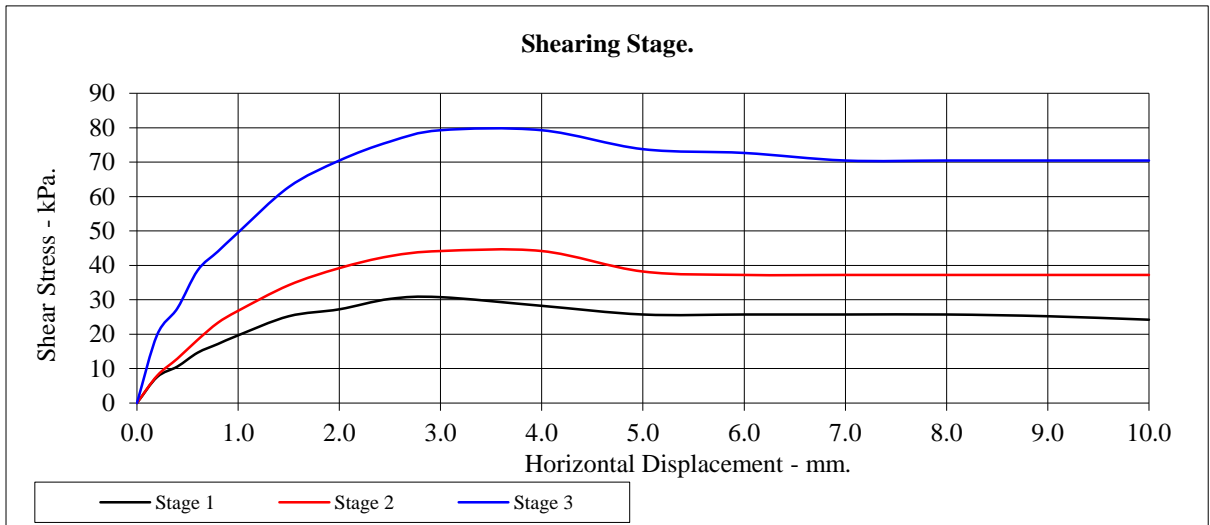
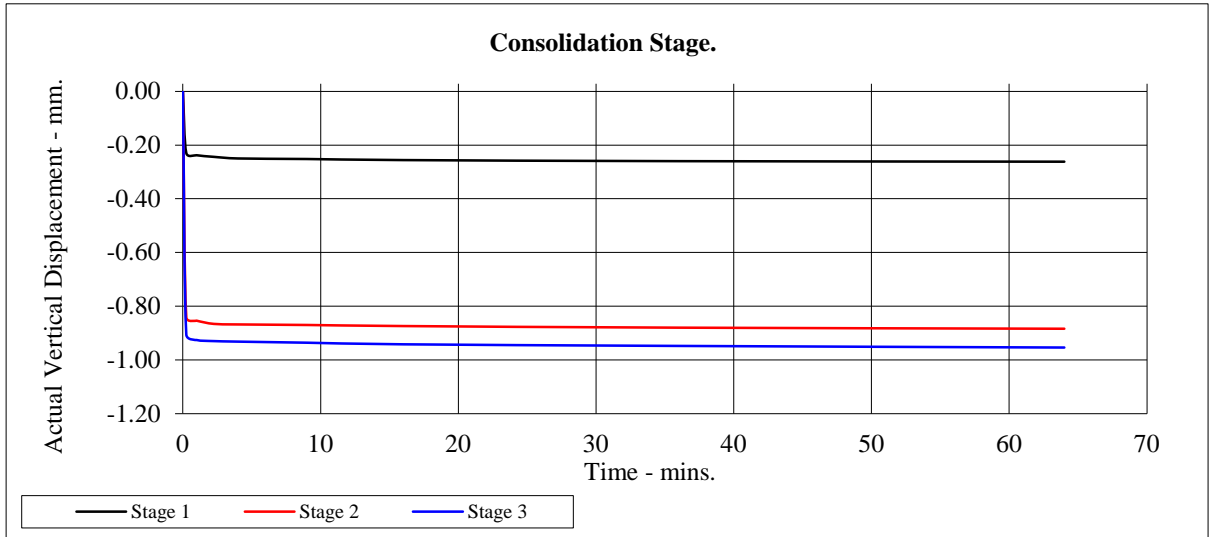
Newton Stewart FPS

Contract No:
PSL18/1203
Client Ref:
17/082

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4.5.4

Hole Number:	BH1-OP7	Top Depth:	4.30
Sample Number:		Base Depth:	



Newton Stewart FPS

Contract No:	PSL18/1203
Client Ref:	17/082

LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Certificate No : 18/309 - 01
To : Craig Rodger
Client : Holequest Limited
Winston Road
Galashiels
TD1 2DA

Tel: 0141 774 4032
Fax: 0141 774 3552

email: info@mattest.org
Website: www.mattest.org

Dear Sirs,

LABORATORY TESTING OF ROCK

Introduction

We refer to samples taken from Newton Stewart FPS and delivered to our laboratory on 16th March 2018.

Material & Source

Sample Reference : See Report Plates
Sampled By : Client
Sampling Certificate : Not Supplied
Location : See Report Plates
Description : Rock
Date Sampled : Not Supplied
Date Tested : 16th March 2018 Onwards
Source : 17/082 - Newton Stewart FPS

Test Results;

As Detailed On Page 2 to Page 11 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

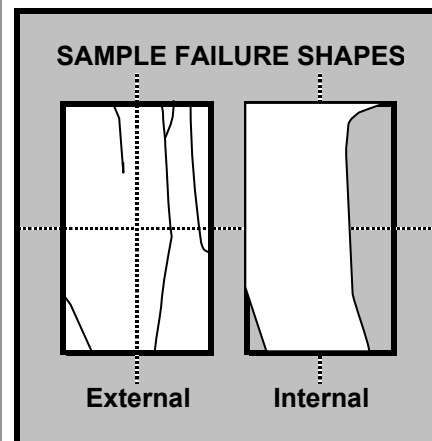
Remarks;

Approved for Issue

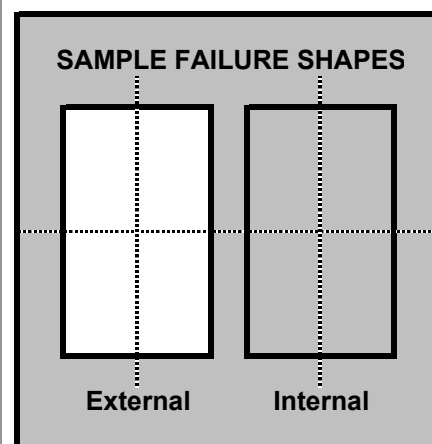
T McLelland (Director)

Date 26/03/2018

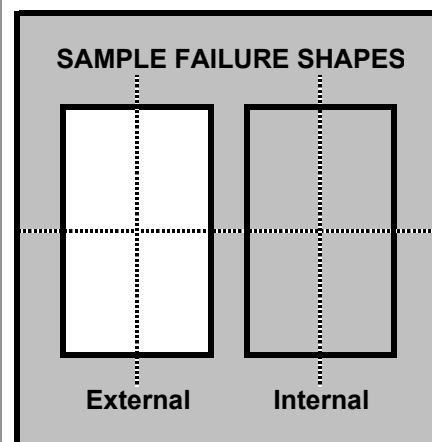
BOREHOLE		BH1-OP7
SAMPLE		C
DEPTH	m	16.90
SAMPLE DIAMETER	mm	79.08
SAMPLE HEIGHT	mm	184.35
TEST CONDITION		As Received
RATE OF LOADING	kN/s	0.5
TEST DURATION	min.sec	8.05
DATE OF TESTING		22/03/2018
LOAD FRAME USED		2000kN
LOAD DIRECTION WITH RESPECT TO LITHOLOGY		Unknown
FAILURE LOAD	kN	231.2
UNCONFINED COMPRESSIVE STRENGTH	MPa	47.1
WATER CONTENT (ISRM Suggested Methods)	%	0.3
BULK DENSITY (ISRM Suggested Methods)	Mg/m ³	2.69
DRY DENSITY (ISRM Suggested Methods)	Mg/m ³	2.68



BOREHOLE		
SAMPLE		
DEPTH	m	
SAMPLE DIAMETER	mm	
SAMPLE HEIGHT	mm	
TEST CONDITION		
RATE OF LOADING	kN/s	
TEST DURATION	min.sec	
DATE OF TESTING		
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	



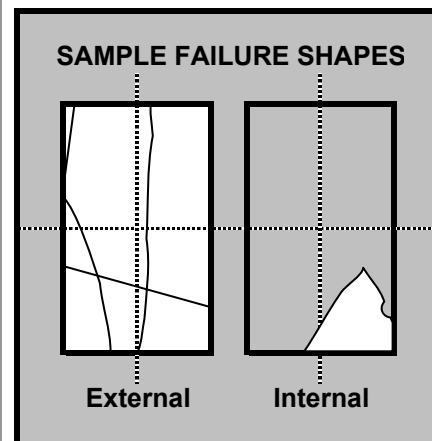
BOREHOLE		
SAMPLE		
DEPTH	m	
SAMPLE DIAMETER	mm	
SAMPLE HEIGHT	mm	
TEST CONDITION		
RATE OF LOADING	kN/s	
TEST DURATION	min.sec	
DATE OF TESTING		
LOAD FRAME USED		
LOAD DIRECTION WITH RESPECT TO LITHOLOGY		
FAILURE LOAD	kN	
UNCONFINED COMPRESSIVE STRENGTH	MPa	
WATER CONTENT (ISRM Suggested Methods)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



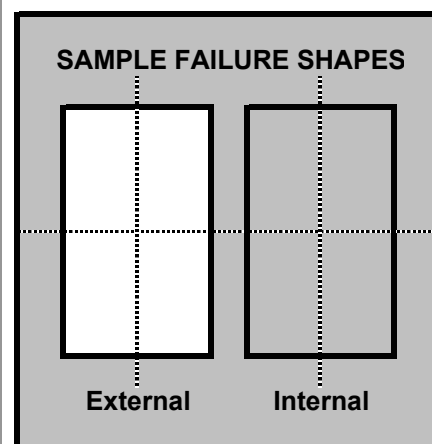
Tested in accordance with ASTM D7012 - 14

SUMMARY OF UNCONFINED COMPRESSIVE STRENGTH

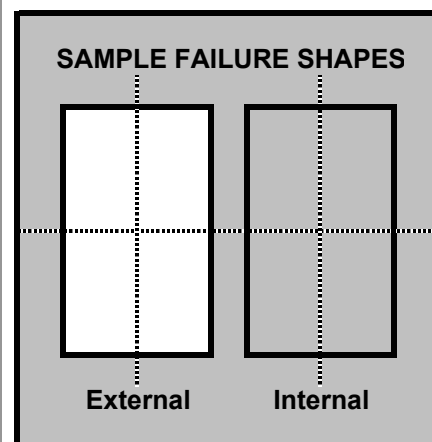
BOREHOLE		BH8-OP6
SAMPLE		C
DEPTH	m	11.10
SAMPLE DIAMETER	mm	78.65
SAMPLE HEIGHT	mm	179.83
TEST CONDITION		As Received
RATE OF LOADING	kN/s	0.5
TEST DURATION	min.sec	5.55
DATE OF TESTING		22/03/2018
LOAD FRAME USED		2000kN
LOAD DIRECTION WITH RESPECT TO LITHOLOGY		Unknown
FAILURE LOAD	kN	163.4
UNCONFINED COMPRESSIVE STRENGTH	MPa	33.6
WATER CONTENT (ISRM Suggested Methods)	%	0.5
BULK DENSITY (ISRM Suggested Methods)	Mg/m ³	2.69
DRY DENSITY (ISRM Suggested Methods)	Mg/m ³	2.67



BOREHOLE		
SAMPLE		
DEPTH	m	
SAMPLE DIAMETER	mm	
SAMPLE HEIGHT	mm	
TEST CONDITION		
RATE OF LOADING	kN/s	
TEST DURATION	min.sec	
DATE OF TESTING		
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	



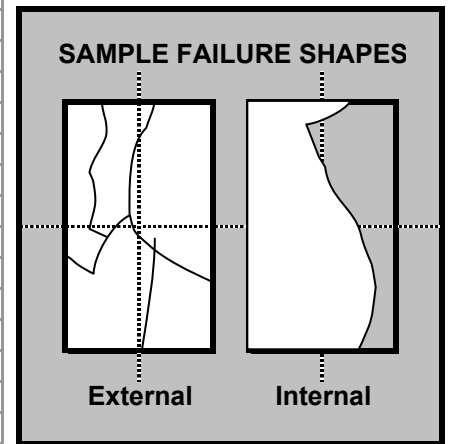
BOREHOLE		
SAMPLE		
DEPTH	m	
SAMPLE DIAMETER	mm	
SAMPLE HEIGHT	mm	
TEST CONDITION		
RATE OF LOADING	kN/s	
TEST DURATION	min.sec	
DATE OF TESTING		
LOAD FRAME USED		
LOAD DIRECTION WITH RESPECT TO LITHOLOGY		
FAILURE LOAD	kN	
UNCONFINED COMPRESSIVE STRENGTH	MPa	
WATER CONTENT (ISRM Suggested Methods)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



Tested in accordance with ASTM D7012 - 14

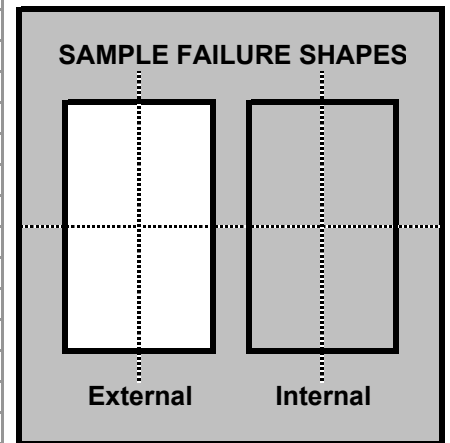
SUMMARY OF UNCONFINED COMPRESSIVE STRENGTH

BOREHOLE		BH11-OP6
SAMPLE		C
DEPTH	m	15.10
SAMPLE DIAMETER	mm	79.80
SAMPLE HEIGHT	mm	154.02
TEST CONDITION		As Received
RATE OF LOADING	kN/s	0.5
TEST DURATION	min.sec	4.47
DATE OF TESTING		22/03/2018
LOAD FRAME USED		2000kN
LOAD DIRECTION WITH RESPECT TO LITHOLOGY		Unknown
FAILURE LOAD	kN	122.5
UNCONFINED COMPRESSIVE STRENGTH	MPa	24.5
WATER CONTENT (ISRM Suggested Methods)	%	0.4
BULK DENSITY (ISRM Suggested Methods)	Mg/m ³	2.64
DRY DENSITY (ISRM Suggested Methods)	Mg/m ³	2.63

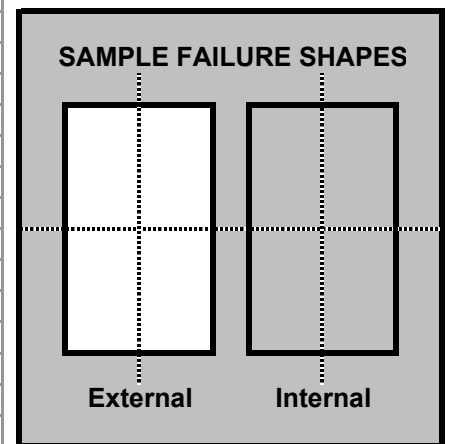


Test specimen does not meet specified length / diameter ratio requirements

BOREHOLE		
SAMPLE		
DEPTH	m	
SAMPLE DIAMETER	mm	
SAMPLE HEIGHT	mm	
TEST CONDITION		
RATE OF LOADING	kN/s	
TEST DURATION	min.sec	
DATE OF TESTING		
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	



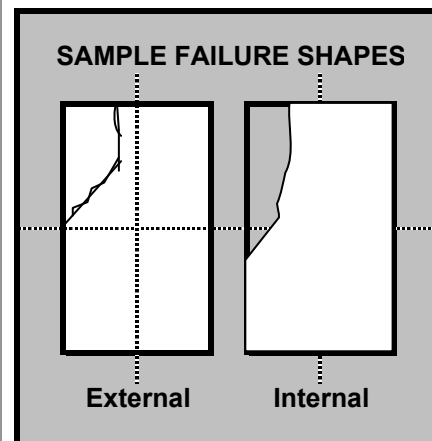
BOREHOLE		
SAMPLE		
DEPTH	m	
SAMPLE DIAMETER	mm	
SAMPLE HEIGHT	mm	
TEST CONDITION		
RATE OF LOADING	kN/s	
TEST DURATION	min.sec	
DATE OF TESTING		
LOAD FRAME USED		
LOAD DIRECTION WITH RESPECT TO LITHOLOGY		
FAILURE LOAD	kN	
UNCONFINED COMPRESSIVE STRENGTH	MPa	
WATER CONTENT (ISRM Suggested Methods)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



Tested in accordance with ASTM D7012 - 14

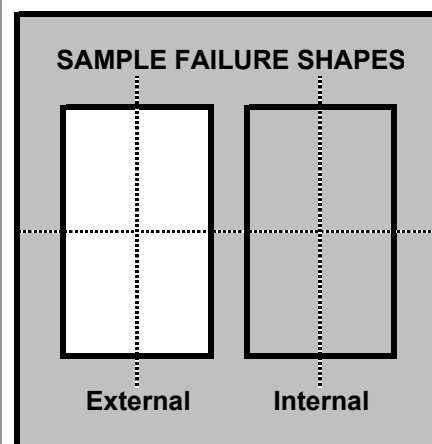
SUMMARY OF UNCONFINED COMPRESSIVE STRENGTH

BOREHOLE		BH13-OP6
SAMPLE		C
DEPTH	m	16.10
SAMPLE DIAMETER	mm	79.53
SAMPLE HEIGHT	mm	151.58
TEST CONDITION		As Received
RATE OF LOADING	kN/s	0.6
TEST DURATION	min.sec	3.11
DATE OF TESTING		22/03/2018
LOAD FRAME USED		2000kN
LOAD DIRECTION WITH RESPECT TO LITHOLOGY		Unknown
FAILURE LOAD	kN	110.2
UNCONFINED COMPRESSIVE STRENGTH	MPa	22.2
WATER CONTENT (ISRM Suggested Methods)	%	0.2
BULK DENSITY (ISRM Suggested Methods)	Mg/m ³	2.66
DRY DENSITY (ISRM Suggested Methods)	Mg/m ³	2.66

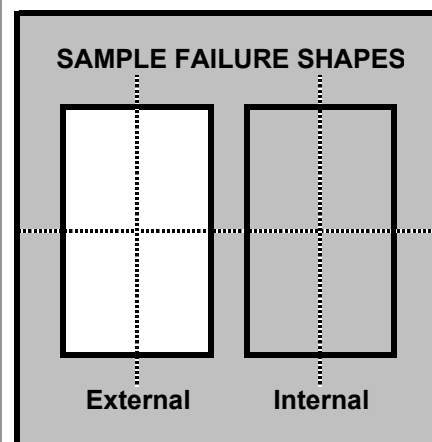


Test specimen does not meet specified length / diameter ratio requirements

BOREHOLE		
SAMPLE		
DEPTH	m	
SAMPLE DIAMETER	mm	
SAMPLE HEIGHT	mm	
TEST CONDITION		
RATE OF LOADING	kN/s	
TEST DURATION	min.sec	
DATE OF TESTING		
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		
DEPTH	m	
SAMPLE DIAMETER	mm	
SAMPLE HEIGHT	mm	
TEST CONDITION		
RATE OF LOADING	kN/s	
TEST DURATION	min.sec	
DATE OF TESTING		
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)
BH1-OP6	C	6.00	As Received	D	79.46	79.46	79.46	3.24	0.51	0.63
				A	79.46	71.07	49.93	3.66	0.72	0.85
				A	79.46	73.97	54.08	7.08	1.29	1.54
	C	6.25	As Received	D	79.60	79.60	79.60	8.27	1.31	1.61
				A	79.60	64.06	40.49	4.87	1.19	1.33
				A	79.60	67.54	45.01	7.98	1.75	2.00
	C	6.50	As Received	D	79.90	79.90	79.90	9.56	1.50	1.85
				A	79.90	63.88	40.11	10.08	2.47	2.76
				A	79.90	60.29	35.73	8.79	2.42	2.63
	C	7.50	As Received	D	79.97	79.97	79.97	24.44	3.82	4.72
				A	79.97	66.18	43.01	15.68	3.58	4.06
				A	79.97	68.86	46.57	18.30	3.86	4.46
	C	8.20	As Received	D	79.76	79.76	79.76	10.09	1.59	1.96
				A	79.76	67.66	45.08	15.55	3.40	3.89
				A	79.76	54.94	29.72	13.11	4.34	4.53

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	2.81
Mean Is(50) - Diametrical tests	2.15
la(50)	1.30

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)
BH1-OP7	C	16.40	As Received	D	79.15	79.15	79.15	10.01	1.60	1.96
				A	79.15	65.84	43.01	9.32	2.15	2.43
				A	79.15	62.33	38.55	13.09	3.37	3.72
	C	16.65	As Received	D	78.71	78.71	78.71	19.43	3.14	3.85
				A	78.71	53.92	29.01	8.67	2.98	3.08
				A	78.71	63.75	40.55	13.55	3.33	3.72
	C	16.90	As Received	D	79.06	79.06	79.06	19.00	3.04	3.74
				A	79.06	55.46	30.55	14.57	4.74	4.96
				A	79.06	61.10	37.08	18.09	4.85	5.30
	C	17.20	As Received	D	79.65	79.65	79.65	1.46	0.23	0.28
				A	79.65	60.47	36.05	2.62	0.72	0.78
				A	79.65	60.54	36.14	2.80	0.76	0.83
	C	17.80	As Received	D	79.48	79.48	79.48	7.33	1.16	1.43
				A	79.48	57.05	32.16	11.22	3.45	3.66
				A	79.48	59.58	35.08	12.01	3.38	3.66

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	3.22
Mean Is(50) - Diametrical tests	2.25
la(50)	1.43

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)
BH3-OP6	C	5.75	As Received	D	79.65	79.65	79.65	5.72	0.90	1.11
				A	79.65	65.19	41.90	4.37	1.03	1.16
				A	79.65	61.33	37.09	4.16	1.10	1.21
	C	6.60	As Received	D	80.12	80.12	80.12	11.10	1.73	2.14
				A	80.12	64.59	40.90	2.85	0.68	0.77
				A	80.12	65.04	41.47	7.56	1.79	2.01
	C	6.75	As Received	D	79.71	79.71	79.71	2.78	0.44	0.54
				A	79.71	62.95	39.05	5.10	1.29	1.43
				A	79.71	55.11	29.93	2.31	0.76	0.79
	C	7.20	As Received	D	80.66	80.66	80.66	7.83	1.20	1.49
				A	80.66	60.64	35.80	8.02	2.18	2.38
				A	80.66	61.68	37.04	10.55	2.77	3.05
	C	7.40	As Received	D	79.80	79.80	79.80	1.06	0.17	0.20
				A	79.80	53.82	28.51	2.30	0.79	0.82
				A	79.80	50.00	24.60	1.57	0.63	0.63

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	1.42
Mean Is(50) - Diametrical tests	1.10
la(50)	1.30

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)
BH8-OP6	C	10.60	As Received	D	78.52	78.52	78.52	35.26	5.72	7.01
				A	78.52	55.46	30.76	15.21	4.95	5.18
				A	78.52	72.19	52.12	29.09	5.58	6.59
	C	10.70	As Received	D	78.76	78.76	78.76	>40	>6.45	>7.91
				A	78.76	54.44	29.55	10.09	3.40	3.54
				A	78.76	56.72	32.08	12.16	3.78	4.00
	C	11.00	As Received	D	78.49	78.49	78.49	29.46	4.78	5.86
				A	78.49	69.51	48.35	21.00	4.35	5.04
				A	78.49	64.07	41.08	19.91	4.85	5.42
	C	11.30	As Received	D	79.20	79.20	79.20	11.76	1.87	2.31
				A	79.20	52.62	27.46	17.67	6.38	6.53
				A	79.20	63.41	39.87	20.85	5.19	5.77
	C	11.90	As Received	D	80.26	80.26	80.26	17.24	2.68	3.31
				A	80.26	63.53	39.50	12.09	2.99	3.34
				A	80.26	66.35	43.08	15.80	3.59	4.08

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	4.95
Mean Is(50) - Diametrical tests	3.70
la(50)	1.34

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)
BH11-OP6	C	13.80	As Received	D	79.10	79.10	79.10	8.47	1.35	1.66
				A	79.10	68.69	46.85	5.94	1.26	1.45
				A	79.10	71.73	51.09	9.01	1.75	2.06
	C	14.00	As Received	D	78.97	78.97	78.97	15.86	2.54	3.12
				A	78.97	65.82	43.08	3.83	0.88	1.00
				A	78.97	79.41	62.72	8.10	1.28	1.58
	C	14.20	As Received	D	79.18	79.18	79.18	23.15	3.69	4.54
				A	79.18	63.94	40.55	20.06	4.91	5.48
				A	79.18	65.90	43.08	23.55	5.42	6.14
	C	14.30	As Received	D	78.65	78.65	78.65	20.52	3.32	4.07
				A	78.65	55.79	31.08	11.06	3.55	3.73
				A	78.65	63.23	39.92	15.32	3.83	4.26
	C	14.90	As Received	D	79.71	79.71	79.71	14.68	2.31	2.85
				A	79.71	61.73	37.55	10.52	2.76	3.04
				A	79.71	63.74	40.03	12.39	3.05	3.40

NOTE: N/M - Not measured
 NOTE: A dash (-) signifies that scale did not register a reading

Mean Is(50) - Axial tests	3.21
Mean Is(50) - Diametrical tests	3.25
la(50)	0.99

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

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)
BH13-OP6	C	14.00	As Received	D	77.76	77.76	77.76	2.80	0.46	0.57
				A	77.76	66.55	44.73	16.41	3.71	4.22
				A	77.76	70.01	49.51	18.00	3.67	4.27
	C	14.30	As Received	D	79.38	79.38	79.38	13.28	2.11	2.60
				A	79.38	64.79	41.53	11.69	2.78	3.13
				A	79.38	73.82	53.92	15.91	2.92	3.48
	C	15.20	As Received	D	79.63	79.63	79.63	3.42	0.54	0.66
				A	79.63	71.17	49.96	7.51	1.48	1.74
				A	79.63	63.72	40.05	4.66	1.15	1.28
	C	15.70	As Received	D	79.50	79.50	79.50	35.29	5.58	6.88
				A	79.50	59.60	35.09	21.03	5.92	6.41
				A	79.50	64.66	41.31	23.11	5.53	6.21
	C	16.00	As Received	D	79.86	79.86	79.86	25.50	4.00	4.94
				A	79.86	55.35	30.13	19.10	6.23	6.53
				A	79.86	57.93	33.00	19.55	5.83	6.23

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	4.35
Mean Is(50) - Diametrical tests	3.13
la(50)	1.39

Tested in accordance with ISRM (2007)

SUMMARY OF POINT LOAD TEST RESULTS



CONCEPT LIFE SCIENCES
DELIVERING SCIENCE

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Wales (No 2514788)

Concept Life Sciences

Certificate of Analysis

16 Langlands Place
Kelvin South Business
Park
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Tel : 01355 573340
Fax : 01355 573341

Report Number: 704816-1

Date of Report: 08-Jan-2018

Customer: Holequest
Winston Road
Galashiels
TD1 2DA

Customer Contact: Mr Craig Rodger

Customer Job Reference:

Customer Purchase Order: 17552

Customer Site Reference: Newton Stewart FPS

Date Job Received at Concept: 14-Dec-2017

Date Analysis Started: 20-Dec-2017

Date Analysis Completed: 08-Jan-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

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

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



1549

Report checked
and authorised by :
Ashleigh Cunningham
Customer Service Advisor

Issued by :
Ashleigh Cunningham
Customer Service Advisor

Concept Reference: 704816

Project Site: Newton Stewart FPS

Customer Reference:

Soil
Miscellaneous

Analysed as Soil

Concept Reference					704816 002	704816 004	704816 011	704816 016
Customer Sample Reference					TP3-OP24 0.5m	TP4-OP24 0.2m	TP6-OP24 0.5m	SP-TP4 0.2m
Date Sampled					13-DEC-2017	13-DEC-2017	13-DEC-2017	13-DEC-2017
Determinand	Method	Test Sample	LOD	Units				
Cyanide(free)	T4	AR	1	mg/kg	<1	<1	<1	<1
Cyanide(Total)	T4	AR	1	mg/kg	<1	<1	<1	<1
Thiocyanate	T4	A40	10	mg/kg	<10	<10	<10	<10
Chromium VI	T82	A40	1	mg/kg	<1	<1	<1	<1
pH	T7	A40			6.0	6.2	5.7	6.1
Sulphide	T4	AR	10	mg/kg	<10	<10	<10	<10
Phenols(Mono)	T4	AR	1	mg/kg	<1	<1	<1	<1
SO4(Total)	T82	A40	0.01	%	0.07	0.15	0.10	0.15
Organic Matter	T2	A40	0.1	%	1.2	8.6	3.1	5.3
Chloride (2:1)	T686	AR	0.5	mg/l	1.5	3.2	2.1	4.1
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.
Chromium (trivalent)	T85	AR	2	mg/kg	56	61	59	61
Vanadium	T82	A40	1	mg/kg	33	45	40	44
Nitrate (2:1)	T686	AR	1.0	mg/l	<1.0	2.5	1.1	<1.0



Concept Reference: 704816

Project Site: Newton Stewart FPS

Customer Reference:

Soil
TPH (CWG) Analysed as Soil

Concept Reference					704816 002	704816 004	704816 011	704816 016
Customer Sample Reference					TP3-OP24 0.5m	TP4-OP24 0.2m	TP6-OP24 0.5m	SP-TP4 0.2m
Date Sampled					13-DEC-2017	13-DEC-2017	13-DEC-2017	13-DEC-2017
Determinand	Method	Test Sample	LOD	Units				
TPH (C5-C6 aliphatic)	T54	AR	10	µg/kg	<10	<10	<10	<10
TPH (C6-C8 aliphatic)	T54	AR	10	µg/kg	<10	<10	<10	<10
TPH (C8-C10 aliphatic)	T54	AR	10	µg/kg	<10	<10	<10	<10
TPH (C10-C12 aliphatic)	T8	AR	1	mg/kg	<1	<1	<1	<1
TPH (C12-C16 aliphatic)	T8	AR	1	mg/kg	<1	<1	<1	<1
TPH (C16-C21 aliphatic)	T8	AR	1	mg/kg	<1	<1	<1	<1
TPH (C21-C35 aliphatic)	T8	AR	1	mg/kg	<1	<1	<1	<1
TPH (C6-C7 aromatic)	T54	AR	10	µg/kg	<10	<10	<10	<10
TPH (C7-C8 aromatic)	T54	AR	10	µg/kg	<10	<10	<10	<10
TPH (C8-C10 aromatic)	T54	AR	10	µg/kg	<10	<10	<10	<10
TPH (C10-C12 aromatic)	T8	AR	1	mg/kg	<1	<1	<1	<1
TPH (C12-C16 aromatic)	T8	AR	1	mg/kg	<1	<1	<1	<1
TPH (C16-C21 aromatic)	T8	AR	1	mg/kg	<1	<1	<1	<1
TPH (C21-C35 aromatic)	T8	AR	1	mg/kg	<1	<1	<1	<1



Concept Reference: 704816
 Project Site: Newton Stewart FPS
 Customer Reference:

Soil
 PAH (USEPA 16) Analysed as Soil

Concept Reference					704816 002	704816 004	704816 011	704816 016
Customer Sample Reference					TP3-OP24 0.5m	TP4-OP24 0.2m	TP6-OP24 0.5m	SP-TP4 0.2m
Date Sampled					13-DEC-2017	13-DEC-2017	13-DEC-2017	13-DEC-2017
Determinand	Method	Test Sample	LOD	Units				
Naphthalene	T149	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
Acenaphthylene	T149	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
Acenaphthene	T149	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
Fluorene	T149	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
Phenanthrene	T149	AR	0.01	mg/kg	0.02	0.02	<0.01	0.01
Anthracene	T149	AR	0.01	mg/kg	0.01	<0.01	<0.01	<0.01
Fluoranthene	T149	AR	0.01	mg/kg	0.03	0.04	0.01	0.03
Pyrene	T149	AR	0.01	mg/kg	0.03	0.03	<0.01	0.03
Benzo(a)Anthracene	T149	AR	0.01	mg/kg	⁽¹³⁾ 0.01	⁽¹³⁾ 0.01	⁽¹³⁾ <0.01	⁽¹³⁾ 0.01
Chrysene	T149	AR	0.01	mg/kg	0.02	0.02	<0.01	0.02
Benzo(b/k)Fluoranthene	T149	AR	0.01	mg/kg	0.02	0.04	<0.01	0.03
Benzo(a)Pyrene	T149	AR	0.01	mg/kg	0.01	0.02	<0.01	0.02
Indeno(123-cd)Pyrene	T149	AR	0.01	mg/kg	0.01	0.01	<0.01	0.01
Dibenzo(ah)Anthracene	T149	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01
Benzo(ghi)Perylene	T149	AR	0.01	mg/kg	0.01	0.02	<0.01	0.02



Index to symbols used in 704816-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

GC/MS Headspace - These samples have been analysed exceeding recommended holding times. It is possible therefore that the results provided may be compromised.

Method Index

Value	Description
T8	GC/FID
T85	Calc
T4	Colorimetry
T149	GC/MS (SIR)
T54	GC/MS (Headspace)
T82	ICP/OES (Sim)
T686	Discrete Analyser
T2	Grav
T27	PLM
T7	Probe

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Arsenic	T82	A40	2	mg/kg	U	002,004,011,016
Boron (water-soluble)	T82	A40	1	mg/kg	U	002,004,011,016
Cadmium	T82	A40	1	mg/kg	U	002,004,011,016
Chromium	T82	A40	1	mg/kg	U	002,004,011,016
Copper	T82	A40	1	mg/kg	U	002,004,011,016
Lead	T82	A40	3	mg/kg	U	002,004,011,016
Mercury	T82	A40	1	mg/kg	U	002,004,011,016
Nickel	T82	A40	1	mg/kg	U	002,004,011,016
Selenium	T82	A40	3	mg/kg	U	002,004,011,016
Zinc	T82	A40	1	mg/kg	U	002,004,011,016
TPH (C5-C6 aliphatic)	T54	AR	10	µg/kg	N	002,004,011,016
TPH (C6-C8 aliphatic)	T54	AR	10	µg/kg	N	002,004,011,016
TPH (C8-C10 aliphatic)	T54	AR	10	µg/kg	N	002,004,011,016
TPH (C10-C12 aliphatic)	T8	AR	1	mg/kg	N	002,004,011,016
TPH (C12-C16 aliphatic)	T8	AR	1	mg/kg	N	002,004,011,016
TPH (C16-C21 aliphatic)	T8	AR	1	mg/kg	N	002,004,011,016
TPH (C21-C35 aliphatic)	T8	AR	1	mg/kg	N	002,004,011,016
TPH (C6-C7 aromatic)	T54	AR	10	µg/kg	N	002,004,011,016
TPH (C7-C8 aromatic)	T54	AR	10	µg/kg	N	002,004,011,016
TPH (C8-C10 aromatic)	T54	AR	10	µg/kg	N	002,004,011,016
TPH (C10-C12 aromatic)	T8	AR	1	mg/kg	N	002,004,011,016
TPH (C12-C16 aromatic)	T8	AR	1	mg/kg	N	002,004,011,016
TPH (C16-C21 aromatic)	T8	AR	1	mg/kg	N	002,004,011,016
TPH (C21-C35 aromatic)	T8	AR	1	mg/kg	N	002,004,011,016
Cyanide(free)	T4	AR	1	mg/kg	U	002,004,011,016
Cyanide(Total)	T4	AR	1	mg/kg	U	002,004,011,016
Thiocyanate	T4	A40	10	mg/kg	N	002,004,011,016
Chromium VI	T82	A40	1	mg/kg	N	002,004,011,016
pH	T7	A40			U	002,004,011,016
Sulphide	T4	AR	10	mg/kg	N	002,004,011,016
Phenols(Mono)	T4	AR	1	mg/kg	U	002,004,011,016
SO4(Total)	T82	A40	0.01	%	N	002,004,011,016
Organic Matter	T2	A40	0.1	%	N	002,004,011,016
Chloride (2:1)	T686	AR	0.5	mg/l	N	002,004,011,016
Asbestos ID	T27	AR			SU	002,004,011,016

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Chromium (trivalent)	T85	AR	2	mg/kg	N	002,004,011,016
Vanadium	T82	A40	1	mg/kg	U	002,004,011,016
Nitrate (2:1)	T686	AR	1.0	mg/l	N	002,004,011,016
Naphthalene	T149	AR	0.01	mg/kg	U	002,004,011,016
Acenaphthylene	T149	AR	0.01	mg/kg	U	002,004,011,016
Acenaphthene	T149	AR	0.01	mg/kg	U	002,004,011,016
Fluorene	T149	AR	0.01	mg/kg	U	002,004,011,016
Phenanthrene	T149	AR	0.01	mg/kg	U	002,004,011,016
Anthracene	T149	AR	0.01	mg/kg	U	002,004,011,016
Fluoranthene	T149	AR	0.01	mg/kg	U	002,004,011,016
Pyrene	T149	AR	0.01	mg/kg	U	002,004,011,016
Benzo(a)Anthracene	T149	AR	0.01	mg/kg	U	002,004,011,016
Chrysene	T149	AR	0.01	mg/kg	U	002,004,011,016
Benzo(b/k)Fluoranthene	T149	AR	0.01	mg/kg	U	002,004,011,016
Benzo(a)Pyrene	T149	AR	0.01	mg/kg	U	002,004,011,016
Indeno(123-cd)Pyrene	T149	AR	0.01	mg/kg	U	002,004,011,016
Dibenzo(ah)Anthracene	T149	AR	0.01	mg/kg	U	002,004,011,016
Benzo(ghi)Perylene	T149	AR	0.01	mg/kg	U	002,004,011,016





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Concept Life Sciences

Certificate of Analysis

16 Langlands Place
Kelvin South Business
Park
East Kilbride
G75 0YF
Tel : 01355 573340
Fax : 01355 573341

Report Number: 705022-1

Date of Report: 08-Jan-2018

Customer: Holequest
Winston Road
Galashiels
TD1 2DA

Customer Contact: Mr Craig Rodger

Customer Job Reference: 17/082

Customer Purchase Order: 17552

Customer Site Reference: Newton Stewart FPS

Date Job Received at Concept: 19-Dec-2017

Date Analysis Started: 20-Dec-2017

Date Analysis Completed: 08-Jan-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

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

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



1549

Report checked
and authorised by :
Ashleigh Cunningham
Customer Service Advisor

Issued by :
Ashleigh Cunningham
Customer Service Advisor

Concept Reference: 705022					
Project Site: Newton Stewart FPS					
Customer Reference: 17/082					
Soil Analysed as Soil					
Miscellaneous					
Concept Reference					705022 020
Customer Sample Reference					TP2-OP24 0.50M
Date Sampled					14-DEC-2017
Determinand	Method	Test Sample	LOD	Units	
Cyanide(free)	T4	AR	1	mg/kg	<1
Cyanide(Total)	T4	AR	1	mg/kg	<1
Thiocyanate	T4	A40	10	mg/kg	<10
Chromium VI	T82	A40	1	mg/kg	<1
pH	T7	A40			5.4
Sulphide	T4	AR	10	mg/kg	<10
Phenols(Mono)	T4	AR	1	mg/kg	<1
SO4(Total)	T82	A40	0.01	%	0.12
Organic Matter	T2	A40	0.1	%	7.1
Chloride (2:1)	T686	AR	0.5	mg/l	1.8
Asbestos ID	T27	AR			N.D.
Chromium (trivalent)	T85	AR	2	mg/kg	54
Vanadium	T82	A40	1	mg/kg	38
Nitrate (2:1)	T686	AR	1.0	mg/l	9.1

Concept Reference: 705022					
Project Site: Newton Stewart FPS					
Customer Reference: 17/082					
Soil Analysed as Soil					
TPH (CWG)					
Concept Reference					705022 020
Customer Sample Reference					TP2-OP24 0.50M
Date Sampled					14-DEC-2017
Determinand	Method	Test Sample	LOD	Units	
TPH (C5-C6 aliphatic)	T54	AR	10	µg/kg	<10
TPH (C6-C8 aliphatic)	T54	AR	10	µg/kg	<10
TPH (C8-C10 aliphatic)	T54	AR	10	µg/kg	<10
TPH (C10-C12 aliphatic)	T8	AR	1	mg/kg	<1
TPH (C12-C16 aliphatic)	T8	AR	1	mg/kg	<1
TPH (C16-C21 aliphatic)	T8	AR	1	mg/kg	<1
TPH (C21-C35 aliphatic)	T8	AR	1	mg/kg	<1
TPH (C6-C7 aromatic)	T54	AR	10	µg/kg	<10
TPH (C7-C8 aromatic)	T54	AR	10	µg/kg	<10
TPH (C8-C10 aromatic)	T54	AR	10	µg/kg	<10
TPH (C10-C12 aromatic)	T8	AR	1	mg/kg	<1
TPH (C12-C16 aromatic)	T8	AR	1	mg/kg	<1
TPH (C16-C21 aromatic)	T8	AR	1	mg/kg	<1
TPH (C21-C35 aromatic)	T8	AR	1	mg/kg	<1

Concept Reference: 705022					
Project Site: Newton Stewart FPS					
Customer Reference: 17/082					
Soil Analysed as Soil					
PAH (USEPA 16)					
Concept Reference					705022 020
Customer Sample Reference					TP2-OP24 0.50M
Date Sampled					14-DEC-2017
Determinand	Method	Test Sample	LOD	Units	
Naphthalene	T149	AR	0.01	mg/kg	<0.01
Acenaphthylene	T149	AR	0.01	mg/kg	<0.01
Acenaphthene	T149	AR	0.01	mg/kg	<0.01
Fluorene	T149	AR	0.01	mg/kg	<0.01
Phenanthrene	T149	AR	0.01	mg/kg	0.01
Anthracene	T149	AR	0.01	mg/kg	<0.01
Fluoranthene	T149	AR	0.01	mg/kg	0.02
Pyrene	T149	AR	0.01	mg/kg	0.02
Benzo(a)Anthracene	T149	AR	0.01	mg/kg	⁽¹³⁾ <0.01
Chrysene	T149	AR	0.01	mg/kg	0.01
Benzo(b/k)Fluoranthene	T149	AR	0.01	mg/kg	0.02
Benzo(a)Pyrene	T149	AR	0.01	mg/kg	0.01
Indeno(123-cd)Pyrene	T149	AR	0.01	mg/kg	0.01
Dibenzo(ah)Anthracene	T149	AR	0.01	mg/kg	<0.01
Benzo(ghi)Perylene	T149	AR	0.01	mg/kg	0.01

Concept Reference: 705022					
Project Site: Newton Stewart FPS					
Customer Reference: 17/082					
Soil Analysed as Soil					
PCB EC7 Suite (EK)					
Concept Reference					705022 020
Customer Sample Reference					TP2-OP24 0.50M
Date Sampled					14-DEC-2017
Determinand	Method	Test Sample	LOD	Units	
PCB BZ#101	T149	AR	1	µg/kg	<1
PCB BZ#118	T149	AR	1	µg/kg	<1
PCB BZ#138	T149	AR	1	µg/kg	<1
PCB BZ#153	T149	AR	1	µg/kg	<1
PCB BZ#180	T149	AR	1	µg/kg	<1
PCB BZ#28	T149	AR	1	µg/kg	<1
PCB BZ#52	T149	AR	1	µg/kg	<1

Concept Reference: 705022					
Project Site: Newton Stewart FPS					
Customer Reference: 17/082					
Soil Analysed as Soil					
ICRCL (Table 3:metals)					
Concept Reference					705022 020
Customer Sample Reference					TP2-OP24 0.50M
Date Sampled					14-DEC-2017
Determinand	Method	Test Sample	LOD	Units	
Arsenic	T82	A40	2	mg/kg	17
Boron (water-soluble)	T82	A40	1	mg/kg	<1
Cadmium	T82	A40	1	mg/kg	<1
Chromium	T82	A40	1	mg/kg	54
Copper	T82	A40	1	mg/kg	22
Lead	T82	A40	3	mg/kg	54
Mercury	T82	A40	1	mg/kg	<1
Nickel	T82	A40	1	mg/kg	38
Selenium	T82	A40	3	mg/kg	<3
Zinc	T82	A40	1	mg/kg	100

Index to symbols used in 705022-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Method Index

Value	Description
T8	GC/FID
T85	Calc
T149	GC/MS (SIR)
T27	PLM
T82	ICP/OES (Sim)
T4	Colorimetry
T54	GC/MS (Headspace)
T2	Grav
T7	Probe
T686	Discrete Analyser

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
TPH (C5-C6 aliphatic)	T54	AR	10	µg/kg	N	020
TPH (C6-C8 aliphatic)	T54	AR	10	µg/kg	N	020
TPH (C8-C10 aliphatic)	T54	AR	10	µg/kg	N	020
TPH (C10-C12 aliphatic)	T8	AR	1	mg/kg	N	020
TPH (C12-C16 aliphatic)	T8	AR	1	mg/kg	N	020
TPH (C16-C21 aliphatic)	T8	AR	1	mg/kg	N	020
TPH (C21-C35 aliphatic)	T8	AR	1	mg/kg	N	020
TPH (C6-C7 aromatic)	T54	AR	10	µg/kg	N	020
TPH (C7-C8 aromatic)	T54	AR	10	µg/kg	N	020
TPH (C8-C10 aromatic)	T54	AR	10	µg/kg	N	020
TPH (C10-C12 aromatic)	T8	AR	1	mg/kg	N	020
TPH (C12-C16 aromatic)	T8	AR	1	mg/kg	N	020
TPH (C16-C21 aromatic)	T8	AR	1	mg/kg	N	020
TPH (C21-C35 aromatic)	T8	AR	1	mg/kg	N	020
Naphthalene	T149	AR	0.01	mg/kg	U	020
Acenaphthylene	T149	AR	0.01	mg/kg	U	020
Acenaphthene	T149	AR	0.01	mg/kg	U	020
Fluorene	T149	AR	0.01	mg/kg	U	020
Phenanthrene	T149	AR	0.01	mg/kg	U	020
Anthracene	T149	AR	0.01	mg/kg	U	020
Fluoranthene	T149	AR	0.01	mg/kg	U	020
Pyrene	T149	AR	0.01	mg/kg	U	020
Benzo(a)Anthracene	T149	AR	0.01	mg/kg	U	020
Chrysene	T149	AR	0.01	mg/kg	U	020
Benzo(b/k)Fluoranthene	T149	AR	0.01	mg/kg	U	020
Benzo(a)Pyrene	T149	AR	0.01	mg/kg	U	020
Indeno(123-cd)Pyrene	T149	AR	0.01	mg/kg	U	020
Dibenzo(ah)Anthracene	T149	AR	0.01	mg/kg	U	020
Benzo(ghi)Perylene	T149	AR	0.01	mg/kg	U	020
Arsenic	T82	A40	2	mg/kg	U	020
Boron (water-soluble)	T82	A40	1	mg/kg	U	020
Cadmium	T82	A40	1	mg/kg	U	020
Chromium	T82	A40	1	mg/kg	U	020
Copper	T82	A40	1	mg/kg	U	020
Lead	T82	A40	3	mg/kg	U	020
Mercury	T82	A40	1	mg/kg	U	020
Nickel	T82	A40	1	mg/kg	U	020
Selenium	T82	A40	3	mg/kg	U	020
Zinc	T82	A40	1	mg/kg	U	020
Cyanide(free)	T4	AR	1	mg/kg	U	020

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Cyanide(Total)	T4	AR	1	mg/kg	U	020
Thiocyanate	T4	A40	10	mg/kg	N	020
Chromium VI	T82	A40	1	mg/kg	N	020
pH	T7	A40			U	020
Sulphide	T4	AR	10	mg/kg	N	020
Phenols(Mono)	T4	AR	1	mg/kg	U	020
SO4(Total)	T82	A40	0.01	%	N	020
Organic Matter	T2	A40	0.1	%	N	020
Chloride (2:1)	T686	AR	0.5	mg/l	N	020
Asbestos ID	T27	AR			SU	020
Chromium (trivalent)	T85	AR	2	mg/kg	N	020
Vanadium	T82	A40	1	mg/kg	U	020
Nitrate (2:1)	T686	AR	1.0	mg/l	N	020
PCB BZ#101	T149	AR	1	µg/kg	U	020
PCB BZ#118	T149	AR	1	µg/kg	U	020
PCB BZ#138	T149	AR	1	µg/kg	U	020
PCB BZ#153	T149	AR	1	µg/kg	U	020
PCB BZ#180	T149	AR	1	µg/kg	U	020
PCB BZ#28	T149	AR	1	µg/kg	U	020
PCB BZ#52	T149	AR	1	µg/kg	U	020





CONCEPT LIFE SCIENCES
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Services Limited registered in England and
Wales (No 2514788)

Concept Life Sciences

Certificate of Analysis

16 Langlands Place
Kelvin South Business
Park
East Kilbride
G75 0YF
Tel : 01355 573340
Fax : 01355 573341

Report Number: 706864-1

Date of Report: 08-Jan-2018

Customer: Holequest
Winston Road
Galashiels
TD1 2DA

Customer Contact: Mr Fraser Murray

Customer Job Reference: 17/082

Customer Purchase Order: 17552

Customer Site Reference: Newton Stewart FPS

Date Job Received at Concept: 21-Dec-2017

Date Analysis Started: 04-Jan-2018

Date Analysis Completed: 08-Jan-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

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

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



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Report checked
and authorised by :
Ashleigh Cunningham
Customer Service Advisor

Issued by :
Ashleigh Cunningham
Customer Service Advisor

Index to symbols used in 706864-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
N.D.	Not Detected
13	Results have been blank corrected.
9	LOD raised due to dilution of sample
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

TPH, PAH and Phenols - These samples have been analysed exceeding recommended holding times. It is possible therefore that the results provided may be compromised.
GC/MS Headspace - sample 007 diluted due to poor internal standard recovery.
GC/MS Headspace (sample 007) - These samples have been analysed exceeding recommended holding times. It is possible therefore that the results provided may be compromised.

Method Index

Value	Description
T149	GC/MS (SIR)
T7	Probe
T112	ICP/OES (SIM)(Water Extract)
T27	PLM
T85	Calc
T4	Colorimetry
T8	GC/FID
T2	Grav
T54	GC/MS (Headspace)
T82	ICP/OES (Sim)
T686	Discrete Analyser

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
TPH (C8-C10)	T8	AR	1	mg/kg	N	015
TPH (C10-C12)	T8	AR	1	mg/kg	U	015
TPH (C12-C16)	T8	AR	1	mg/kg	U	015
TPH (C16-C21)	T8	AR	1	mg/kg	U	015
TPH (C21-C35)	T8	AR	1	mg/kg	U	015
Naphthalene	T149	AR	0.01	mg/kg	U	002,007,015
Acenaphthylene	T149	AR	0.01	mg/kg	U	002,007,015
Acenaphthene	T149	AR	0.01	mg/kg	U	002,007,015
Fluorene	T149	AR	0.01	mg/kg	U	002,007,015
Phenanthrene	T149	AR	0.01	mg/kg	U	002,007,015
Anthracene	T149	AR	0.01	mg/kg	U	002,007,015
Fluoranthene	T149	AR	0.01	mg/kg	U	002,007,015
Pyrene	T149	AR	0.01	mg/kg	U	002,007,015
Benzo(a)Anthracene	T149	AR	0.01	mg/kg	U	002,007,015
Chrysene	T149	AR	0.01	mg/kg	U	002,007,015
Benzo(b)fluoranthene	T149	AR	0.01	mg/kg	U	002,007,015
Benzo(k)fluoranthene	T149	AR	0.01	mg/kg	U	002,007,015
Benzo(a)Pyrene	T149	AR	0.01	mg/kg	U	002,007,015
Indeno(123-cd)Pyrene	T149	AR	0.01	mg/kg	U	002,007,015
Dibenzo(ah)Anthracene	T149	AR	0.01	mg/kg	U	002,007,015
Benzo(ghi)Perylene	T149	AR	0.01	mg/kg	U	002,007,015
PAH(total)	T149	AR	0.01	mg/kg	U	002,007,015
Cyanide(Total)	T4	AR	1	mg/kg	U	002,007,015
Cyanide(free)	T4	AR	1	mg/kg	U	002,007,015
Thiocyanate	T4	A40	10	mg/kg	N	002,007,015
Organic Matter	T2	A40	0.1	%	N	002,007,015
Arsenic	T82	A40	2	mg/kg	U	002,007,015
Mercury	T82	A40	1	mg/kg	U	002,007,015
Selenium	T82	A40	3	mg/kg	U	002,007,015
Boron (water-soluble)	T112	A40	1	mg/kg	U	002,007,015
Cadmium	T82	A40	1	mg/kg	U	002,007,015

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Chromium (trivalent)	T85	AR	2	mg/kg	N	002,007,015
Chromium (hexavalent)	T82	A40	1	mg/kg	N	002,007,015
Copper	T82	A40	1	mg/kg	U	002,007,015
Lead	T82	A40	3	mg/kg	U	002,007,015
Nickel	T82	A40	1	mg/kg	U	002,007,015
Vanadium	T82	A40	1	mg/kg	U	002,007,015
Zinc	T82	A40	1	mg/kg	U	002,007,015
Asbestos ID	T27	AR			SU	002,007,015
pH	T7	A40			U	002,007,015
SO4(Total)	T82	A40	0.01	%	N	002,007,015
Chloride	T686	AR	1	mg/kg	N	002,007,015
Sulphide	T4	AR	10	mg/kg	N	002,007,015
Nitrate	T686	AR	1	mg/kg	N	002,007,015
Phenols(Mono)	T4	AR	1	mg/kg	U	002,007,015
Benzene	T54	AR	1	µg/kg	U	002,007
Toluene	T54	AR	1	µg/kg	U	002,007
EthylBenzene	T54	AR	1	µg/kg	U	002,007
M/P Xylene	T54	AR	1	µg/kg	U	002,007
O Xylene	T54	AR	1	µg/kg	U	002,007
Methyl tert-Butyl Ether	T54	AR	1	µg/kg	U	002,007
TPH (C5-C6 aliphatic)	T54	AR	10	µg/kg	N	002,007
TPH (C6-C8 aliphatic)	T54	AR	10	µg/kg	N	002,007
TPH (C8-C10 aliphatic)	T54	AR	10	µg/kg	N	002,007
TPH (C10-C12 aliphatic)	T8	AR	1	mg/kg	N	002,007
TPH (C12-C16 aliphatic)	T8	AR	1	mg/kg	N	002,007
TPH (C16-C21 aliphatic)	T8	AR	1	mg/kg	N	002,007
TPH (C21-C35 aliphatic)	T8	AR	1	mg/kg	N	002,007
TPH (C6-C7 aromatic)	T54	AR	10	µg/kg	N	002,007
TPH (C7-C8 aromatic)	T54	AR	10	µg/kg	N	002,007
TPH (C8-C10 aromatic)	T54	AR	10	µg/kg	N	002,007
TPH (C10-C12 aromatic)	T8	AR	1	mg/kg	N	002,007
TPH (C12-C16 aromatic)	T8	AR	1	mg/kg	N	002,007
TPH (C16-C21 aromatic)	T8	AR	1	mg/kg	N	002,007
TPH (C21-C35 aromatic)	T8	AR	1	mg/kg	N	002,007





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Concept Life Sciences

Certificate of Analysis

16 Langlands Place
Kelvin South Business
Park
East Kilbride
G75 0YF
Tel : 01355 573340
Fax : 01355 573341

Report Number: 707520-1

Date of Report: 12-Jan-2018

Customer: Holequest
Winston Road
Galashiels
TD1 2DA

Customer Contact: Mr Craig Rodger

Customer Job Reference: 17/082

Customer Purchase Order: 17552

Customer Site Reference: Newton Stewart FPS

Date Job Received at Concept: 21-Dec-2017

Date Analysis Started: 09-Jan-2018

Date Analysis Completed: 12-Jan-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual

Report checked
and authorised by :
Ashleigh Cunningham
Customer Service Advisor

Issued by :
Ashleigh Cunningham
Customer Service Advisor

Concept Reference: 707520					
Project Site: Newton Stewart FPS					
Customer Reference: 17/082					
Soil		Analysed as Soil			
Miscellaneous					
Concept Reference					707520 001
Customer Sample Reference					SP-TP2 0.5m
Date Sampled					19-DEC-2017
Determinand	Method	Test Sample	LOD	Units	
Asbestos Quantification	T27	AR	0.001	%	Amosite Detected <0.001



Index to symbols used in 707520-1

Value	Description
AR	As Received
S	Analysis was subcontracted
U	Analysis is UKAS accredited

Notes

This report should be read in conjunction with previous report number 706864.

Method Index

Value	Description
T27	PLM

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Asbestos Quantification	T27	AR	0.001	%	SU	001





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Concept Life Sciences

Certificate of Analysis

16 Langlands Place
Kelvin South Business
Park
East Kilbride
G75 0YF
Tel : 01355 573340
Fax : 01355 573341

Report Number: 709955-1

Date of Report: 29-Jan-2018

Customer: Holequest
Winston Road
Galashiels
TD1 2DA

Customer Contact: Mr Craig Rodger

Customer Job Reference: 17/082

Customer Purchase Order: 17552

Customer Site Reference: Newton Stewart FPS

Date Job Received at Concept: 18-Jan-2018

Date Analysis Started: 22-Jan-2018

Date Analysis Completed: 29-Jan-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

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

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



1549

Report checked
and authorised by :
Ashleigh Cunningham
Customer Service Advisor

Issued by :
Ashleigh Cunningham
Customer Service Advisor

Index to symbols used in 709955-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
N.D.	Not Detected
13	Results have been blank corrected.
64	Analysis was performed by an alternative technique
9	LOD raised due to dilution of sample
68	Outside scope of UKAS accreditation
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

<p>GC/MS Headspace - sample 002 diluted due to poor internal standard recovery.</p> <p>Due to our recent instrument failure, water soluble boron results have been reported as unaccredited.</p> <p>These instrument delays are expected for a minimum of another week.</p> <p>The analytical method used here is identical to our accredited instrument, the only difference being that we have not issued analytical data to UKAS.</p> <p>All calibrations and QC samples have been analysed and are acceptable in accordance with our accredited method.</p>

Method Index

Value	Description
T112	ICP/OES (SIM)(Water Extract)
T27	PLM
T54	GC/MS (Headspace)
T2	Grav
T4	Colorimetry
T82	ICP/OES (Sim)
T85	Calc
T149	GC/MS (SIR)
T7	Probe
T686	Discrete Analyser
T8	GC/FID

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Cyanide(Total)	T4	AR	1	mg/kg	U	002
Cyanide(free)	T4	AR	1	mg/kg	U	002
Thiocyanate	T4	A40	10	mg/kg	N	002
Organic Matter	T2	A40	0.1	%	N	002
Arsenic	T82	A40	2	mg/kg	U	002
Mercury	T82	A40	1	mg/kg	U	002
Selenium	T82	A40	3	mg/kg	U	002
Boron (water-soluble)	T112	A40	1	mg/kg	U	002
Cadmium	T82	A40	1	mg/kg	U	002
Chromium (trivalent)	T85	AR	2	mg/kg	N	002
Chromium (hexavalent)	T82	A40	1	mg/kg	N	002
Copper	T82	A40	1	mg/kg	U	002
Lead	T82	A40	3	mg/kg	U	002
Nickel	T82	A40	1	mg/kg	U	002
Vanadium	T82	A40	1	mg/kg	U	002
Zinc	T82	A40	1	mg/kg	U	002
Asbestos ID	T27	AR			SU	002
pH	T7	A40			U	002
SO4(Total)	T82	A40	0.01	%	N	002
Chloride	T686	AR	1	mg/kg	N	002
Sulphide	T4	AR	10	mg/kg	N	002
Nitrate	T686	AR	1	mg/kg	N	002
Phenols(Mono)	T4	AR	1	mg/kg	U	002
Naphthalene	T149	AR	0.01	mg/kg	U	002
Acenaphthylene	T149	AR	0.01	mg/kg	U	002
Acenaphthene	T149	AR	0.01	mg/kg	U	002
Fluorene	T149	AR	0.01	mg/kg	U	002

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Phenanthrene	T149	AR	0.01	mg/kg	U	002
Anthracene	T149	AR	0.01	mg/kg	U	002
Fluoranthene	T149	AR	0.01	mg/kg	U	002
Pyrene	T149	AR	0.01	mg/kg	U	002
Benzo(a)Anthracene	T149	AR	0.01	mg/kg	U	002
Chrysene	T149	AR	0.01	mg/kg	U	002
Benzo(b)fluoranthene	T149	AR	0.01	mg/kg	U	002
Benzo(k)fluoranthene	T149	AR	0.01	mg/kg	U	002
Benzo(a)Pyrene	T149	AR	0.01	mg/kg	U	002
Indeno(123-cd)Pyrene	T149	AR	0.01	mg/kg	U	002
Dibenzo(ah)Anthracene	T149	AR	0.01	mg/kg	U	002
Benzo(ghi)Perylene	T149	AR	0.01	mg/kg	U	002
PAH(total)	T149	AR	0.01	mg/kg	U	002
Benzene	T54	AR	1	µg/kg	U	002
Toluene	T54	AR	1	µg/kg	U	002
EthylBenzene	T54	AR	1	µg/kg	U	002
M/P Xylene	T54	AR	1	µg/kg	U	002
O Xylene	T54	AR	1	µg/kg	U	002
Methyl tert-Butyl Ether	T54	AR	1	µg/kg	U	002
TPH (C5-C6 aliphatic)	T54	AR	10	µg/kg	N	002
TPH (C6-C8 aliphatic)	T54	AR	10	µg/kg	N	002
TPH (C8-C10 aliphatic)	T54	AR	10	µg/kg	N	002
TPH (C10-C12 aliphatic)	T8	AR	1	mg/kg	N	002
TPH (C12-C16 aliphatic)	T8	AR	1	mg/kg	N	002
TPH (C16-C21 aliphatic)	T8	AR	1	mg/kg	N	002
TPH (C21-C35 aliphatic)	T8	AR	1	mg/kg	N	002
TPH (C6-C7 aromatic)	T54	AR	10	µg/kg	N	002
TPH (C7-C8 aromatic)	T54	AR	10	µg/kg	N	002
TPH (C8-C10 aromatic)	T54	AR	10	µg/kg	N	002
TPH (C10-C12 aromatic)	T8	AR	1	mg/kg	N	002
TPH (C12-C16 aromatic)	T8	AR	1	mg/kg	N	002
TPH (C16-C21 aromatic)	T8	AR	1	mg/kg	N	002
TPH (C21-C35 aromatic)	T8	AR	1	mg/kg	N	002





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Certificate of Analysis

16 Langlands Place
Kelvin South Business
Park
East Kilbride
G75 0YF
Tel : 01355 573340
Fax : 01355 573341

Report Number: 710547-1

Date of Report: 29-Jan-2018

Customer: Holequest
Winston Road
Galashiels
TD1 2DA

Customer Contact: Mr Craig Rodger

Customer Job Reference: 17/082

Customer Purchase Order: 17552

Customer Site Reference: Newton Stewart FPS

Date Job Received at Concept: 20-Jan-2018

Date Analysis Started: 23-Jan-2018

Date Analysis Completed: 29-Jan-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

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

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



1549

Report checked
and authorised by :
Kimberley Macmaster
Customer Relations Manager

Issued by :
Kimberley Macmaster
Customer Relations Manager

Index to symbols used in 710547-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
N.D.	Not Detected
13	Results have been blank corrected.
64	Analysis was performed by an alternative technique
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Thiocyanate analysis was carried out by Concept Life Sciences Braintree.

Due to our recent instrument failure, water soluble boron results have been reported as unaccredited.

These instrument delays are expected for a minimum of another week.

The analytical method used here is identical to our accredited instrument, the only difference being that we have not issued analytical data to UKAS.

All calibrations and QC samples have been analysed and are acceptable in accordance with our accredited method.

Method Index

Value	Description
T7	Probe
T149	GC/MS (SIR)
T8	GC/FID
T2	Grav
T4	Colorimetry
T82	ICP/OES (Sim)
T112	ICP/OES (SIM)(Water Extract)
T686	Discrete Analyser
T27	PLM
T85	Calc

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Cyanide(Total)	T4	AR	1	mg/kg	U	004
Cyanide(free)	T4	AR	1	mg/kg	U	004
Thiocyanate	T4	A40	10	mg/kg	N	004
Organic Matter	T2	A40	0.1	%	N	004
Arsenic	T82	A40	2	mg/kg	U	004
Mercury	T82	A40	1	mg/kg	U	004
Selenium	T82	A40	3	mg/kg	U	004
Boron (water-soluble)	T112	A40	1	mg/kg	U	004
Cadmium	T82	A40	1	mg/kg	U	004
Chromium (trivalent)	T85	AR	2	mg/kg	N	004
Chromium (hexavalent)	T82	A40	1	mg/kg	N	004
Copper	T82	A40	1	mg/kg	U	004
Lead	T82	A40	3	mg/kg	U	004
Nickel	T82	A40	1	mg/kg	U	004
Vanadium	T82	A40	1	mg/kg	U	004
Zinc	T82	A40	1	mg/kg	U	004
Asbestos ID	T27	AR			SU	004
pH	T7	A40			U	004
SO4(Total)	T82	A40	0.01	%	N	004
Chloride	T686	AR	1	mg/kg	N	004
Sulphide	T4	AR	10	mg/kg	N	004
Nitrate	T686	AR	1	mg/kg	N	004
Phenols(Mono)	T4	AR	1	mg/kg	U	004
TPH (C8-C10)	T8	AR	1	mg/kg	N	004
TPH (C10-C12)	T8	AR	1	mg/kg	U	004
TPH (C12-C16)	T8	AR	1	mg/kg	U	004
TPH (C16-C21)	T8	AR	1	mg/kg	U	004
TPH (C21-C35)	T8	AR	1	mg/kg	U	004
Naphthalene	T149	AR	0.01	mg/kg	U	004
Acenaphthylene	T149	AR	0.01	mg/kg	U	004
Acenaphthene	T149	AR	0.01	mg/kg	U	004
Fluorene	T149	AR	0.01	mg/kg	U	004

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Phenanthrene	T149	AR	0.01	mg/kg	U	004
Anthracene	T149	AR	0.01	mg/kg	U	004
Fluoranthene	T149	AR	0.01	mg/kg	U	004
Pyrene	T149	AR	0.01	mg/kg	U	004
Benzo(a)Anthracene	T149	AR	0.01	mg/kg	U	004
Chrysene	T149	AR	0.01	mg/kg	U	004
Benzo(b)fluoranthene	T149	AR	0.01	mg/kg	U	004
Benzo(k)fluoranthene	T149	AR	0.01	mg/kg	U	004
Benzo(a)Pyrene	T149	AR	0.01	mg/kg	U	004
Indeno(123-cd)Pyrene	T149	AR	0.01	mg/kg	U	004
Dibenzo(ah)Anthracene	T149	AR	0.01	mg/kg	U	004
Benzo(ghi)Perylene	T149	AR	0.01	mg/kg	U	004
PAH(total)	T149	AR	0.01	mg/kg	U	004





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Certificate of Analysis

16 Langlands Place
Kelvin South Business
Park
East Kilbride
G75 0YF
Tel : 01355 573340
Fax : 01355 573341

Report Number: 712221-1

Date of Report: 07-Feb-2018

Customer: Holequest
Winston Road
Galashiels
TD1 2DA

Customer Contact: Mr Craig Rodger

Customer Job Reference: 17/082

Customer Purchase Order: 17552

Customer Site Reference: Newton Stewart FPS

Date Job Received at Concept: 24-Jan-2018

Date Analysis Started: 30-Jan-2018

Date Analysis Completed: 07-Feb-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

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

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



1549

Report checked
and authorised by :
Emma Hilton
Customer Service Advisor

Issued by :
Emma Hilton
Customer Service Advisor

Index to symbols used in 712221-1

Value	Description
A40	Assisted dried < 40C
AR	As Received
N.D.	Not Detected
64	Analysis was performed by an alternative technique
13	Results have been blank corrected.
9	LOD raised due to dilution of sample
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Pah soil- LOD has been raised for sample 003 due to sample consistency.
ICPOES analysis carried out at Concept Life Sciences Braintree.

Method Index

Value	Description
T4	Colorimetry
T82	ICP/OES (Sim)
T8	GC/FID
T27	PLM
T112	ICP/OES (SIM)(Water Extract)
T2	Grav
T7	Probe
T85	Calc
T149	GC/MS (SIR)
T686	Discrete Analyser

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Cyanide(Total)	T4	AR	1	mg/kg	U	001,003,006,014
Cyanide(free)	T4	AR	1	mg/kg	U	001,003,006,014
Thiocyanate	T4	A40	10	mg/kg	N	001,003,006,014
Organic Matter	T2	A40	0.1	%	N	001,003,006,014
Arsenic	T82	A40	2	mg/kg	U	001,003,006,014
Mercury	T82	A40	1	mg/kg	U	001,003,006,014
Selenium	T82	A40	3	mg/kg	U	001,003,006,014
Boron (water-soluble)	T112	A40	1	mg/kg	U	001,003,006,014
Cadmium	T82	A40	1	mg/kg	U	001,003,006,014
Chromium (trivalent)	T85	AR	2	mg/kg	N	001,003,006,014
Chromium (hexavalent)	T82	A40	1	mg/kg	N	001,003,006,014
Copper	T82	A40	1	mg/kg	U	001,003,006,014
Lead	T82	A40	3	mg/kg	U	001,003,006,014
Nickel	T82	A40	1	mg/kg	U	001,003,006,014
Vanadium	T82	A40	1	mg/kg	U	001,003,006,014
Zinc	T82	A40	1	mg/kg	U	001,003,006,014
Asbestos ID	T27	AR			SU	001,003,006,014
pH	T7	A40			U	001,003,006,014
SO4(Total)	T82	A40	0.01	%	N	001,003,006,014
Chloride	T686	AR	1	mg/kg	N	001,003,006,014
Sulphide	T4	AR	10	mg/kg	N	001,003,006,014
Nitrate	T686	AR	1	mg/kg	N	001,003,006,014
Phenols(Mono)	T4	AR	1	mg/kg	U	001,003,006,014
TPH (C8-C10)	T8	AR	1	mg/kg	N	001,003,006,014
TPH (C10-C12)	T8	AR	1	mg/kg	U	001,003,006,014
TPH (C12-C16)	T8	AR	1	mg/kg	U	001,003,006,014
TPH (C16-C21)	T8	AR	1	mg/kg	U	001,003,006,014
TPH (C21-C35)	T8	AR	1	mg/kg	U	001,003,006,014
Naphthalene	T149	AR	0.01	mg/kg	U	001,003,006,014
Acenaphthylene	T149	AR	0.01	mg/kg	U	001,003,006,014
Acenaphthene	T149	AR	0.01	mg/kg	U	001,003,006,014
Fluorene	T149	AR	0.01	mg/kg	U	001,003,006,014

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Phenanthrene	T149	AR	0.01	mg/kg	U	001,003,006,014
Anthracene	T149	AR	0.01	mg/kg	U	001,003,006,014
Fluoranthene	T149	AR	0.01	mg/kg	U	001,003,006,014
Pyrene	T149	AR	0.01	mg/kg	U	001,003,006,014
Benzo(a)Anthracene	T149	AR	0.01	mg/kg	U	001,003,006,014
Chrysene	T149	AR	0.01	mg/kg	U	001,003,006,014
Benzo(b)fluoranthene	T149	AR	0.01	mg/kg	U	001,003,006,014
Benzo(k)fluoranthene	T149	AR	0.01	mg/kg	U	001,003,006,014
Benzo(a)Pyrene	T149	AR	0.01	mg/kg	U	001,003,006,014
Indeno(123-cd)Pyrene	T149	AR	0.01	mg/kg	U	001,003,006,014
Dibenzo(ah)Anthracene	T149	AR	0.01	mg/kg	U	001,003,006,014
Benzo(ghi)Perylene	T149	AR	0.01	mg/kg	U	001,003,006,014
PAH(total)	T149	AR	0.01	mg/kg	U	001,003,006,014





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Concept Life Sciences

Certificate of Analysis

16 Langlands Place
Kelvin South Business
Park
East Kilbride
G75 0YF
Tel : 01355 573340
Fax : 01355 573341

Report Number: 712932-1

Date of Report: 13-Feb-2018

Customer: Holequest
Winston Road
Galashiels
TD1 2DA

Customer Contact: Mr Craig Rodger

Customer Job Reference: 17/082

Customer Purchase Order: 17552

Customer Site Reference: Newton Stewart FPS

Date Job Received at Concept: 26-Jan-2018

Date Analysis Started: 02-Feb-2018

Date Analysis Completed: 12-Feb-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

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

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



1549

Report checked
and authorised by :
Ashleigh Cunningham
Customer Service Advisor

Issued by :
Ashleigh Cunningham
Customer Service Advisor

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Cyanide(Total)	T4	AR	1	mg/kg	U	002,009,020
Cyanide(free)	T4	AR	1	mg/kg	U	002,009,020
Thiocyanate	T4	A40	10	mg/kg	N	002,009,020
Organic Matter	T2	A40	0.1	%	N	002,009,020
Arsenic	T82	A40	2	mg/kg	U	002,009,020
Mercury	T82	A40	1	mg/kg	U	002,009,020
Selenium	T82	A40	3	mg/kg	U	002,009,020
Boron (water-soluble)	T112	A40	1	mg/kg	U	002,009,020
Cadmium	T82	A40	1	mg/kg	U	002,009,020
Chromium (trivalent)	T85	AR	2	mg/kg	N	002,009,020
Chromium (hexavalent)	T82	A40	1	mg/kg	N	002,009,020
Copper	T82	A40	1	mg/kg	U	002,009,020
Lead	T82	A40	3	mg/kg	U	002,009,020
Nickel	T82	A40	1	mg/kg	U	002,009,020
Vanadium	T82	A40	1	mg/kg	U	002,009,020
Zinc	T82	A40	1	mg/kg	U	002,009,020
Asbestos ID	T27	AR			SU	002,009,020
pH	T7	A40			U	002,009,020
SO4(Total)	T82	A40	0.01	%	N	002,009,020
Chloride	T686	AR	1	mg/kg	N	002,009,020
Sulphide	T4	A40	10	mg/kg	N	002,009,020
Nitrate	T686	AR	1	mg/kg	N	002,009,020
Phenols(Mono)	T4	AR	1	mg/kg	U	002,009,020
TPH (C8-C10)	T8	AR	1	mg/kg	N	002,020
TPH (C10-C12)	T8	AR	1	mg/kg	U	002,020
TPH (C12-C16)	T8	AR	1	mg/kg	U	002,020
TPH (C16-C21)	T8	AR	1	mg/kg	U	002,020
TPH (C21-C35)	T8	AR	1	mg/kg	U	002,020
Naphthalene	T149	AR	0.01	mg/kg	U	002,009,020
Acenaphthylene	T149	AR	0.01	mg/kg	U	002,009,020
Acenaphthene	T149	AR	0.01	mg/kg	U	002,009,020
Fluorene	T149	AR	0.01	mg/kg	U	002,009,020
Phenanthrene	T149	AR	0.01	mg/kg	U	002,009,020
Anthracene	T149	AR	0.01	mg/kg	U	002,009,020
Fluoranthene	T149	AR	0.01	mg/kg	U	002,009,020
Pyrene	T149	AR	0.01	mg/kg	U	002,009,020
Benzo(a)Anthracene	T149	AR	0.01	mg/kg	U	002,009,020
Chrysene	T149	AR	0.01	mg/kg	U	002,009,020
Benzo(b)fluoranthene	T149	AR	0.01	mg/kg	U	002,009,020
Benzo(k)fluoranthene	T149	AR	0.01	mg/kg	U	002,009,020
Benzo(a)Pyrene	T149	AR	0.01	mg/kg	U	002,009,020
Indeno(123-cd)Pyrene	T149	AR	0.01	mg/kg	U	002,009,020
Dibenzo(ah)Anthracene	T149	AR	0.01	mg/kg	U	002,009,020
Benzo(ghi)Perylene	T149	AR	0.01	mg/kg	U	002,009,020
PAH(total)	T149	AR	0.01	mg/kg	U	002,009,020
Benzene	T54	AR	1	µg/kg	U	009
Toluene	T54	AR	1	µg/kg	U	009
EthylBenzene	T54	AR	1	µg/kg	U	009
M/P Xylene	T54	AR	1	µg/kg	U	009
O Xylene	T54	AR	1	µg/kg	U	009
Methyl tert-Butyl Ether	T54	AR	1	µg/kg	U	009
TPH (C5-C6 aliphatic)	T54	AR	10	µg/kg	N	009
TPH (C6-C8 aliphatic)	T54	AR	10	µg/kg	N	009
TPH (C8-C10 aliphatic)	T54	AR	10	µg/kg	N	009
TPH (C10-C12 aliphatic)	T8	AR	1	mg/kg	N	009
TPH (C12-C16 aliphatic)	T8	AR	1	mg/kg	N	009
TPH (C16-C21 aliphatic)	T8	AR	1	mg/kg	N	009
TPH (C21-C35 aliphatic)	T8	AR	1	mg/kg	N	009
TPH (C6-C7 aromatic)	T54	AR	10	µg/kg	N	009
TPH (C7-C8 aromatic)	T54	AR	10	µg/kg	N	009
TPH (C8-C10 aromatic)	T54	AR	10	µg/kg	N	009
TPH (C10-C12 aromatic)	T8	AR	1	mg/kg	N	009
TPH (C12-C16 aromatic)	T8	AR	1	mg/kg	N	009
TPH (C16-C21 aromatic)	T8	AR	1	mg/kg	N	009
TPH (C21-C35 aromatic)	T8	AR	1	mg/kg	N	009



CONCEPT LIFE SCIENCES
DELIVERING SCIENCE

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Services Limited registered in England and
Wales (No 2514788)

Concept Life Sciences

Certificate of Analysis

16 Langlands Place
Kelvin South Business
Park
East Kilbride
G75 0YF
Tel : 01355 573340
Fax : 01355 573341

Report Number: 714275-1

Date of Report: 19-Feb-2018

Customer: Holequest
Winston Road
Galashiels
TD1 2DA

Customer Contact: Mr Craig Rodger

Customer Job Reference: 17/082

Customer Purchase Order: 17552

Customer Site Reference: Newton Stewart FPS

Date Job Received at Concept: 30-Jan-2018

Date Analysis Started: 08-Feb-2018

Date Analysis Completed: 16-Feb-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

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

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



1549

Report checked
and authorised by :
Ashleigh Cunningham
Customer Service Advisor

Issued by :
Ashleigh Cunningham
Customer Service Advisor

Concept Reference: 714275					
Project Site: Newton Stewart FPS					
Customer Reference: 17/082					
Soil Analysed as Soil					
Total and Speciated USEPA16 PAH (EK)					
Concept Reference					714275 005
Customer Sample Reference					TP3-OP6 0.5m
Date Sampled					26-JAN-2018
Determinand	Method	Test Sample	LOD	Units	
Naphthalene	T149	AR	0.01	mg/kg	0.06
Acenaphthylene	T149	AR	0.01	mg/kg	0.47
Acenaphthene	T149	AR	0.01	mg/kg	⁽⁹⁾ <0.05
Fluorene	T149	AR	0.01	mg/kg	0.08
Phenanthrene	T149	AR	0.01	mg/kg	1.0
Anthracene	T149	AR	0.01	mg/kg	0.52
Fluoranthene	T149	AR	0.01	mg/kg	3.5
Pyrene	T149	AR	0.01	mg/kg	3.2
Benzo(a)Anthracene	T149	AR	0.01	mg/kg	2.3
Chrysene	T149	AR	0.01	mg/kg	2.2
Benzo(b)fluoranthene	T149	AR	0.01	mg/kg	3.7
Benzo(k)fluoranthene	T149	AR	0.01	mg/kg	1.3
Benzo(a)Pyrene	T149	AR	0.01	mg/kg	2.6
Indeno(123-cd)Pyrene	T149	AR	0.01	mg/kg	1.3
Dibenzo(ah)Anthracene	T149	AR	0.01	mg/kg	0.29
Benzo(ghi)Perylene	T149	AR	0.01	mg/kg	1.6
PAH(total)	T149	AR	0.01	mg/kg	24

Index to symbols used in 714275-1

Value	Description
A40	Assisted dried < 40C
AR	As Received
N.D.	Not Detected
9	LOD raised due to dilution of sample
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

PAH soil - sample diluted to bring within calibration range.

Method Index

Value	Description
T27	PLM
T7	Probe
T82	ICP/OES (Sim)
T686	Discrete Analyser
T112	ICP/OES (SIM)(Water Extract)
T149	GC/MS (SIR)
T2	Grav
T8	GC/FID
T4	Colorimetry
T85	Calc

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Cyanide(Total)	T4	AR	1	mg/kg	U	005
Cyanide(free)	T4	AR	1	mg/kg	U	005
Thiocyanate	T4	A40	10	mg/kg	N	005
Organic Matter	T2	A40	0.1	%	N	005
Arsenic	T82	A40	2	mg/kg	U	005

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Mercury	T82	A40	1	mg/kg	U	005
Selenium	T82	A40	3	mg/kg	U	005
Boron (water-soluble)	T112	A40	1	mg/kg	U	005
Cadmium	T82	A40	1	mg/kg	U	005
Chromium (trivalent)	T85	AR	2	mg/kg	N	005
Chromium (hexavalent)	T82	A40	1	mg/kg	N	005
Copper	T82	A40	1	mg/kg	U	005
Lead	T82	A40	3	mg/kg	U	005
Nickel	T82	A40	1	mg/kg	U	005
Vanadium	T82	A40	1	mg/kg	U	005
Zinc	T82	A40	1	mg/kg	U	005
Asbestos ID	T27	AR			SU	005
pH	T7	A40			U	005
SO4(Total)	T82	A40	0.01	%	N	005
Chloride	T686	AR	1	mg/kg	N	005
Sulphide	T4	A40	10	mg/kg	N	005
Nitrate	T686	AR	1	mg/kg	N	005
Phenols(Mono)	T4	AR	1	mg/kg	U	005
TPH (C8-C10)	T8	AR	1	mg/kg	N	005
TPH (C10-C12)	T8	AR	1	mg/kg	U	005
TPH (C12-C16)	T8	AR	1	mg/kg	U	005
TPH (C16-C21)	T8	AR	1	mg/kg	U	005
TPH (C21-C35)	T8	AR	1	mg/kg	U	005
Naphthalene	T149	AR	0.01	mg/kg	U	005
Acenaphthylene	T149	AR	0.01	mg/kg	U	005
Acenaphthene	T149	AR	0.01	mg/kg	U	005
Fluorene	T149	AR	0.01	mg/kg	U	005
Phenanthrene	T149	AR	0.01	mg/kg	U	005
Anthracene	T149	AR	0.01	mg/kg	U	005
Fluoranthene	T149	AR	0.01	mg/kg	U	005
Pyrene	T149	AR	0.01	mg/kg	U	005
Benzo(a)Anthracene	T149	AR	0.01	mg/kg	U	005
Chrysene	T149	AR	0.01	mg/kg	U	005
Benzo(b)fluoranthene	T149	AR	0.01	mg/kg	U	005
Benzo(k)fluoranthene	T149	AR	0.01	mg/kg	U	005
Benzo(a)Pyrene	T149	AR	0.01	mg/kg	U	005
Indeno(123-cd)Pyrene	T149	AR	0.01	mg/kg	U	005
Dibenzo(ah)Anthracene	T149	AR	0.01	mg/kg	U	005
Benzo(ghi)Perylene	T149	AR	0.01	mg/kg	U	005
PAH(total)	T149	AR	0.01	mg/kg	U	005



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Concept Life Sciences

Certificate of Analysis

16 Langlands Place
Kelvin South Business
Park
East Kilbride
G75 0YF
Tel : 01355 573340
Fax : 01355 573341

Report Number: 714291-1

Date of Report: 19-Feb-2018

Customer: Holequest
Winston Road
Galashiels
TD1 2DA

Customer Contact: Mr Craig Rodger

Customer Job Reference: 17/082

Customer Purchase Order: 17552

Customer Site Reference: Newton Stewart FPS

Date Job Received at Concept: 30-Jan-2018

Date Analysis Started: 08-Feb-2018

Date Analysis Completed: 19-Feb-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

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

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



1549

Report checked
and authorised by :
Ashleigh Cunningham
Customer Service Advisor

Issued by :
Ashleigh Cunningham
Customer Service Advisor

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Arsenic	T82	A40	2	mg/kg	U	001,013
Mercury	T82	A40	1	mg/kg	U	001,013
Selenium	T82	A40	3	mg/kg	U	001,013
Boron (water-soluble)	T112	A40	1	mg/kg	U	001,013
Cadmium	T82	A40	1	mg/kg	U	001,013
Chromium (trivalent)	T85	AR	2	mg/kg	N	001,013
Chromium (hexavalent)	T82	A40	1	mg/kg	N	001,013
Copper	T82	A40	1	mg/kg	U	001,013
Lead	T82	A40	3	mg/kg	U	001,013
Nickel	T82	A40	1	mg/kg	U	001,013
Vanadium	T82	A40	1	mg/kg	U	001,013
Zinc	T82	A40	1	mg/kg	U	001,013
Asbestos ID	T27	AR			SU	001,013
pH	T7	A40			U	001,013
SO4(Total)	T82	A40	0.01	%	N	001,013
Chloride	T686	AR	1	mg/kg	N	001,013
Sulphide	T4	A40	10	mg/kg	N	001,013
Nitrate	T686	AR	1	mg/kg	N	001,013
Phenols(Mono)	T4	AR	1	mg/kg	U	001,013
TPH (C8-C10)	T8	AR	1	mg/kg	N	001,013
TPH (C10-C12)	T8	AR	1	mg/kg	U	001,013
TPH (C12-C16)	T8	AR	1	mg/kg	U	001,013
TPH (C16-C21)	T8	AR	1	mg/kg	U	001,013
TPH (C21-C35)	T8	AR	1	mg/kg	U	001,013
Naphthalene	T149	AR	0.01	mg/kg	U	001,013
Acenaphthylene	T149	AR	0.01	mg/kg	U	001,013
Acenaphthene	T149	AR	0.01	mg/kg	U	001,013
Fluorene	T149	AR	0.01	mg/kg	U	001,013
Phenanthrene	T149	AR	0.01	mg/kg	U	001,013
Anthracene	T149	AR	0.01	mg/kg	U	001,013
Fluoranthene	T149	AR	0.01	mg/kg	U	001,013
Pyrene	T149	AR	0.01	mg/kg	U	001,013
Benzo(a)Anthracene	T149	AR	0.01	mg/kg	U	001,013
Chrysene	T149	AR	0.01	mg/kg	U	001,013
Benzo(b)fluoranthene	T149	AR	0.01	mg/kg	U	001,013
Benzo(k)fluoranthene	T149	AR	0.01	mg/kg	U	001,013
Benzo(a)Pyrene	T149	AR	0.01	mg/kg	U	001,013
Indeno(123-cd)Pyrene	T149	AR	0.01	mg/kg	U	001,013
Dibenzo(ah)Anthracene	T149	AR	0.01	mg/kg	U	001,013
Benzo(ghi)Perylene	T149	AR	0.01	mg/kg	U	001,013
PAH(total)	T149	AR	0.01	mg/kg	U	001,013



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Certificate of Analysis

16 Langlands Place
Kelvin South Business
Park
East Kilbride
G75 0YF
Tel : 01355 573340
Fax : 01355 573341

Report Number: 715241-1

Date of Report: 21-Feb-2018

Customer: Holequest
Winston Road
Galashiels
TD1 2DA

Customer Contact: Mr Fraser Murray

Customer Job Reference: 17/082

Customer Purchase Order: 17552

Customer Site Reference: Newton Stewart FPS

Date Job Received at Concept: 08-Feb-2018

Date Analysis Started: 13-Feb-2018

Date Analysis Completed: 21-Feb-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

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

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



1549

Report checked
and authorised by :
Emma Hilton
Customer Service Advisor

Issued by :
Emma Hilton
Customer Service Advisor

Index to symbols used in 715241-1

Value	Description
A40	Assisted dried < 40C
AR	As Received
N.D.	Not Detected
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Sulphide, cyanide and phenols analysis carried out at Concept Life Sciences Braintree.

Method Index

Value	Description
T4	Colorimetry
T112	ICP/OES (SIM)(Water Extract)
T82	ICP/OES (Sim)
T85	Calc
T149	GC/MS (SIR)
T686	Discrete Analyser
T2	Grav
T8	GC/FID
T27	PLM
T7	Probe

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Cyanide(Total)	T4	AR	1	mg/kg	U	020,030
Cyanide(free)	T4	AR	1	mg/kg	U	020,030
Thiocyanate	T4	A40	10	mg/kg	N	020,030
Organic Matter	T2	A40	0.1	%	N	020,030
Arsenic	T82	A40	2	mg/kg	U	020,030
Mercury	T82	A40	1	mg/kg	U	020,030
Selenium	T82	A40	3	mg/kg	U	020,030
Boron (water-soluble)	T112	A40	1	mg/kg	U	020,030
Cadmium	T82	A40	1	mg/kg	U	020,030
Chromium (trivalent)	T85	AR	2	mg/kg	N	020,030
Chromium (hexavalent)	T82	A40	1	mg/kg	N	020,030
Copper	T82	A40	1	mg/kg	U	020,030
Lead	T82	A40	3	mg/kg	U	020,030
Nickel	T82	A40	1	mg/kg	U	020,030
Vanadium	T82	A40	1	mg/kg	U	020,030
Zinc	T82	A40	1	mg/kg	U	020,030
Asbestos ID	T27	AR			SU	020,030
pH	T7	A40			U	020,030
SO4(Total)	T82	A40	0.01	%	N	020,030
Chloride	T686	AR	1	mg/kg	N	020,030
Sulphide	T4	A40	10	mg/kg	N	020,030
Nitrate	T686	AR	1	mg/kg	N	020,030
Phenols(Mono)	T4	AR	1	mg/kg	U	020,030
TPH (C8-C10)	T8	AR	1	mg/kg	N	020,030
TPH (C10-C12)	T8	AR	1	mg/kg	U	020,030
TPH (C12-C16)	T8	AR	1	mg/kg	U	020,030
TPH (C16-C21)	T8	AR	1	mg/kg	U	020,030
TPH (C21-C35)	T8	AR	1	mg/kg	U	020,030
Naphthalene	T149	AR	0.01	mg/kg	U	020,030
Acenaphthylene	T149	AR	0.01	mg/kg	U	020,030
Acenaphthene	T149	AR	0.01	mg/kg	U	020,030
Fluorene	T149	AR	0.01	mg/kg	U	020,030
Phenanthrene	T149	AR	0.01	mg/kg	U	020,030
Anthracene	T149	AR	0.01	mg/kg	U	020,030
Fluoranthene	T149	AR	0.01	mg/kg	U	020,030
Pyrene	T149	AR	0.01	mg/kg	U	020,030

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Benzo(a)Anthracene	T149	AR	0.01	mg/kg	U	020,030
Chrysene	T149	AR	0.01	mg/kg	U	020,030
Benzo(b)fluoranthene	T149	AR	0.01	mg/kg	U	020,030
Benzo(k)fluoranthene	T149	AR	0.01	mg/kg	U	020,030
Benzo(a)Pyrene	T149	AR	0.01	mg/kg	U	020,030
Indeno(123-cd)Pyrene	T149	AR	0.01	mg/kg	U	020,030
Dibenzo(ah)Anthracene	T149	AR	0.01	mg/kg	U	020,030
Benzo(ghi)Perylene	T149	AR	0.01	mg/kg	U	020,030
PAH(total)	T149	AR	0.01	mg/kg	U	020,030





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Certificate of Analysis

16 Langlands Place
Kelvin South Business
Park
East Kilbride
G75 0YF
Tel : 01355 573340
Fax : 01355 573341

Report Number: 716422-1

Date of Report: 05-Mar-2018

Customer: Holequest
Winston Road
Galashiels
TD1 2DA

Customer Contact: Mr Fraser Murray

Customer Job Reference: 17/082

Customer Purchase Order: 17552

Customer Site Reference: Newton Stewart FPS

Date Job Received at Concept: 14-Feb-2018

Date Analysis Started: 19-Feb-2018

Date Analysis Completed: 05-Mar-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

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Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



1549

Report checked
and authorised by :
Kimberley Macmaster
Customer Relations Manager

Issued by :
Kimberley Macmaster
Customer Relations Manager

Index to symbols used in 716422-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
N.D.	Not Detected
13	Results have been blank corrected.
9	LOD raised due to dilution of sample
S	Analysis was subcontracted
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Cyanide and Phenols analysis was performed at Concept Life Sciences Manchester.
PAH soils - samples diluted due to sample consistency.

Method Index

Value	Description
T27	PLM
T85	Calc
T149	GC/MS (SIR)
T686	Discrete Analyser
T4	Colorimetry
T2	Grav
T112	ICP/OES (SIM)(Water Extract)
T7	Probe
T8	GC/FID
T82	ICP/OES (Sim)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Cyanide(Total)	T4	AR	1	mg/kg	U	001-003,006
Cyanide(free)	T4	AR	1	mg/kg	U	001-003,006
Thiocyanate	T4	A40	10	mg/kg	N	001-003,006
Organic Matter	T2	A40	0.1	%	N	001-003,006
Arsenic	T82	A40	2	mg/kg	U	001-003,006
Mercury	T82	A40	1	mg/kg	U	001-003,006
Selenium	T82	A40	3	mg/kg	U	001-003,006
Boron (water-soluble)	T112	A40	1	mg/kg	U	001-003,006
Cadmium	T82	A40	1	mg/kg	U	001-003,006
Chromium (trivalent)	T85	AR	2	mg/kg	N	001-003,006
Chromium (hexavalent)	T82	A40	1	mg/kg	N	001-003,006
Copper	T82	A40	1	mg/kg	U	001-003,006
Lead	T82	A40	3	mg/kg	U	001-003,006
Nickel	T82	A40	1	mg/kg	U	001-003,006
Vanadium	T82	A40	1	mg/kg	U	001-003,006
Zinc	T82	A40	1	mg/kg	U	001-003,006
Asbestos ID	T27	AR			SU	001-003,006
pH	T7	A40			U	001-003,006
SO4(Total)	T82	A40	0.01	%	N	001-003,006
Chloride	T686	AR	1	mg/kg	N	001-003,006
Sulphide	T4	A40	10	mg/kg	N	001-003,006
Nitrate	T686	AR	1	mg/kg	N	001-003,006
Phenols(Mono)	T4	AR	1	mg/kg	U	001-003,006
TPH (C8-C10)	T8	AR	1	mg/kg	N	001-003,006
TPH (C10-C12)	T8	AR	1	mg/kg	U	001-003,006
TPH (C12-C16)	T8	AR	1	mg/kg	U	001-003,006
TPH (C16-C21)	T8	AR	1	mg/kg	U	001-003,006
TPH (C21-C35)	T8	AR	1	mg/kg	U	001-003,006
Naphthalene	T149	AR	0.01	mg/kg	U	001-003,006
Acenaphthylene	T149	AR	0.01	mg/kg	U	001-003,006
Acenaphthene	T149	AR	0.01	mg/kg	U	001-003,006
Fluorene	T149	AR	0.01	mg/kg	U	001-003,006
Phenanthrene	T149	AR	0.01	mg/kg	U	001-003,006

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Anthracene	T149	AR	0.01	mg/kg	U	001-003,006
Fluoranthene	T149	AR	0.01	mg/kg	U	001-003,006
Pyrene	T149	AR	0.01	mg/kg	U	001-003,006
Benzo(a)Anthracene	T149	AR	0.01	mg/kg	U	001-003,006
Chrysene	T149	AR	0.01	mg/kg	U	001-003,006
Benzo(b)fluoranthene	T149	AR	0.01	mg/kg	U	001-003,006
Benzo(k)fluoranthene	T149	AR	0.01	mg/kg	U	001-003,006
Benzo(a)Pyrene	T149	AR	0.01	mg/kg	U	001-003,006
Indeno(123-cd)Pyrene	T149	AR	0.01	mg/kg	U	001-003,006
Dibenzo(ah)Anthracene	T149	AR	0.01	mg/kg	U	001-003,006
Benzo(ghi)Perylene	T149	AR	0.01	mg/kg	U	001-003,006
PAH(total)	T149	AR	0.01	mg/kg	U	001-003,006





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Certificate of Analysis

16 Langlands Place
Kelvin South Business
Park
East Kilbride
G75 0YF
Tel : 01355 573340
Fax : 01355 573341

Report Number: 707561-1

Date of Report: 16-Jan-2018

Customer: Holequest
Winston Road
Galashiels
TD1 2DA

Customer Contact: Mr Craig Rodger

Customer Job Reference: 17/082

Customer Purchase Order: 17570

Customer Site Reference: Newton Stewart FPS

Date Job Received at Concept: 09-Jan-2018

Date Analysis Started: 09-Jan-2018

Date Analysis Completed: 16-Jan-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

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Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



1549

Report checked
and authorised by :
Ashleigh Cunningham
Customer Service Advisor

Issued by :
Ashleigh Cunningham
Customer Service Advisor

T102	ICP/OES (HCl extract)
T2	Grav

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Organic Matter	T2	A40	0.1	%	N	001-003,005,007
Ammonia expressed as NH4	T686	2:1	0.05	mg/l	U	004,006,008-009
Chloride	T686	2:1	1	mg/l	U	004,006,008-009
Magnesium	T82	2:1	1	mg/l	N	004,006,008-009
Nitrate	T686	2:1	0.5	mg/l	U	004,006,008-009
Sulphate	T82	2:1	10	mg/l	N	004,006,008-009
pH	T7	A40			U	004,006,008-009
SO4(Total)	T102	AR	0.01	%	N	004,006,008-009
Sulphur (total)	T6	A40	0.01	%	N	004,006,008-009





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Concept Life Sciences

Certificate of Analysis

16 Langlands Place
Kelvin South Business
Park
East Kilbride
G75 0YF
Tel : 01355 573340
Fax : 01355 573341

Report Number: 720972-1

Date of Report: 19-Mar-2018

Customer: Holequest
Winston Road
Galashiels
TD1 2DA

Customer Contact: Mr Craig Rodger

Customer Job Reference: 17/082

Customer Purchase Order: 17738

Customer Site Reference: Newton Stewart FPS

Date Job Received at Concept: 08-Mar-2018

Date Analysis Started: 11-Mar-2018

Date Analysis Completed: 19-Mar-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

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

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



1549

Report checked
and authorised by :
Emma Hilton
Customer Service Advisor

Issued by :
Emma Hilton
Customer Service Advisor

Concept Reference: 720972														
Project Site: Newton Stewart FPS														
Customer Reference: 17/082														
Soil		Analysed as Soil												
Miscellaneous														
		Concept Reference		720972 005		720972 006		720972 010		720972 011		720972 012		
		Customer Sample Reference		TP13-OP6 0.4m		TPW1-OP6 0.2m		TP2-OP6 0.4m		TP2-OP7 2.5m		TP4-OP7 0.8m		
		Date Sampled		06-MAR-2018		06-MAR-2018		06-MAR-2018		06-MAR-2018		06-MAR-2018		
Determinand		Method	Test Sample	LOD	Units									
Organic Matter		T2	A40	0.1	%	2.1		13.0		2.7		4.6		1.4

Concept Reference: 720972														
Project Site: Newton Stewart FPS														
Customer Reference: 17/082														
Soil		Analysed as Soil												
Miscellaneous														
		Concept Reference		720972 014		720972 015		720972 021		720972 022		720972 024		
		Customer Sample Reference		TP9-OP6 0.5m		TP9-OP6 1.0m		BH11-OP6 0.9m		BH11-OP6 1.3m		BH12-OP6 0.5m		
		Date Sampled		06-MAR-2018		06-MAR-2018		06-MAR-2018		06-MAR-2018		06-MAR-2018		
Determinand		Method	Test Sample	LOD	Units									
Organic Matter		T2	A40	0.1	%	6.9		5.0		4.9		1.5		0.8

Concept Reference: 720972									
Project Site: Newton Stewart FPS									
Customer Reference: 17/082									
Soil		Analysed as Soil							
Miscellaneous									
		Concept Reference		720972 025		720972 026			
		Customer Sample Reference		BH13-OP6 0.5m		BH14-OP6 2.8m			
		Date Sampled		06-MAR-2018		06-MAR-2018			
Determinand		Method	Test Sample	LOD	Units				
Organic Matter		T2	A40	0.1	%	1.7		0.5	

Concept Reference: 720972									
Project Site: Newton Stewart FPS									
Customer Reference: 17/082									
Soil					Analysed as Soil				
Soil Suite									
Concept Reference					720972 001	720972 002	720972 003	720972 004	720972 007
Customer Sample Reference					HP10-OP6 0.2m	HP11-OP6 0.2m	HP12-OP6 0.2m	TP12-OP7 0.6m	HP1-OP6 0.2m
Date Sampled					06-MAR-2018	06-MAR-2018	06-MAR-2018	06-MAR-2018	06-MAR-2018
Determinand	Method	Test Sample	LOD	Units					
Leach Prep (2:1)	T2	AR			Extracted	Extracted	Extracted	Extracted	Extracted
pH	T7	A40			5.9	7.4	6.4	6.6	8.4
(Acid Soluble) SO4	T192	A40	0.01	%	0.08	0.16	0.12	0.04	0.18
Sulphur (total)	T6	A40	0.01	%	0.03	0.07	0.07	0.02	0.09

Concept Reference: 720972									
Project Site: Newton Stewart FPS									
Customer Reference: 17/082									
Soil					Analysed as Soil				
Soil Suite									
Concept Reference					720972 008	720972 009	720972 010	720972 013	720972 014
Customer Sample Reference					HP2-OP7 1.0m	HP8-OP6 0.2m	TP2-OP6 0.4m	TP7-OP6 0.7m	TP9-OP6 0.5m
Date Sampled					06-MAR-2018	06-MAR-2018	06-MAR-2018	06-MAR-2018	06-MAR-2018
Determinand	Method	Test Sample	LOD	Units					
Leach Prep (2:1)	T2	AR			Extracted	Extracted	Extracted	Extracted	Extracted
pH	T7	A40			7.8	7.7	7.9	6.9	6.3
(Acid Soluble) SO4	T192	A40	0.01	%	0.02	0.12	0.19	0.05	0.12
Sulphur (total)	T6	A40	0.01	%	<0.01	0.10	0.07	0.03	0.05

Concept Reference: 720972									
Project Site: Newton Stewart FPS									
Customer Reference: 17/082									
Soil					Analysed as Soil				
Soil Suite									
Concept Reference					720972 016	720972 017	720972 018	720972 019	720972 020
Customer Sample Reference					BH1-OP6 0.5m	BH4-OP6 0.5m	BH5-OP6 0.2m	BH7-OP6 1.0m	BH8-OP6 0.5m
Date Sampled					06-MAR-2018	06-MAR-2018	06-MAR-2018	06-MAR-2018	06-MAR-2018
Determinand	Method	Test Sample	LOD	Units					
Leach Prep (2:1)	T2	AR			Extracted	Extracted	Extracted	Extracted	Extracted
pH	T7	A40			7.1	7.8	11.8	8.1	7.2
(Acid Soluble) SO4	T192	A40	0.01	%	0.09	0.18	0.28	0.12	0.07
Sulphur (total)	T6	A40	0.01	%	0.05	0.07	0.12	0.04	0.04

Concept Reference: 720972										
Project Site: Newton Stewart FPS										
Customer Reference: 17/082										
Soil					Analysed as Soil					
Soil Suite										
Concept Reference					720972 021	720972 023	720972 027			
Customer Sample Reference					BH11-OP6 0.9m	BH12-OP6 0.2m	BH1-OP7 1.3m			
Date Sampled					06-MAR-2018	06-MAR-2018	06-MAR-2018			
Determinand	Method	Test Sample	LOD	Units						
Leach Prep (2:1)	T2	AR			Extracted	Extracted	Extracted			
pH	T7	A40			6.0	6.8	7.0			
(Acid Soluble) SO4	T192	A40	0.01	%	0.08	0.07	0.03			
Sulphur (total)	T6	A40	0.01	%	0.03	0.03	0.02			

Concept Reference: 720972										
Project Site: Newton Stewart FPS										
Customer Reference: 17/082										
Leachate 2:1					Analysed as Water					
Suite A										
Concept Reference					720972 001	720972 002	720972 003	720972 004	720972 007	
Customer Sample Reference					HP10-OP6 0.2m	HP11-OP6 0.2m	HP12-OP6 0.2m	TP12-OP7 0.6m	HP1-OP6 0.2m	
Date Sampled					06-MAR-2018	06-MAR-2018	06-MAR-2018	06-MAR-2018	06-MAR-2018	
Determinand	Method	Test Sample	LOD	Units						
Ammonia expressed as NH4	T686	2:1	0.05	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	
Chloride	T686	2:1	1	mg/l	1	9	2	<1	<1	
Magnesium	T82	2:1	1	mg/l	2	4	3	1	1	
Nitrate	T686	2:1	0.5	mg/l	2.0	11	10	3.5	2.3	
Dissolved SO4(Total)	T285	2:1	10	mg/l	<10	30	11	<10	<10	

Concept Reference: 720972										
Project Site: Newton Stewart FPS										
Customer Reference: 17/082										
Leachate 2:1					Analysed as Water					
Suite A										
Concept Reference					720972 008	720972 009	720972 010	720972 013	720972 014	
Customer Sample Reference					HP2-OP7 1.0m	HP8-OP6 0.2m	TP2-OP6 0.4m	TP7-OP6 0.7m	TP9-OP6 0.5m	
Date Sampled					06-MAR-2018	06-MAR-2018	06-MAR-2018	06-MAR-2018	06-MAR-2018	
Determinand	Method	Test Sample	LOD	Units						
Ammonia expressed as NH4	T686	2:1	0.05	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	
Chloride	T686	2:1	1	mg/l	1	1	<1	2	2	
Magnesium	T82	2:1	1	mg/l	5	3	2	<1	4	
Nitrate	T686	2:1	0.5	mg/l	1.3	19	1.9	6.5	13	
Dissolved SO4(Total)	T285	2:1	10	mg/l	<10	38	<10	<10	21	

Concept Reference: 720972										
Project Site: Newton Stewart FPS										
Customer Reference: 17/082										
Leachate 2:1					Analysed as Water					
Suite A										
Concept Reference					720972 016	720972 017	720972 018	720972 019	720972 020	
Customer Sample Reference					BH1-OP6 0.5m	BH4-OP6 0.5m	BH5-OP6 0.2m	BH7-OP6 1.0m	BH8-OP6 0.5m	
Date Sampled					06-MAR-2018	06-MAR-2018	06-MAR-2018	06-MAR-2018	06-MAR-2018	
Determinand	Method	Test Sample	LOD	Units						
Ammonia expressed as NH4	T686	2:1	0.05	mg/l	<0.05	<0.05	0.11	<0.05	<0.05	
Chloride	T686	2:1	1	mg/l	1	1	15	9	2	
Magnesium	T82	2:1	1	mg/l	2	<1	<1	<1	2	
Nitrate	T686	2:1	0.5	mg/l	5.9	3.0	0.6	4.2	2.4	
Dissolved SO4(Total)	T285	2:1	10	mg/l	<10	11	100	17	<10	

Concept Reference: 720972										
Project Site: Newton Stewart FPS										
Customer Reference: 17/082										
Leachate 2:1					Analysed as Water					
Suite A										
Concept Reference					720972 021	720972 023	720972 027			
Customer Sample Reference					BH11-OP6 0.9m	BH12-OP6 0.2m	BH1-OP7 1.3m			
Date Sampled					06-MAR-2018	06-MAR-2018	06-MAR-2018			
Determinand	Method	Test Sample	LOD	Units						
Ammonia expressed as NH4	T686	2:1	0.05	mg/l	<0.05	<0.05	<0.05			
Chloride	T686	2:1	1	mg/l	2	<1	<1			
Magnesium	T82	2:1	1	mg/l	<1	7	3			
Nitrate	T686	2:1	0.5	mg/l	6.5	8.4	<0.5			
Dissolved SO4(Total)	T285	2:1	10	mg/l	51	<10	<10			

Index to symbols used in 720972-1

Value	Description
2:1	Leachate 2:1
A40	Assisted dried < 40C
AR	As Received
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Method Index

Value	Description
T82	ICP/OES (Sim)
T686	Discrete Analyser
T2	Grav
T6	ICP/OES
T192	HCl Extraction/ICP/OES (TRL 447 T2)
T285	ICP/OES (SIM) (Filtered)
T7	Probe

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Leach Prep (2:1)	T2	AR			N	001-004,007-010,013-014,016-021,023,027
pH	T7	A40			U	001-004,007-010,013-014,016-021,023,027
(Acid Soluble) SO4	T192	A40	0.01	%	N	001-004,007-010,013-014,016-021,023,027
Sulphur (total)	T6	A40	0.01	%	N	001-004,007-010,013-014,016-021,023,027
Ammonia expressed as NH4	T686	2:1	0.05	mg/l	U	001-004,007-010,013-014,016-021,023,027
Chloride	T686	2:1	1	mg/l	U	001-004,007-010,013-014,016-021,023,027
Magnesium	T82	2:1	1	mg/l	N	001-004,007-010,013-014,016-021,023,027
Nitrate	T686	2:1	0.5	mg/l	U	001-004,007-010,013-014,016-021,023,027
Dissolved SO4(Total)	T285	2:1	10	mg/l	N	001-004,007-010,013-014,016-021,023,027
Organic Matter	T2	A40	0.1	%	N	005-006,010-012,014-015,021-022,024-026

APPENDIX V

In-situ Testing



icate No. 642



icate No. 007883



Permeability Test in a Borehole using Open Systems

according to ISO 22282-2

Project		Newton Stewart FPS		Client		Dumfries and Galloway Council	
Engineer		SWECO		Contract Number		17/082	
Test Method		Constant Flow		Test No.	1	Date	23.04.18
Drilling Method		Rotary Open Hole		Static Hydraulic Head (m)	4.80		
Borehole No.	BH1-OP6	Easting (m)	240948.715	Northing (m)	566124.095	Elevation	15.004
Type of Filter	10mm Single Size Gravel	Isolation Device	N/A	Diameter of Filter Tube (m)	0.05		
Test section Diameter (m)	0.17	Upper level (m)	1.00	Lower level (m)	6.00	Length (m)	5.0
Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh	Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh
0	0	0	0				
120	3.24	4.74	4.74				
240	3.24	4.77	0.03				
360	3.24	4.83	0.06				
480	3.24	4.83	0				
600	3.24	4.83	0				
720	3.24	4.83	0				
840	3.24	4.83	0				
960	3.24	4.83	0				
1080	3.24	4.83	0				
1200	3.24	4.83	0				
1500	3.24	4.83	0				
1800	3.24	4.83	0				
2100	Hole Filled	1.75	-3.08				
2400		1.5	-0.25				
2700		1.3	-0.2				
3000		1.15	-0.15				
3300		1.03	-0.12				

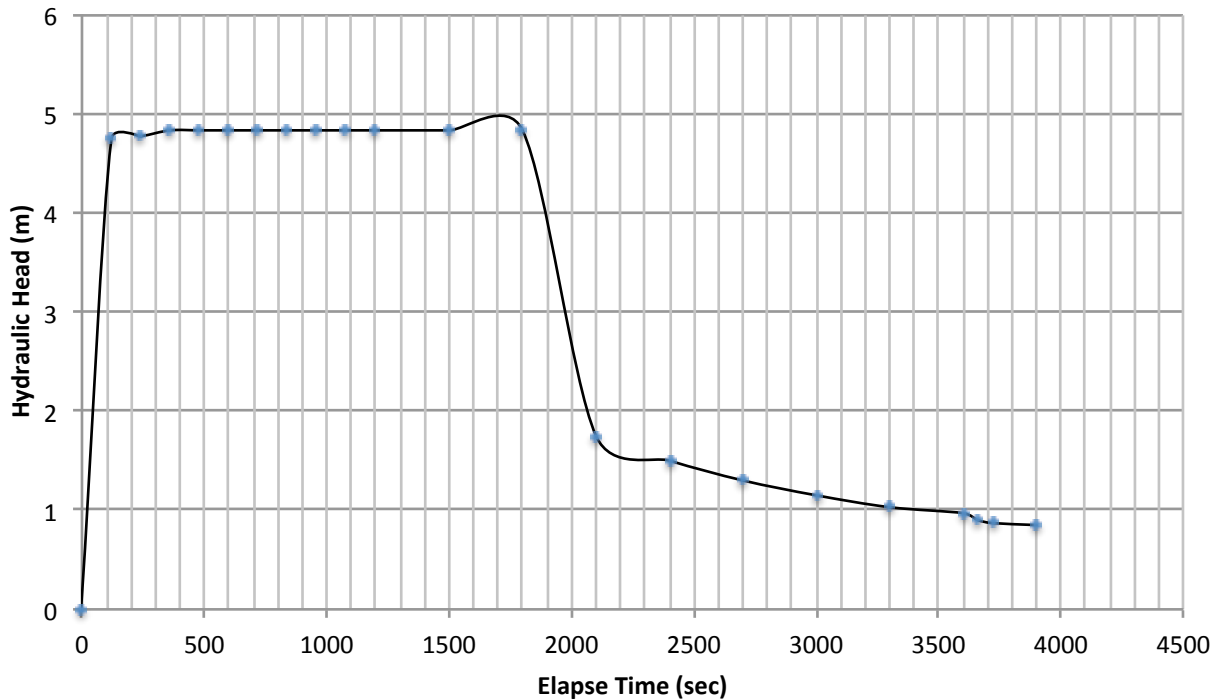
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Directors: K.M. Rodger, (Secretary), A.J. Batchelor, (Managing) Registration No. 56002 Scotland, Est.1974, VAT 271 4670 58 www.holequest.co.uk

3600		0.97	-0.06				
3660		0.9	-0.07				
3720		0.87	-0.03				
3900		0.85	-0.02				

Hydraulic Head vs Elapse Time - BH1-OP6





ite No. 642



ite No. 007883



Permeability Test in a Borehole using Open Systems

according to ISO 22282-2

Project		Newton Stewart FPS		Client		Dumfries and Galloway Council	
Engineer		SWECO		Contract Number		17/082	
Test Method		Constant Flow		Test No.	1	Date	23.04.18
Drilling Method		Rotary Open Hole		Static Hydraulic Head (m)	3.80		
Borehole No.	BH2-OP6	Easting (m)	240979.611	Northing (m)	566048.039	Elevation	14.046
Type of Filter	10mm Single Size Gravel	Isolation Device	N/A	Diameter of Filter Tube (m)	0.05		
Test section Diameter (m)	0.17	Upper level (m)	1.00	Lower level (m)	5.00	Length (m)	4.0
Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh	Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh
0	0	0	0				
120	1.5	3.63	3.63				
240	Hole Filled	1.88	-1.75				
360		1.23	-0.65				
480		0.9	-0.33				
600		0.65	-0.25				
720		0.5	-0.15				
840		0.41	-0.09				
960		0.35	-0.06				
1080		0.31	-0.04				
1200		0.28	-0.03				
1500		0.27	-0.01				
1800		0.25	-0.02				
2100		0.23	-0.02				
2400		0.21	-0.02				
2700		0.2	-0.01				
3000		0.19	-0.01				
3300		0.17	-0.02				

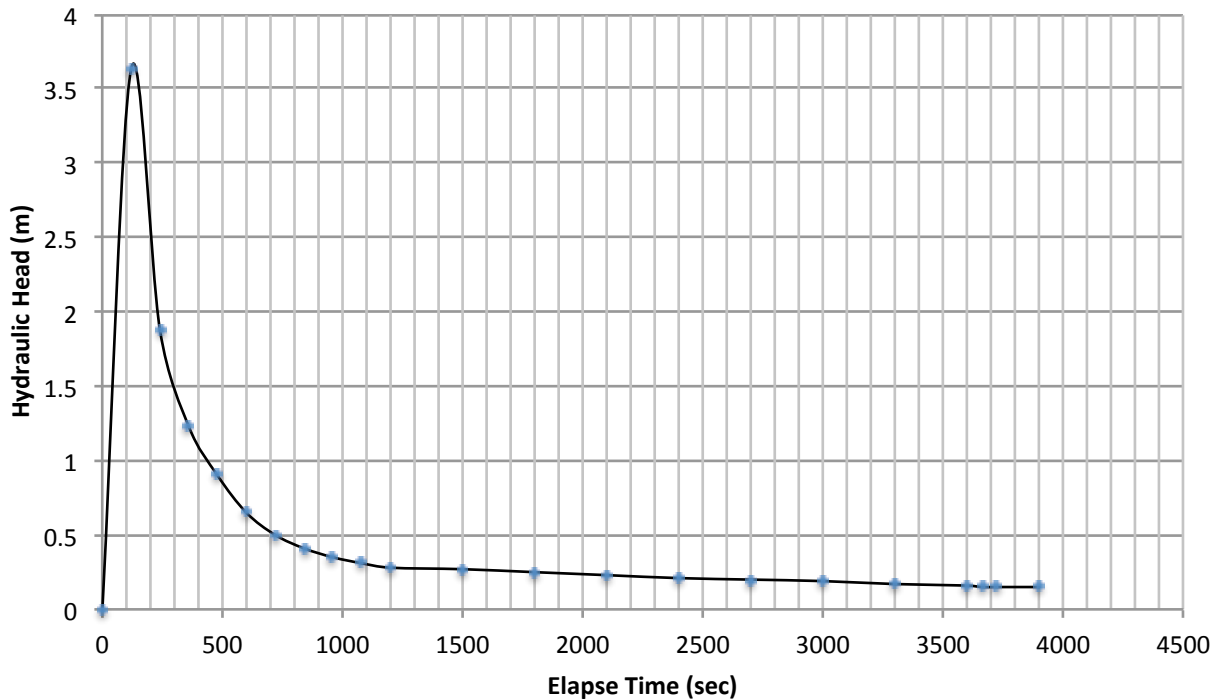
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3600		0.16	-0.01				
3660		0.15	-0.01				
3720		0.15	0				
3900		0.15	0				

Hydraulic Head vs Elapse Time - BH2-OP6





icate No. 642



icate No. 007883



Permeability Test in a Borehole using Open Systems

according to ISO 22282-2

Project		Newton Stewart FPS		Client		Dumfries and Galloway Council	
Engineer		SWECO		Contract Number		17/082	
Test Method		Constant Flow		Test No.	1	Date	24.04.18
Drilling Method		Rotary Open Hole		Static Hydraulic Head (m)	2.80		
Borehole No.	BH3-OP6	Easting (m)	241054.871	Northing (m)	565871.328	Elevation	10.943
Type of Filter	10mm Single Size Gravel	Isolation Device	N/A	Diameter of Filter Tube (m)	0.05		
Test section Diameter (m)	0.17	Upper level (m)	1.00	Lower level (m)	5.00	Length (m)	4.0
Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh	Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh
0	0	0	0				
120	2.8	0.57	0.57				
240	2.8	0.56	-0.01				
360	2.8	0.55	-0.01				
480	2.8	0.54	-0.01				
600	2.8	0.54	0				
720	2.8	0.55	0.01				
840	2.8	0.53	-0.02				
960	2.8	0.51	-0.02				
1080	2.8	0.52	0.01				
1200	2.8	0.5	-0.02				
1500	2.8	0.52	0.02				
1800	2.8	0.51	-0.01				
2100	2.8	0.5	-0.01				
2400	2.8	0.49	-0.01				
2700	2.8	0.52	0.03				
3000	2.8	0.53	0.01				
3300	2.8	0.52	-0.01				

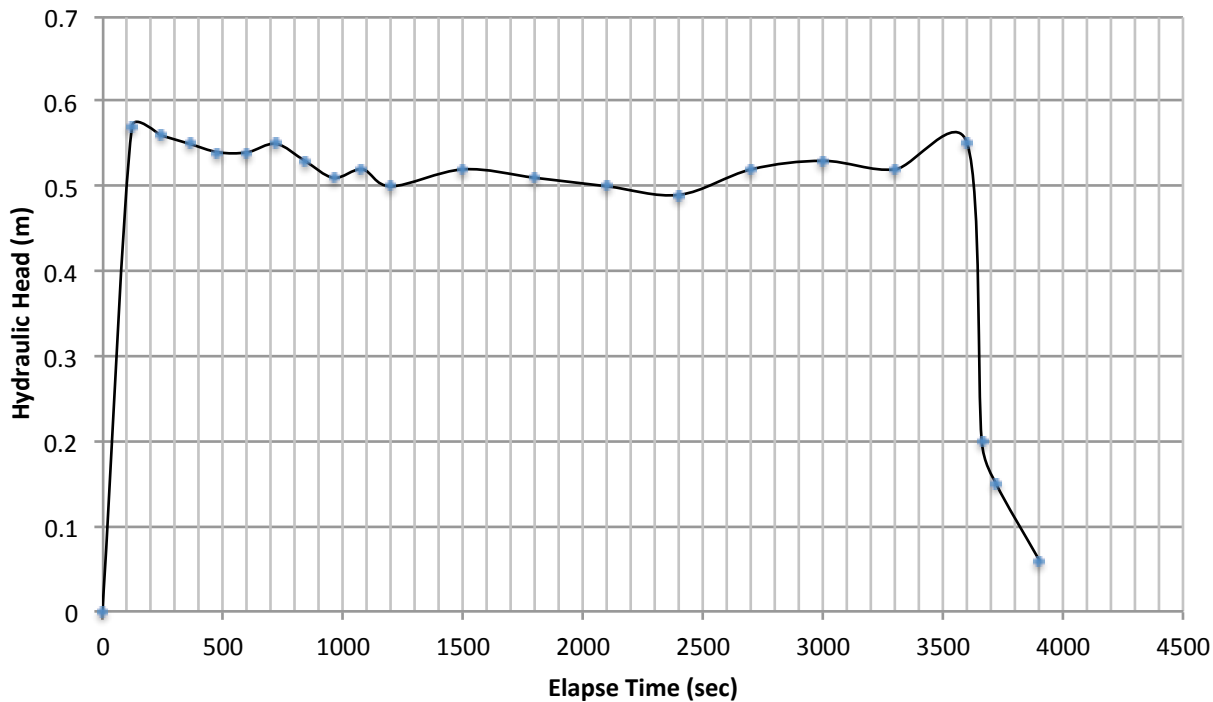
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3600	2.8	0.55	0.03				
3660		0.2	-0.35				
3720		0.15	-0.05				
3900		0.06	-0.09				

Hydraulic Head vs Elapse Time - BH3-OP6





icate No. 642



icate No. 007883



Permeability Test in a Borehole using Open Systems

according to ISO 22282-2

Project		Newton Stewart FPS		Client		Dumfries and Galloway Council	
Engineer		SWECO		Contract Number		17/082	
Test Method		Constant Flow		Test No.	1	Date	24.04.18
Drilling Method		Rotary Open Hole		Static Hydraulic Head (m)	2.10		
Borehole No.	BH5-OP6	Easting (m)	241139.807	Northing (m)	565580.638	Elevation	9.148
Type of Filter	10mm Single Size Gravel	Isolation Device	N/A	Diameter of Filter Tube (m)	0.05		
Test section Diameter (m)	0.17	Upper level (m)	4.50	Lower level (m)	13.00	Length (m)	8.5
Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh	Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh
0	0	0	0				
120	3.56	0.16	0.16				
240	3.56	0.16	0				
360	3.56	0.18	0.02				
480	3.56	0.18	0				
600	3.56	0.19	0.01				
720	3.56	0.19	0				
840	3.56	0.19	0				
960	3.56	0.2	0.01				
1080	3.56	0.2	0				
1200	3.56	0.21	0.01				
1500	3.56	0.21	0				
1800	3.56	0.23	0.02				
2100	3.56	0.22	-0.01				
2400	3.56	0.23	0.01				
2700	3.56	0.22	-0.01				
3000	3.56	0.23	0.01				
3300	3.56	0.24	0.01				

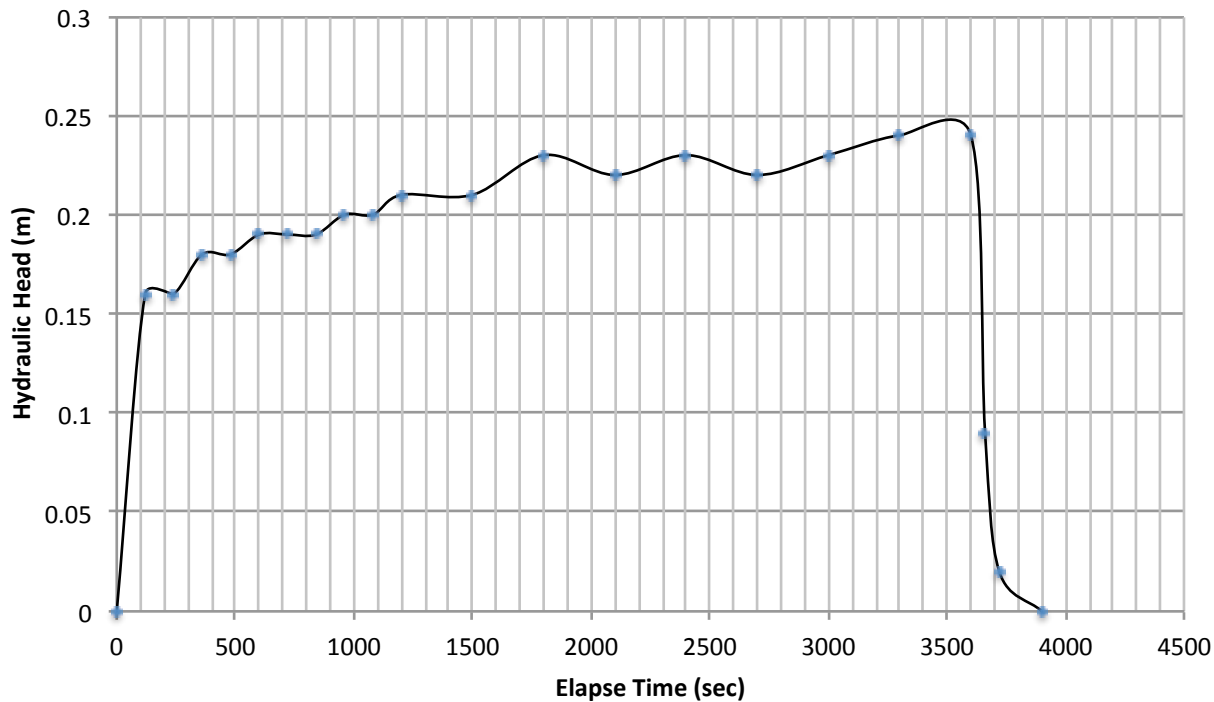
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3600	3.56	0.24	0				
3660		0.09	-0.15				
3720		0.02	-0.07				
3900		0	-0.02				

Hydraulic Head vs Elapse Time - BH5-OP6





icate No. 642



icate No. 007883



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Permeability Test in a Borehole using Open Systems

according to ISO 22282-2

Project		Newton Stewart FPS		Client		Dumfries and Galloway Council	
Engineer		SWECO		Contract Number		17/082	
Test Method		Constant Flow		Test No.	1	Date	23.04.18
Drilling Method		Rotary Open Hole		Static Hydraulic Head (m)	2.40		
Borehole No.	BH07-OP6	Easting (m)	241242.253	Northing (m)	565279.55	Elevation	7.992
Type of Filter	10mm Single Size Gravel	Isolation Device	N/A	Diameter of Filter Tube (m)	0.05		
Test section Diameter (m)	0.17	Upper level (m)	1.00	Lower level (m)	12.00	Length (m)	11.0
Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh	Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh
0	0	0	0				
120	2.88	0.01	0.01				
240	2.88	0.01	0				
360	2.88	0.01	0				
480	2.88	0	-0.01				
600	2.88	0.01	0.01				
720	2.88	0.02	0.01				
840	2.88	0.01	-0.01				
960	2.88	0.01	0				
1080	2.88	0.01	0				
1200	2.88	0.01	0				
1500	2.88	0.01	0				
1800	2.88	0.01	0				
2100	2.88	0.01	0				
2400	2.88	0.02	0.01				
2700	2.88	0.01	-0.01				
3000	2.88	0.01	0				
3300	2.88	0.01	0				

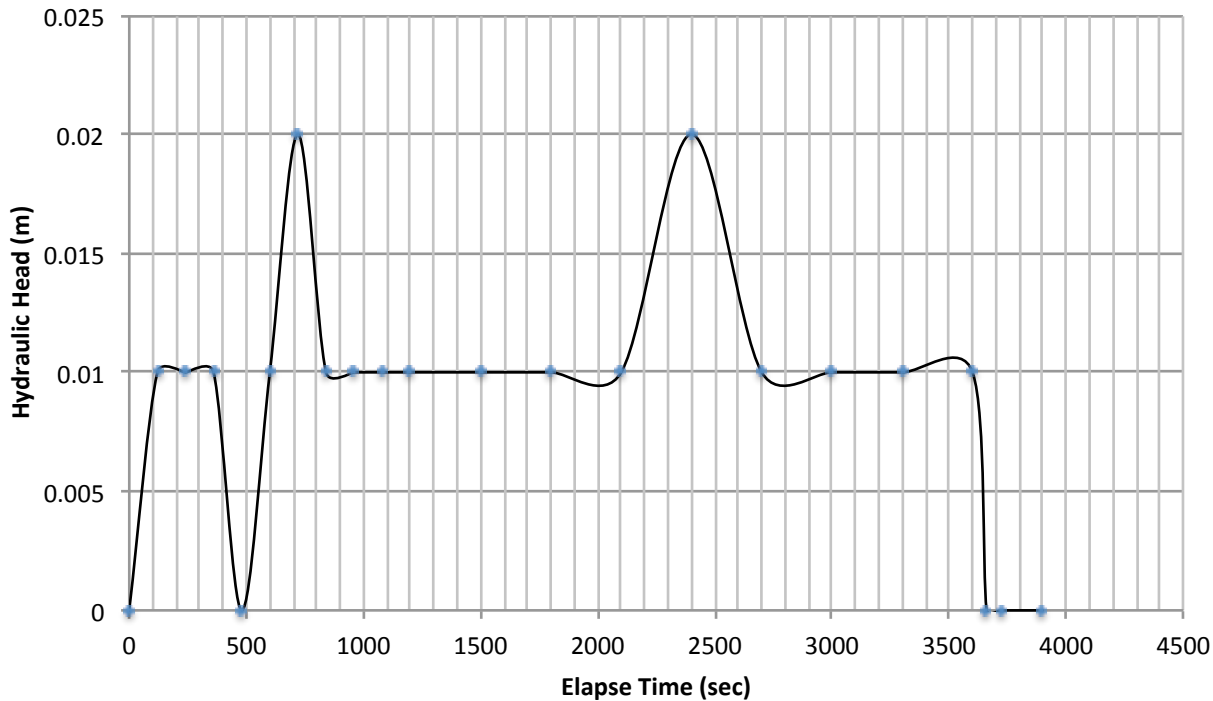
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3600	2.88	0.01	0				
3660		0	-0.01				
3720		0	0				
3900		0	0				

Hydraulic Head vs Elapse Time - BH7-OP6





cate No. 642



icate No. 007883



Permeability Test in a Borehole using Open Systems

according to ISO 22282-2

Project		Newton Stewart FPS		Client		Dumfries and Galloway Council	
Engineer		SWECO		Contract Number		17/082	
Test Method		Constant Flow		Test No.	1	Date	23.04.18
Drilling Method		Rotary Open Hole		Static Hydraulic Head (m)	3.90		
Borehole No.	BH8-OP6	Easting (m)	241250	Northing (m)	565099.302	Elevation	9.441
Type of Filter	10mm Single Size Gravel	Isolation Device	N/A	Diameter of Filter Tube (m)	0.05		
Test section Diameter (m)	0.17	Upper level (m)	4.00	Lower level (m)	10.00	Length (m)	6.0
Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh	Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh
0	0	0	0				
120	3.16	0.84	0.84				
240	3.16	1.99	1.15				
360	3.16	3.05	1.06				
480	3.16	3.1	0.05				
600	3.16	3.13	0.03				
720	3.16	3.12	-0.01				
840	3.16	3.15	0.03				
960	3.16	3.14	-0.01				
1080	3.16	3.12	-0.02				
1200	3.16	3.13	0.01				
1500	3.16	3.1	-0.03				
1800	3.16	3.14	0.04				
2100	3.16	3.13	-0.01				
2400	3.16	3.13	0				
2700	3.16	3.14	0.01				
3000	3.16	3.13	-0.01				
3300	3.16	3.12	-0.01				

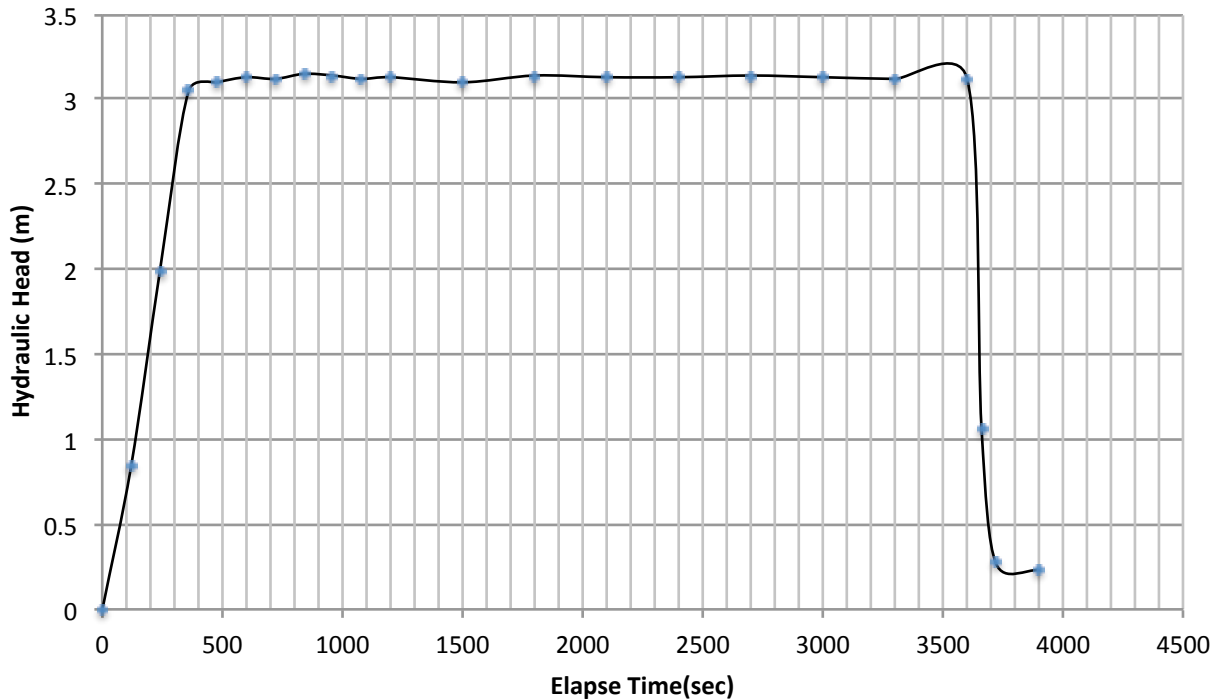
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3600	3.16	3.12	0				
3660		1.06	-2.06				
3720		0.27	-0.79				
3900		0.23	-0.04				

Hydraulic Head vs Elapse Time - BH8-OP6





icate No. 642



icate No. 007883



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Permeability Test in a Borehole using Open Systems

according to ISO 22282-2

Project		Newton Stewart FPS		Client		Dumfries and Galloway Council	
Engineer		SWECO		Contract Number		17/082	
Test Method		Constant Flow		Test No.	1	Date	23.04.18
Drilling Method		Rotary Open Hole		Static Hydraulic Head (m)	3.90		
Borehole No.	BH9-OP6	Easting (m)	241294.904	Northing (m)	564986.199	Elevation	8.464
Type of Filter	10mm Single Size Gravel	Isolation Device	N/A	Diameter of Filter Tube (m)	0.05		
Test section Diameter (m)	0.17	Upper level (m)	1.00	Lower level (m)	10.00	Length (m)	9.0
Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh	Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh
0	0	0	0				
120	3.12	0.54	0.54				
240	3.12	0.55	0.01				
360	3.12	0.64	0.09				
480	3.12	0.71	0.07				
600	3.12	0.73	0.02				
720	3.12	0.75	0.02				
840	3.12	0.67	-0.08				
960	3.12	0.68	0.01				
1080	3.12	0.68	0				
1200	3.12	0.66	-0.02				
1500	3.12	0.67	0.01				
1800	3.12	0.67	0				
2100	3.12	0.66	-0.01				
2400	3.12	0.68	0.02				
2700	3.12	0.69	0.01				
3000	3.12	0.67	-0.02				
3300	3.12	0.66	-0.01				

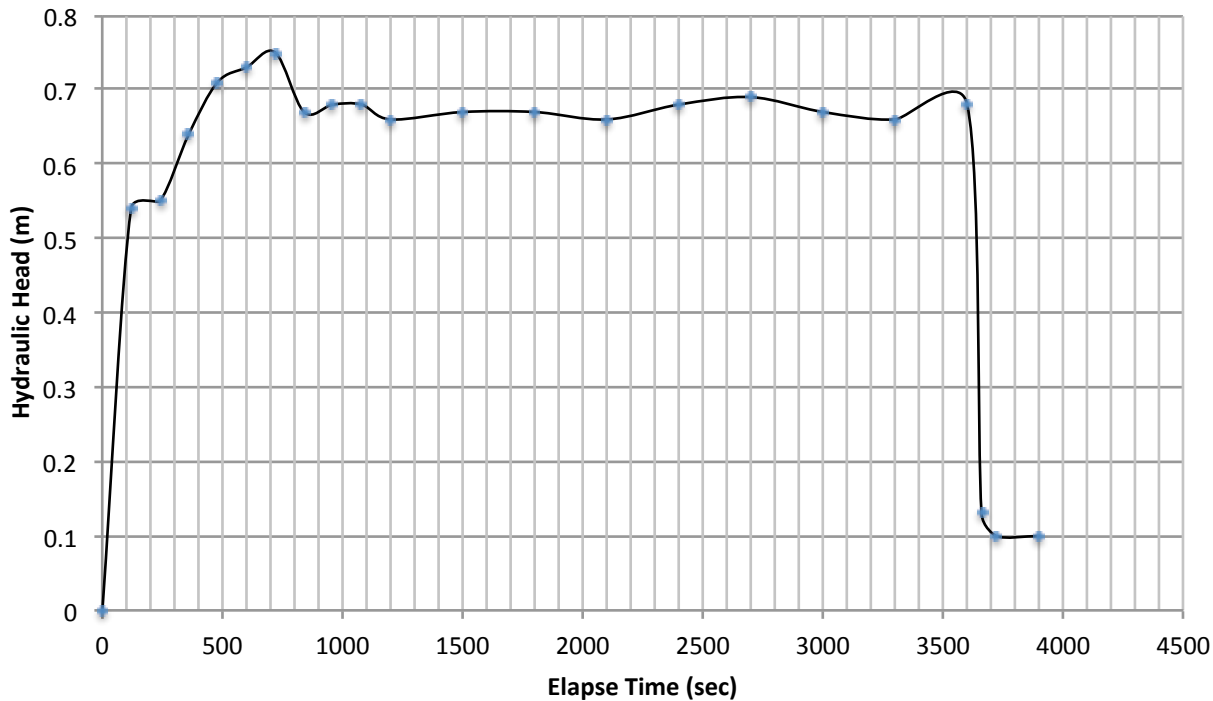
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3600	3.12	0.68	0.02				
3660		0.13	-0.55				
3720		0.1	-0.03				
3900		0.1	0				

Hydraulic Head vs Elapse Time - BH9-OP6





icate No. 642



icate No. 007883



Permeability Test in a Borehole using Open Systems

according to ISO 22282-2

Project		Newton Stewart FPS		Client		Dumfries and Galloway Council	
Engineer		SWECO		Contract Number		17/082	
Test Method		Constant Flow		Test No.	1	Date	25.04.18
Drilling Method		Rotary Open Hole		Static Hydraulic Head (m)	2.10		
Borehole No.	BH11-OP6	Easting (m)	241240.514	Northing (m)	565493.291	Elevation	8.252
Type of Filter	10mm Single Size Gravel	Isolation Device	N/A	Diameter of Filter Tube (m)	0.05		
Test section Diameter (m)	0.17	Upper level (m)	1.00	Lower level (m)	12.00	Length (m)	11.0
Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh	Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh
0	0	0	0				
120	3.74	0.21	0.21				
240	3.74	0.26	0.05				
360	3.74	0.27	0.01				
480	3.74	0.27	0				
600	3.74	0.26	-0.01				
720	3.74	0.28	0.02				
840	3.74	0.27	-0.01				
960	3.74	0.27	0				
1080	3.74	0.28	0.01				
1200	3.74	0.28	0				
1500	3.74	0.27	-0.01				
1800	3.74	0.28	0.01				
2100	3.74	0.28	0				
2400	3.74	0.28	0				
2700	3.74	0.27	-0.01				
3000	3.74	0.28	0.01				
3300	3.74	0.27	-0.01				

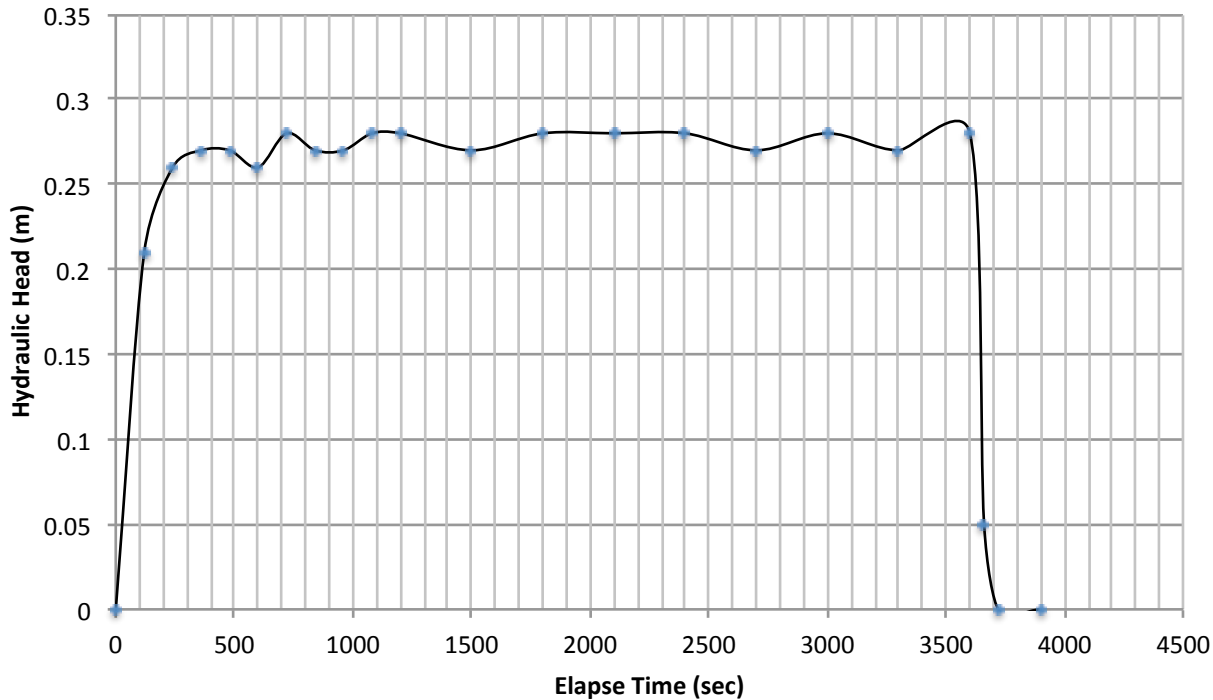
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3600	3.74	0.28	0.01				
3660		0.05	-0.23				
3720		0	-0.05				
3900		0	0				

Hydraulic Head vs Elapse Time - BH11-OP6





icate No. 642



icate No. 007883



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Permeability Test in a Borehole using Open Systems

according to ISO 22282-2

Project		Newton Stewart FPS		Client		Dumfries and Galloway Council	
Engineer		SWECO		Contract Number		17/082	
Test Method		Constant Flow		Test No.	1	Date	25.04.18
Drilling Method		Rotary Open Hole		Static Hydraulic Head (m)	3.10		
Borehole No.	BH12-OP6	Easting (m)	241304.378	Northing (m)	565357.366	Elevation	8.308
Type of Filter	10mm Single Size Gravel	Isolation Device	N/A	Diameter of Filter Tube (m)	0.05		
Test section Diameter (m)	0.17	Upper level (m)	1.00	Lower level (m)	13.00	Length (m)	12.0
Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh	Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh
0	0	0	0				
120	4.32	0.05	0.05				
240	4.32	0.05	0				
360	4.32	0.06	0.01				
480	4.32	0.05	-0.01				
600	4.32	0.07	0.02				
720	4.32	0.06	-0.01				
840	4.32	0.06	0				
960	4.32	0.07	0.01				
1080	4.32	0.06	-0.01				
1200	4.32	0.07	0.01				
1500	4.32	0.07	0				
1800	4.32	0.07	0				
2100	4.32	0.07	0				
2400	4.32	0.07	0				
2700	4.32	0.06	-0.01				
3000	4.32	0.07	0.01				
3300	4.32	0.07	0				

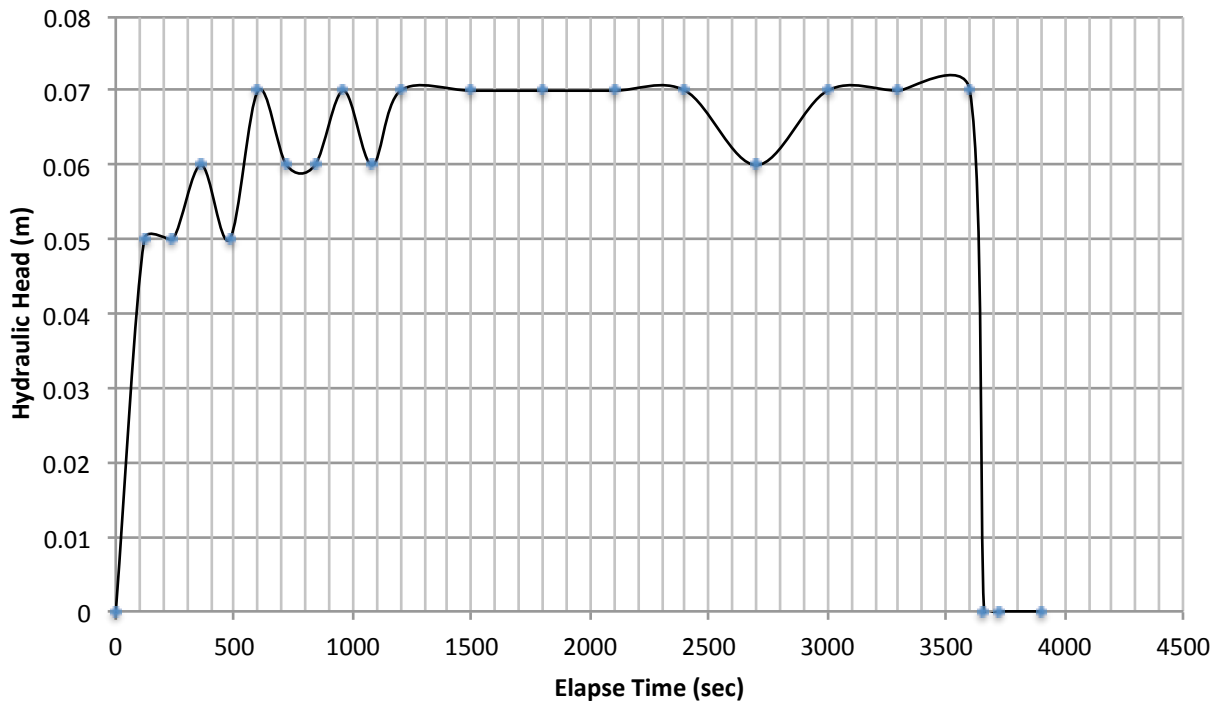
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3600	4.32	0.07	0				
3660		0	-0.07				
3720		0	0				
3900		0	0				

Hydraulic Head vs Elapse Time - BH12-OP6





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Permeability Test in a Borehole using Open Systems

according to ISO 22282-2

Project		Newton Stewart FPS		Client		Dumfries and Galloway Council	
Engineer		SWECO		Contract Number		17/082	
Test Method		Constant Flow		Test No.	1	Date	25.04.18
Drilling Method		Rotary Open Hole		Static Hydraulic Head (m)	2.20		
Borehole No.	BH13-OP6	Easting (m)	241329.323	Northing (m)	565279.663	Elevation	8.066
Type of Filter	10mm Single Size Gravel	Isolation Device	N/A	Diameter of Filter Tube (m)	0.05		
Test section Diameter (m)	0.17	Upper level (m)	1.00	Lower level (m)	14.00	Length (m)	13.0
Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh	Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh
0	0	0	0				
120	4.4	0.03	0.03				
240	4.4	0.04	0.01				
360	4.4	0.05	0.01				
480	4.4	0.04	-0.01				
600	4.4	0.06	0.02				
720	4.4	0.04	-0.02				
840	4.4	0.05	0.01				
960	4.4	0.05	0				
1080	4.4	0.06	0.01				
1200	4.4	0.05	-0.01				
1500	4.4	0.05	0				
1800	4.4	0.06	0.01				
2100	4.4	0.05	-0.01				
2400	4.4	0.06	0.01				
2700	4.4	0.05	-0.01				
3000	4.4	0.05	0				
3300	4.4	0.06	0.01				

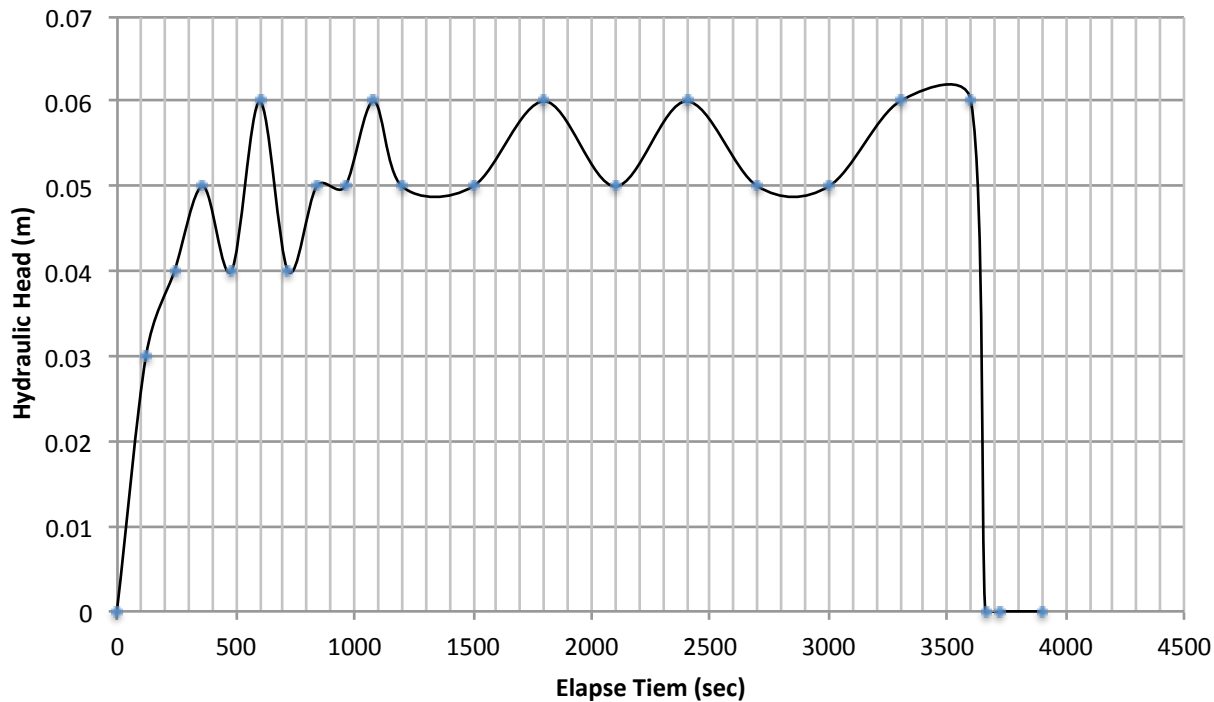
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3600	4.4	0.06	0				
3660		0	-0.06				
3720		0	0				
3900		0	0				

Hydraulic Head vs Elapse Time - BH13-OP6





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icate No. 007883



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Permeability Test in a Borehole using Open Systems

according to ISO 22282-2

Project		Newton Stewart FPS		Client		Dumfries and Galloway Council	
Engineer		SWECO		Contract Number		17/082	
Test Method		Constant Flow		Test No.	1	Date	25.04.18
Drilling Method		Rotary Open Hole		Static Hydraulic Head (m)	1.90		
Borehole No.	BH14-OP6	Easting (m)	241386.187	Northing (m)	565302.529	7.311	
Type of Filter	10mm Single Size Gravel	Isolation Device	N/A	Diameter of Filter Tube (m)	0.05		
Test section Diameter (m)	0.17	Upper level (m)	1.00	Lower level (m)	13.00	Length (m)	12.0
Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh	Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh
0	0	0	0				
120	3.74	0.03	0.03				
240	3.74	0.04	0.01				
360	3.74	0.05	0.01				
480	3.74	0.06	0.01				
600	3.74	0.05	-0.01				
720	3.74	0.05	0				
840	3.74	0.05	0				
960	3.74	0.05	0				
1080	3.74	0.05	0				
1200	3.74	0.05	0				
1500	3.74	0.05	0				
1800	3.74	0.05	0				
2100	3.74	0.05	0				
2400	3.74	0.05	0				
2700	3.74	0.05	0				
3000	3.74	0.05	0				
3300	3.74	0.06	0.01				

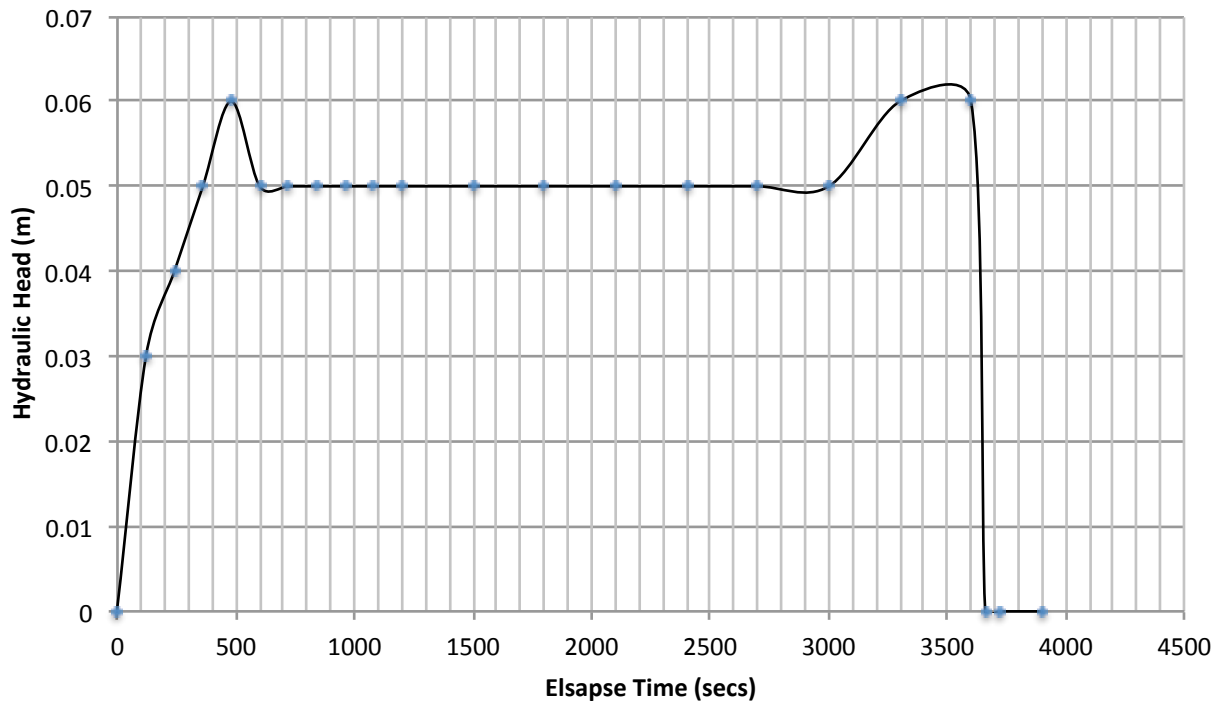
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3600	3.74	0.06	0				
3660		0	-0.06				
3720		0	0				
3900		0	0				

Hydraulic Head vs Elapse Time - BH14-OP6





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ite No. 007883



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Permeability Test in a Borehole using Open Systems

according to ISO 22282-2

Project		Newton Stewart FPS		Client		Dumfries and Galloway Council	
Engineer		SWECO		Contract Number		17/082	
Test Method		Constant Flow		Test No.	1	Date	24.04.18
Drilling Method		Rotary Open Hole		Static Hydraulic Head (m)	1.10		
Borehole No.	BH1-OP7	Easting (m)	241566.161	Northing (m)	564717.077	Elevation	5.222
Type of Filter	10mm Single Size Gravel	Isolation Device	N/A	Diameter of Filter Tube (m)	0.05		
Test section Diameter (m)	0.17	Upper level (m)	1.00	Lower level (m)	14.00	Length (m)	13.0
Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh	Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh
0	0	0	0				
120	3.07	0.32	0.32				
240	3.07	0.33	0.01				
360	3.07	0.33	0				
480	3.07	0.33	0				
600	3.07	0.33	0				
720	3.07	0.33	0				
840	3.07	0.33	0				
960	3.07	0.33	0				
1080	3.07	0.33	0				
1200	3.07	0.33	0				
1500	3.07	0.33	0				
1800	3.07	0.33	0				
2100	3.07	0.33	0				
2400	3.07	0.33	0				
2700	3.07	0.33	0				
3000	3.07	0.33	0				
3300	3.07	0.33	0				

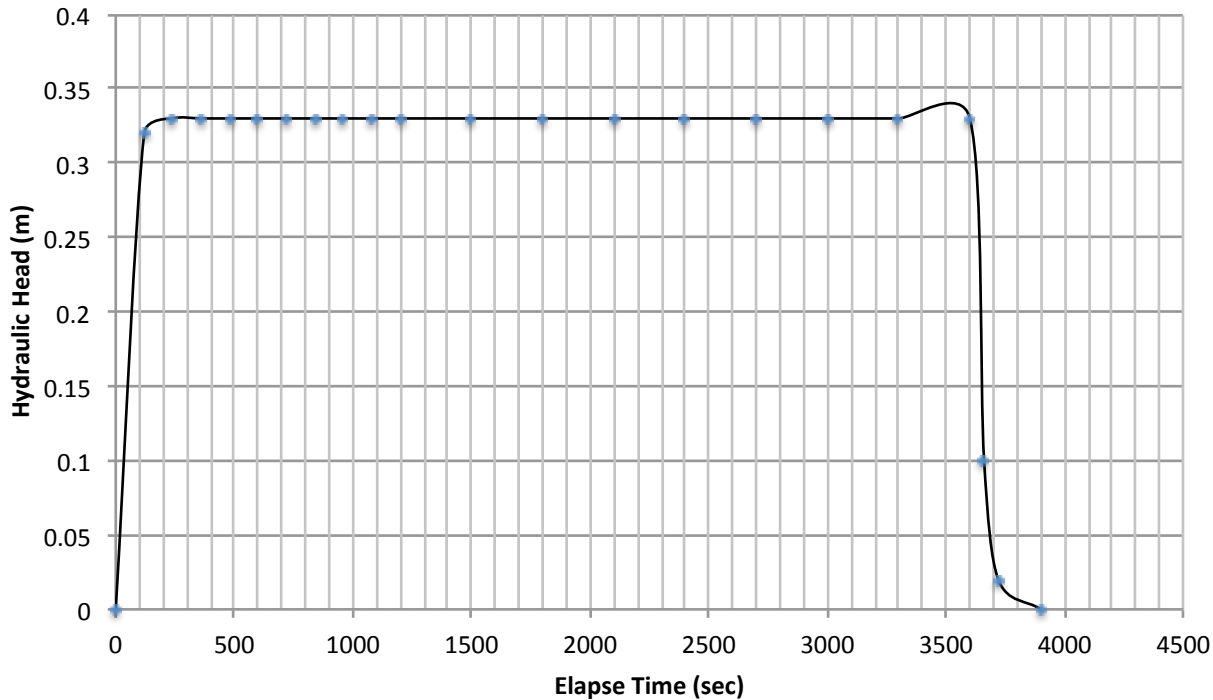
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3600	3.07	0.33	0				
3660		0.1	-0.23				
3720		0.02	-0.08				
3900		0	-0.02				

Hydraulic Head vs Elapse Time - BH1-OP7





icate No. 642



icate No. 007883



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Permeability Test in a Borehole using Open Systems

according to ISO 22282-2

Project		Newton Stewart FPS		Client		Dumfries and Galloway Council	
Engineer		SWECO		Contract Number		17/082	
Test Method		Constant Flow		Test No.	1	Date	23.04.18
Drilling Method		Rotary Open Hole		Static Hydraulic Head (m)	3.50		
Borehole No.	BH1-SP	Easting (m)	241242.675	Northing (m)	565144.772	Elevation	9.238
Type of Filter	10mm Single Size Gravel	Isolation Device	N/A	Diameter of Filter Tube (m)	0.05		
Test section Diameter (m)	0.17	Upper level (m)	3.00	Lower level (m)	13.00	Length (m)	10.0
Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh	Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh
0	0	0	0				
120	2.81	0.25	0.25				
240	2.81	0.34	0.09				
360	2.81	0.35	0.01				
480	2.81	0.39	0.04				
600	2.81	0.37	-0.02				
720	2.81	0.37	0				
840	2.81	0.39	0.02				
960	2.81	0.4	0.01				
1080	2.81	0.41	0.01				
1200	2.81	0.4	-0.01				
1500	2.81	0.39	-0.01				
1800	2.81	0.41	0.02				
2100	2.81	0.39	-0.02				
2400	2.81	0.38	-0.01				
2700	2.81	0.4	0.02				
3000	2.81	0.41	0.01				
3300	2.81	0.41	0				

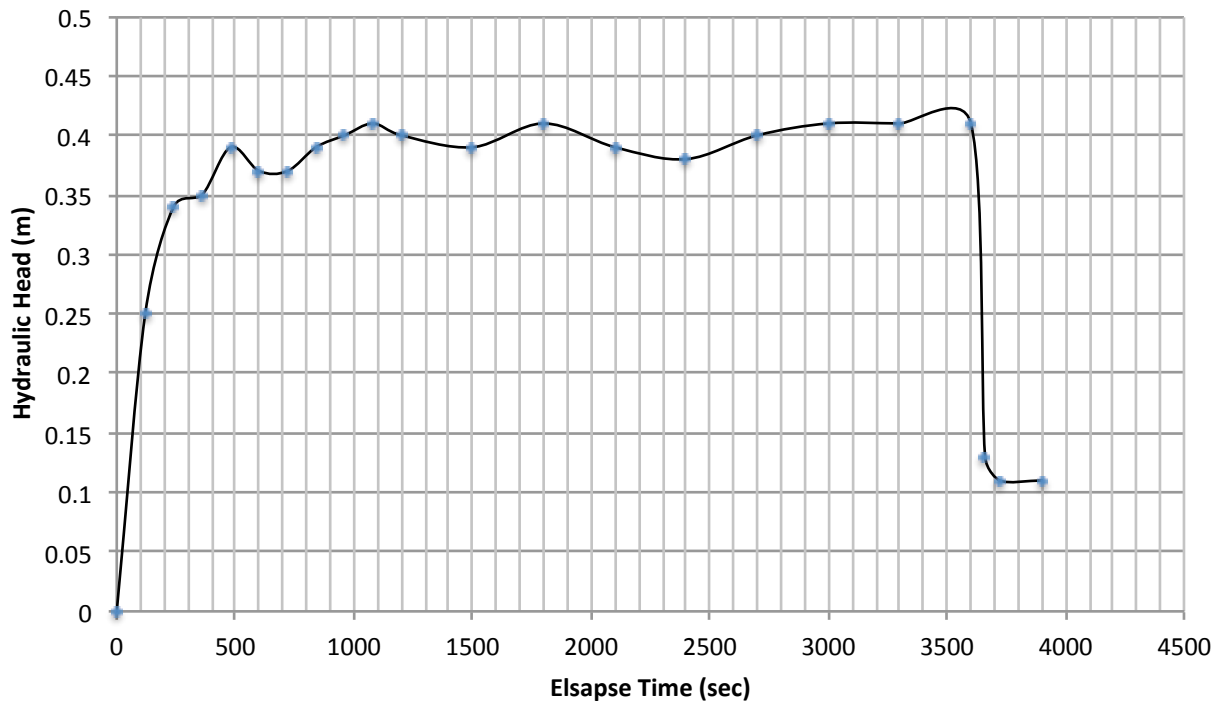
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3600	2.81	0.41	0				
3660		0.13	-0.28				
3720		0.11	-0.02				
3900		0.11	0				

Hydraulic Head vs Elapse Time - BH1-SP





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icate No. 007883



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Permeability Test in a Borehole using Open Systems

according to ISO 22282-2

Project		Newton Stewart FPS		Client		Dumfries and Galloway Council	
Engineer		SWECO		Contract Number		17/082	
Test Method		Constant Flow		Test No.	1	Date	24.04.18
Drilling Method		Rotary Open Hole		Static Hydraulic Head (m)	1.60		
Borehole No.	BH2-SP	Easting (m)	241297.315	Northing (m)	565148.683	Elevation	7.561
Type of Filter	10mm Single Size Gravel	Isolation Device	N/A	Diameter of Filter Tube (m)	0.05		
Test section Diameter (m)	0.17	Upper level (m)	1.00	Lower level (m)	10.00	Length (m)	9.0
Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh	Time (sec)	Flow Rate V (m ³ /hr)	Hydraulic Head h (m)	Head Changes Δh
0	0	0	0				
120	4.25	0.05	0.05				
240	4.25	0.05	0				
360	4.25	0.06	0.01				
480	4.25	0.05	-0.01				
600	4.25	0.06	0.01				
720	4.25	0.06	0				
840	4.25	0.06	0				
960	4.25	0.05	-0.01				
1080	4.25	0.05	0				
1200	4.25	0.05	0				
1500	4.25	0.06	0.01				
1800	4.25	0.06	0				
2100	4.25	0.06	0				
2400	4.25	0.05	-0.01				
2700	4.25	0.06	0.01				
3000	4.25	0.06	0				
3300	4.25	0.06	0				

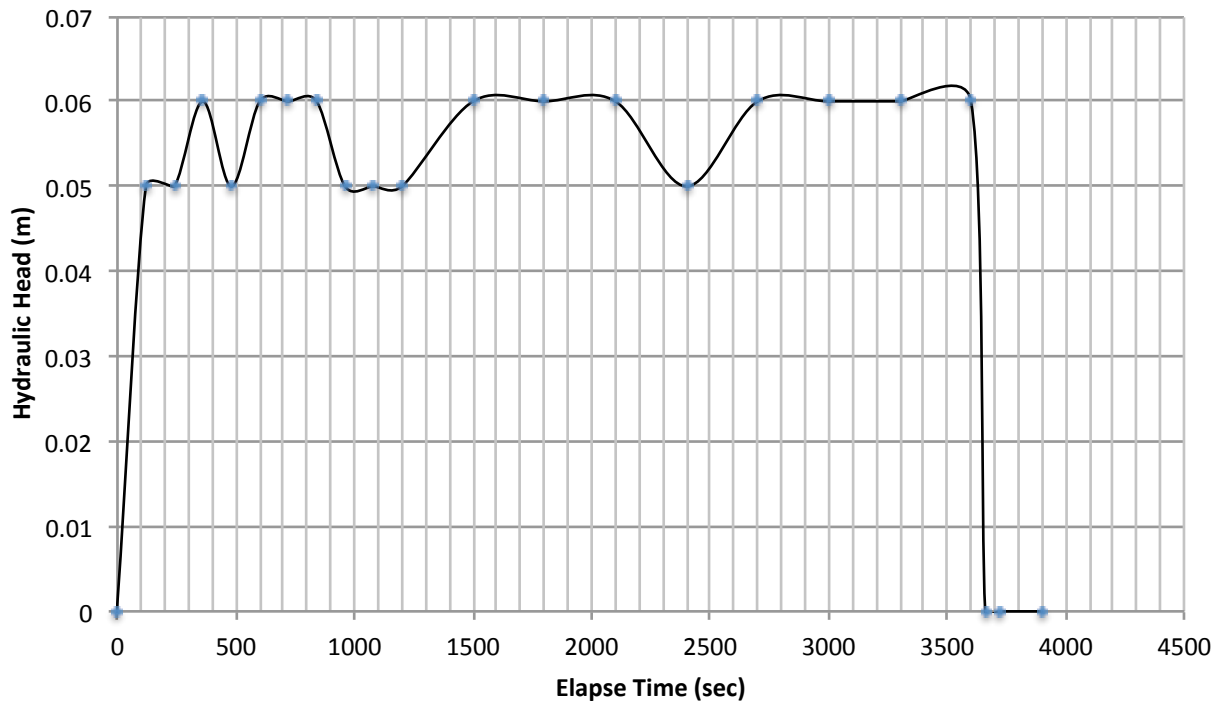
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3600	4.25	0.06	0				
3660		0	-0.06				
3720		0	0				
3900		0	0				

Hydraulic Head vs Elapse Time - BH2-SP



APPENDIX VI

Photographic Records



Certificate No. 007883



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CONTRACT: Newton Stewart Flood Protection Scheme
CLIENT: Dumfries and Galloway Council
ENGINEER: SWECO

BH01 OP7



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Certificate No. 007883



CONTRACT: Newton Stewart Flood Protection Scheme
CLIENT: Dumfries and Galloway Council
ENGINEER: SWECO

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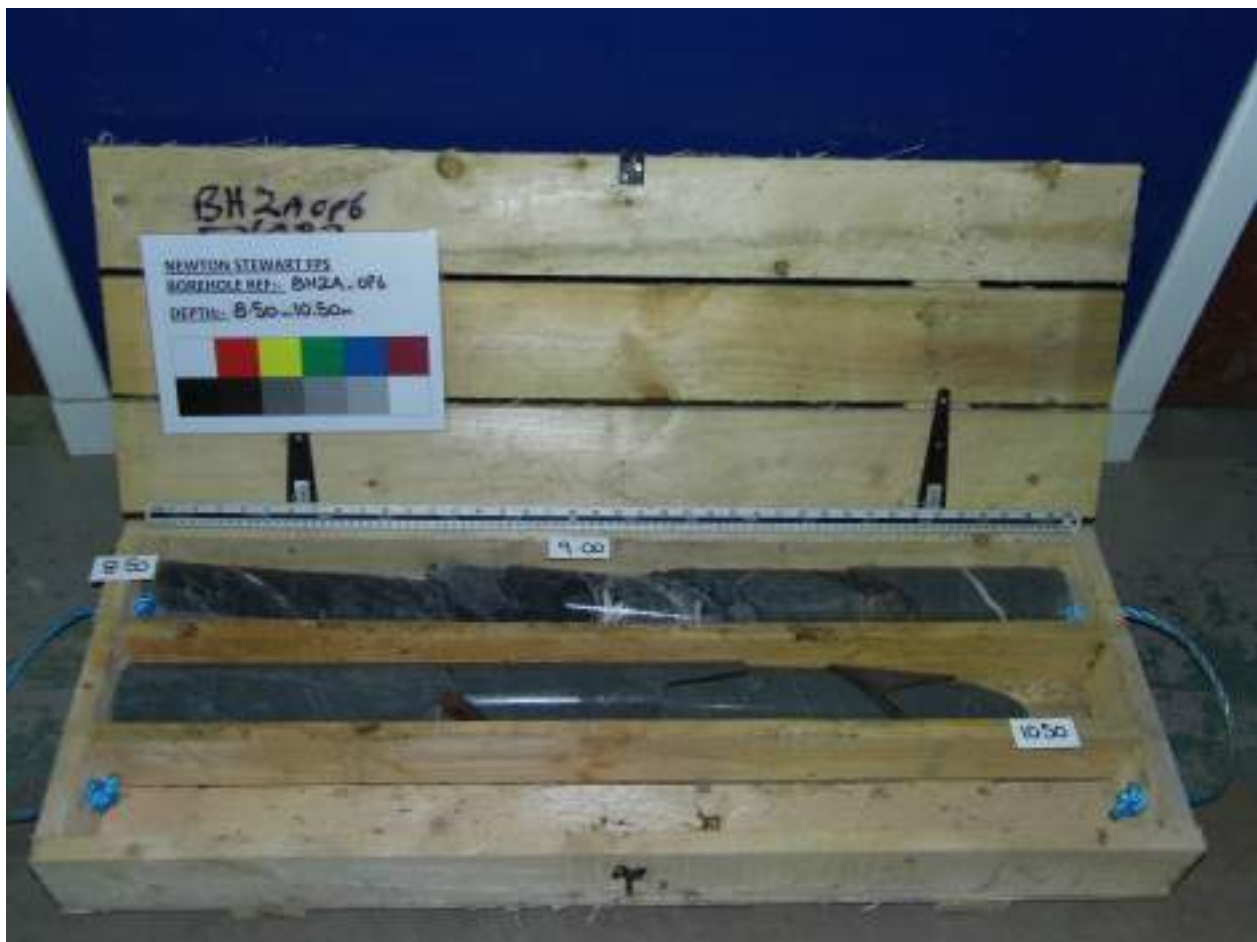


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CONTRACT: Newton Stewart Flood Protection Scheme
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ENGINEER: SWECO

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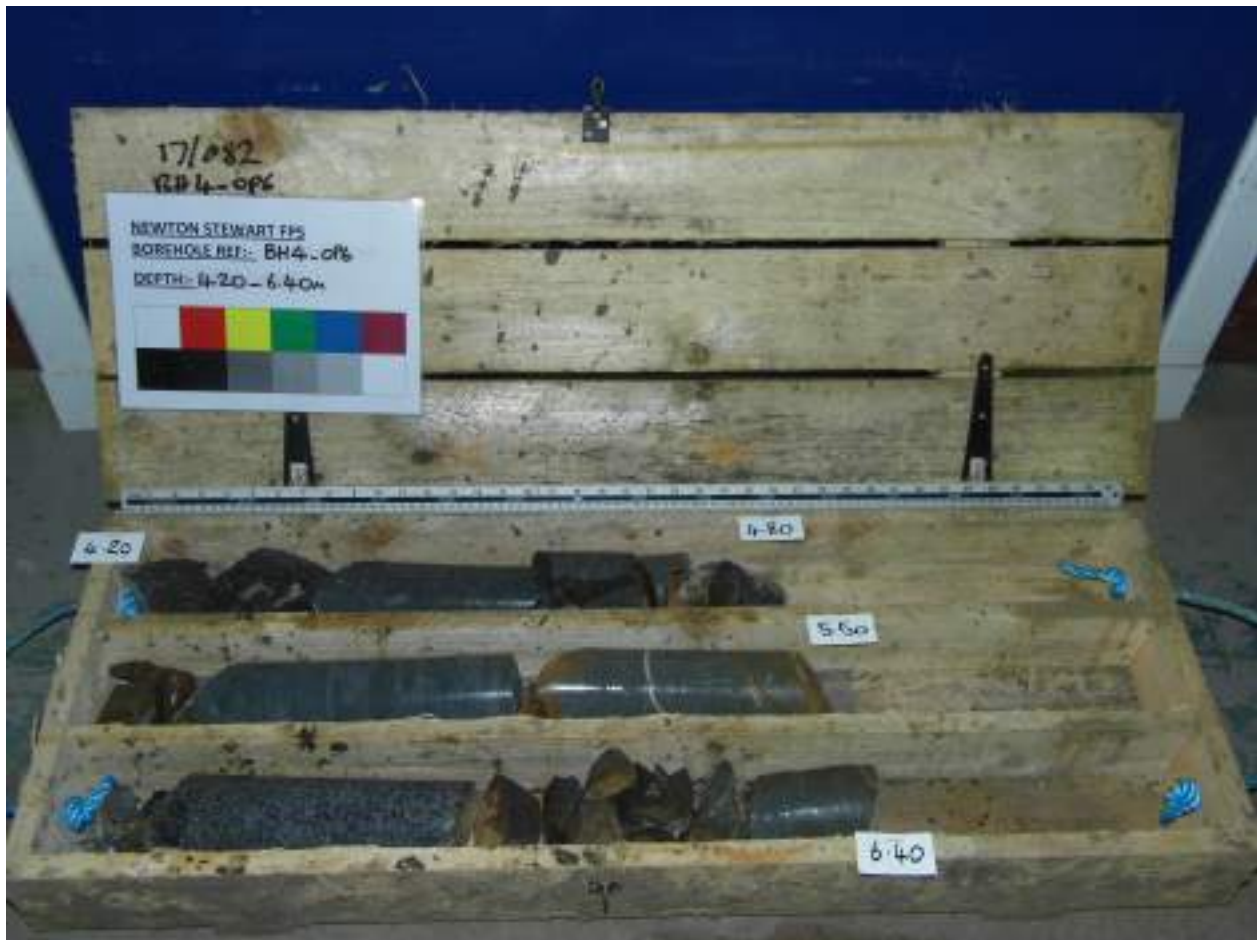
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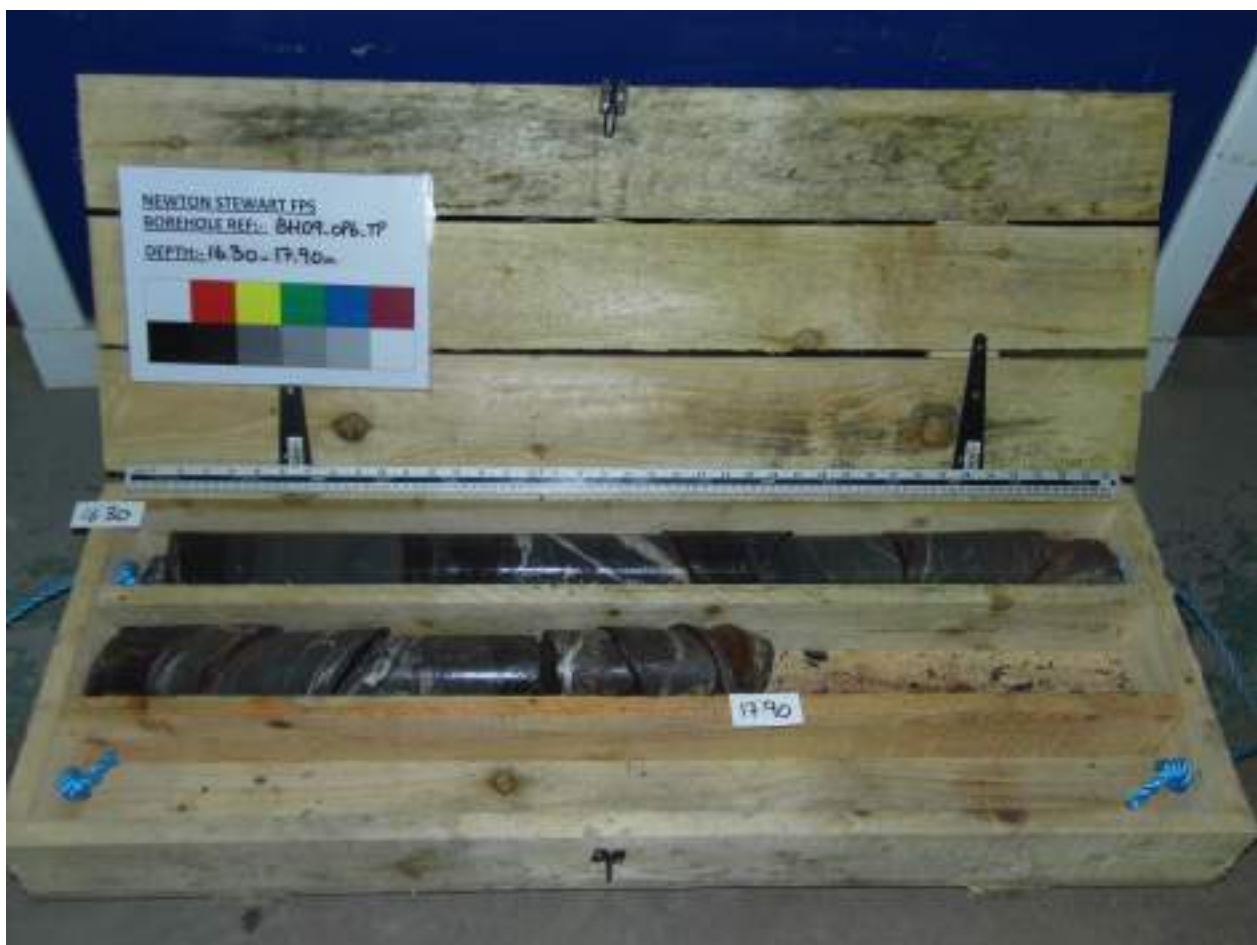


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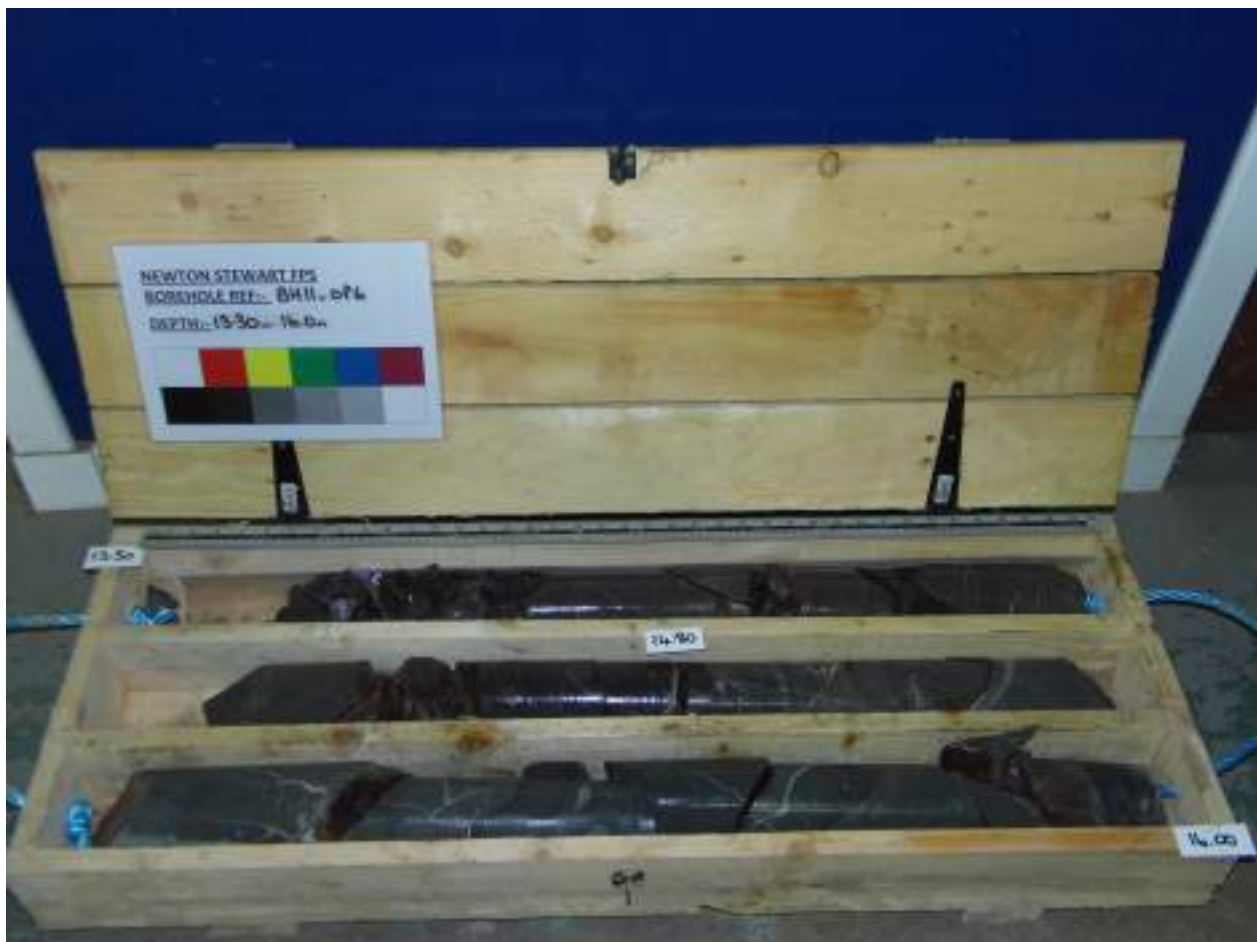
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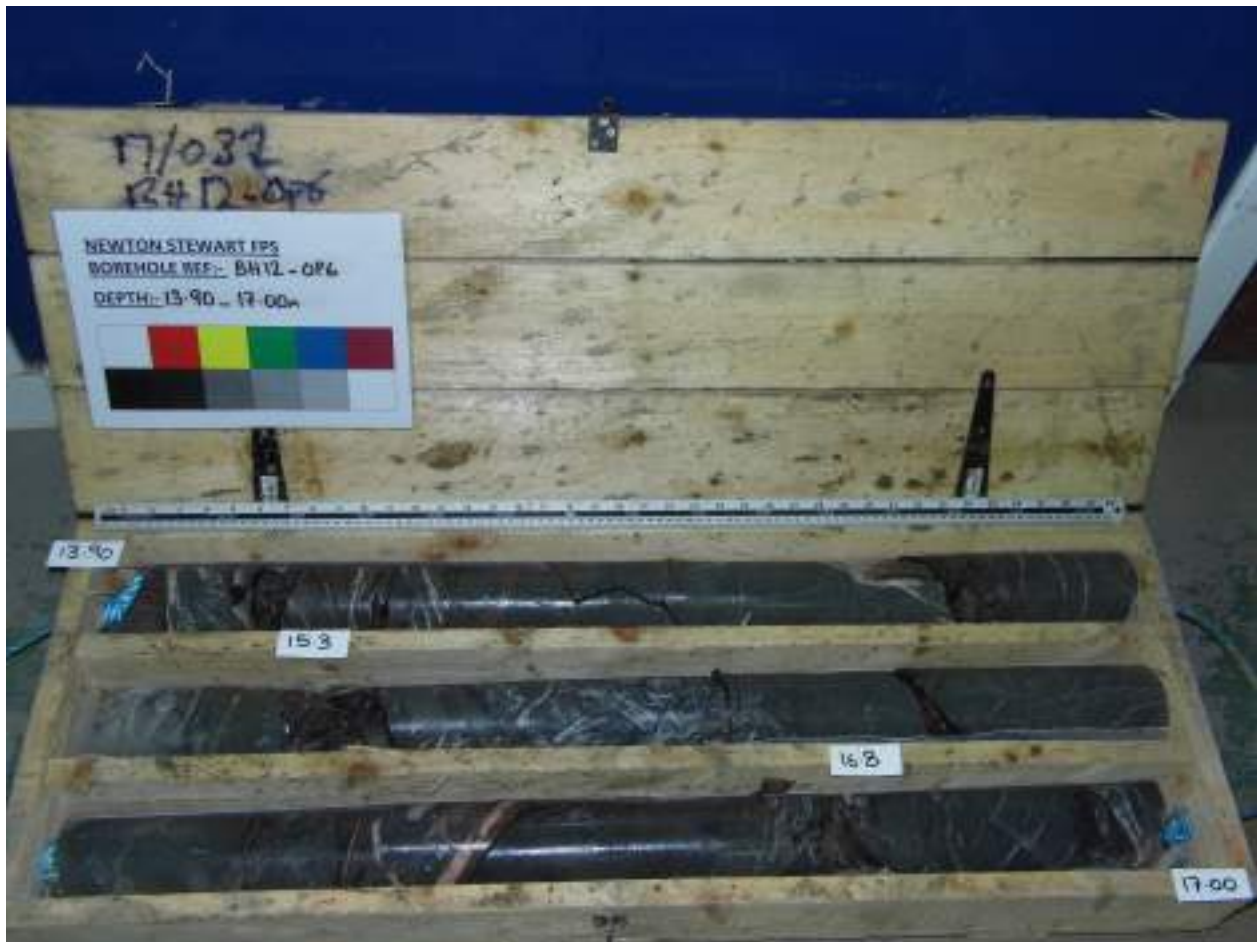
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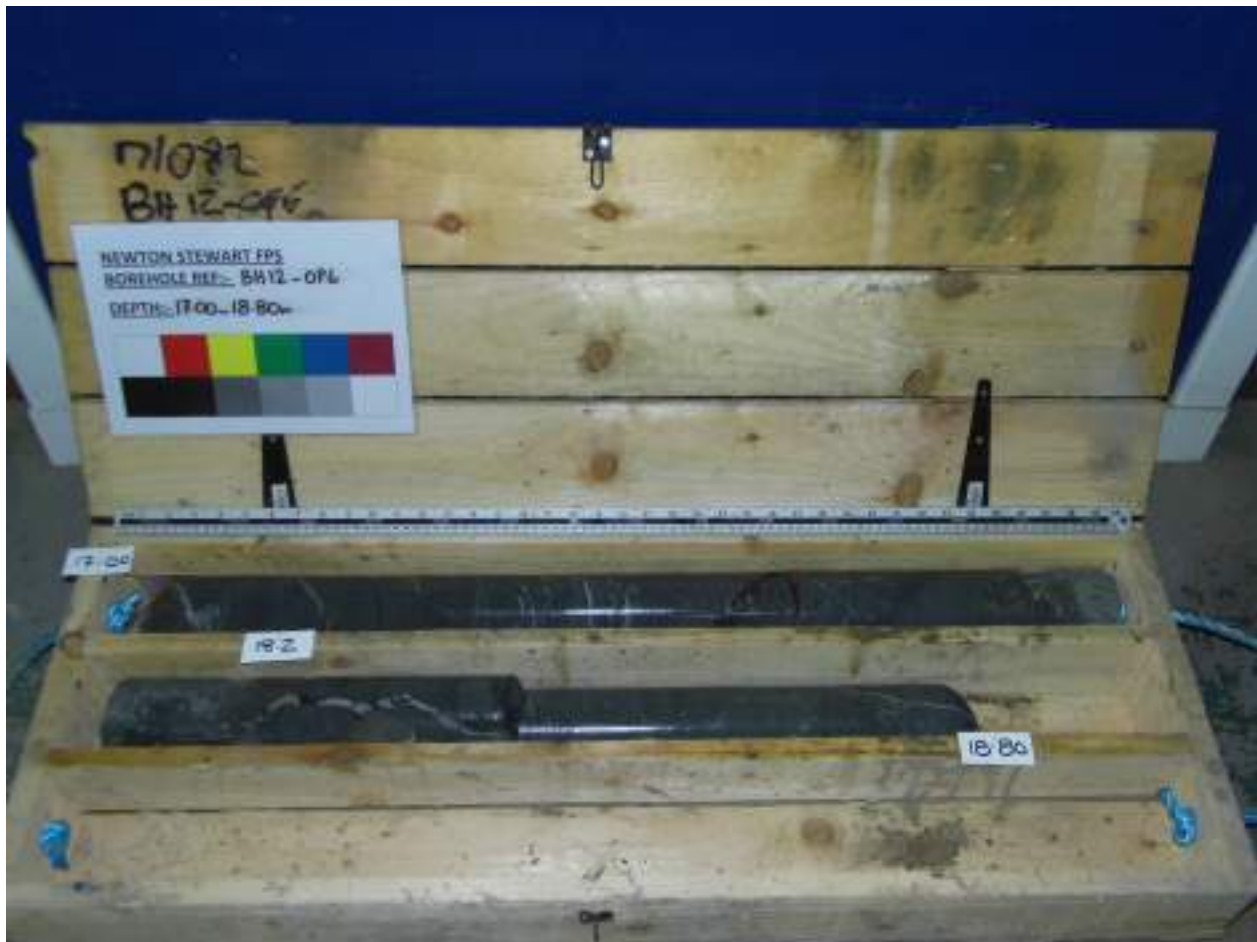
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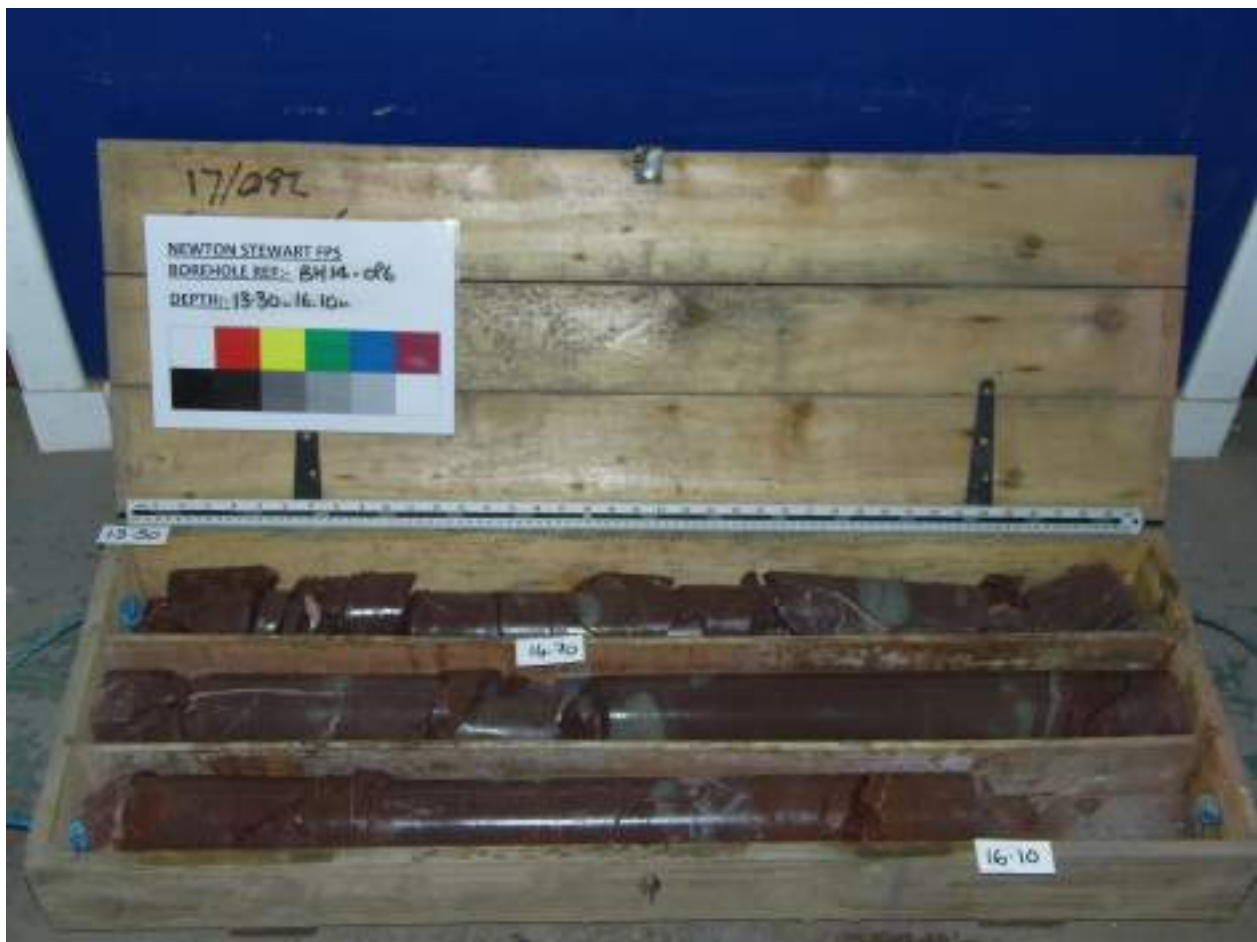


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TP3-OP6



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TP4-OP6



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ENGINEER: SWECO

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ENGINEER: SWECO

TP6-OP24



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ENGINEER: SWECO

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ENGINEER: SWECO

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ENGINEER: SWECO

TP7-OP24



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Certificate No. 007883



CONTRACT: Newton Stewart FPS
CLIENT: Dumfries and Galloway Council
ENGINEER: SWECO

TP7-OP24



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CLIENT: Dumfries and Galloway Council
ENGINEER: SWECO

TP7-OP24



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HOLEQUEST
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CONTRACT: Newton Stewart FPS
CLIENT: Dumfries and Galloway Council
ENGINEER: SWECO

TP10-OP24



GEOTECHNICAL • SITE INVESTIGATION • WELL DRILLING



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Directors: K.M. Rodger, (Secretary), A.J. Batchelor, (Managing) Registration No. 56002 Scotland, Est.1974, VAT 271 4670 58 www.holequest.co.uk





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CLIENT: Dumfries and Galloway Council
ENGINEER: SWECO

TP10-OP24



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Certificate No. 007883



CONTRACT: Newton Stewart FPS
CLIENT: Dumfries and Galloway Council
ENGINEER: SWECO

TP10-OP24



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HOLEQUEST
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CONTRACT: Newton Stewart FPS
CLIENT: Dumfries and Galloway Council
ENGINEER: SWECO

HP1-OP6



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CONTRACT: Newton Stewart FPS
CLIENT: Dumfries and Galloway Council
ENGINEER: SWECO

HP1-OP6



GEOTECHNICAL • SITE INVESTIGATION • WELL DRILLING

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CONTRACT: Newton Stewart FPS
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HP2-OP6



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ENGINEER: SWECO

HP2-OP6



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HP2A-OP6



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ENGINEER: SWECO

HP2A-OP6



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ENGINEER: SWECO

HP3-OP6



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Certificate No. 007883



CONTRACT: Newton Stewart FPS
CLIENT: Dumfries and Galloway Council
ENGINEER: SWECO

HP4-OP6



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CLIENT: Dumfries and Galloway Council
ENGINEER: SWECO

HP4-OP6



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ENGINEER: SWECO

HP4-OP6



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HP5-OP6



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ENGINEER: SWECO

HP5-OP6



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ENGINEER: SWECO

HP6-OP6



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CLIENT: Dumfries and Galloway Council
ENGINEER: SWECO

HP7-OP6



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HP8-OP6



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ENGINEER: SWECO

HP10-OP6



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CONTRACT: Newton Stewart FPS
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ENGINEER: SWECO

HP11-OP6



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Certificate No. 007883



CONTRACT: Newton Stewart FPS
CLIENT: Dumfries and Galloway Council
ENGINEER: SWECO

HP11-OP6



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Certificate No. 007883



CONTRACT: Newton Stewart FPS
CLIENT: Dumfries and Galloway Council
ENGINEER: SWECO

HP12-OP6



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CONTRACT: Newton Stewart FPS
CLIENT: Dumfries and Galloway Council
ENGINEER: SWECO

HP12-OP6



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CONTRACT: Newton Stewart FPS
CLIENT: Dumfries and Galloway Council
ENGINEER: SWECO

HP2-OP7



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APPENDIX VII

SPT Hammer Energy Ratio Certificates

Holequest Ltd
Winston Road
Galashiels
TD1 2DA

SPT Hammer Ref: HQ01 0412
Test Date: 04/12/2017
Report Date: 19/04/2018
File Name: HQ01 0412.spt
Test Operator: FM

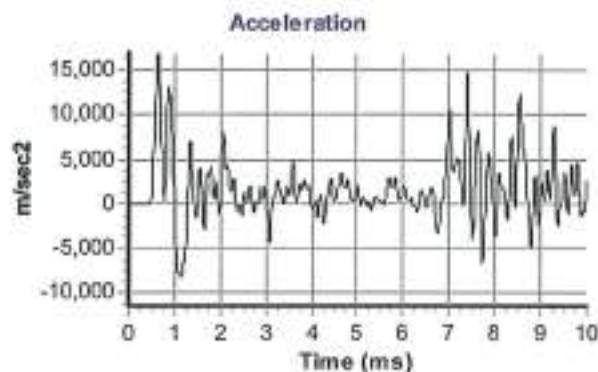
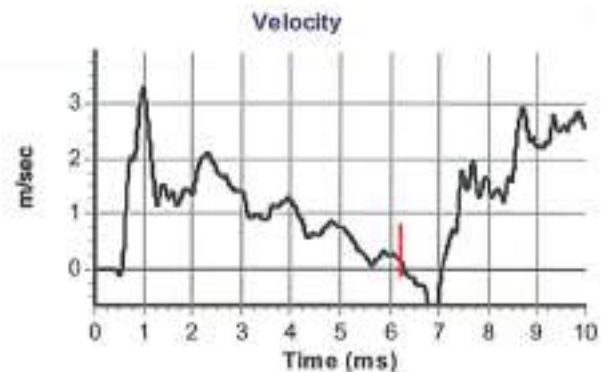
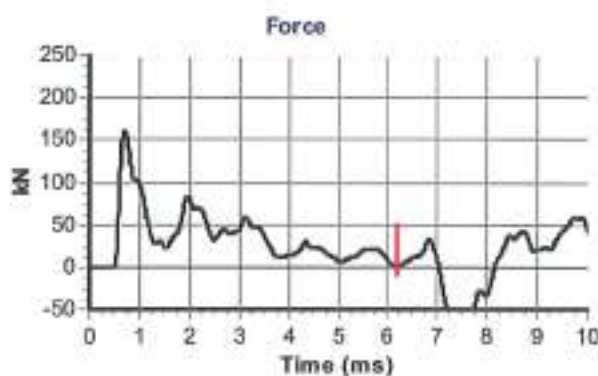
Instrumented Rod Data

Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.7
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 10334
Accelerometer No.2: 11794

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 16.3

Comments / Location



Calculations

Area of Rod A (mm^2): 996
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 345

Energy Ratio E_r (%): **73**



Signed: Fraser Murray
Title: Assistant Contracts Manager

The recommended calibration interval is 6 months

Holequest Ltd
Winston Road
Galashiels
TD1 2DA

SPT Hammer Ref: HQ02 0412
Test Date: 04/12/2017
Report Date: 19/04/2018
File Name: HQ02 0412.spt
Test Operator: FM

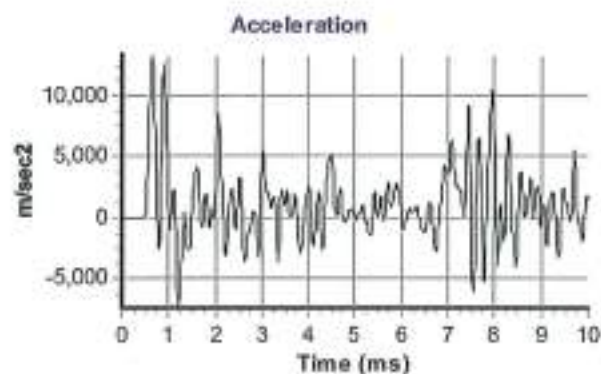
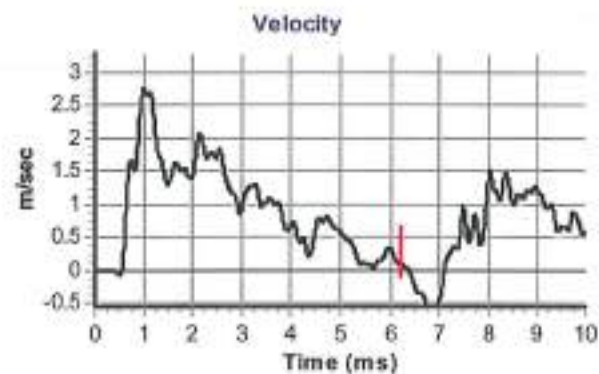
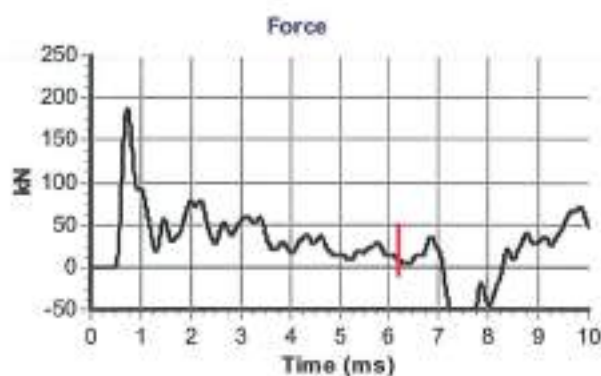
Instrumented Rod Data

Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.7
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 10334
Accelerometer No.2: 11794

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 16.3

Comments / Location



Calculations

Area of Rod A (mm^2): 996
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 339

Energy Ratio E_r (%): **72**



Signed: Fraser Murray
Title: Assistant Contracts Manager

The recommended calibration interval is 6 months

Holequest Ltd
Winston Road
Galashiels
TD1 2DA

SPT Hammer Ref: HQ03 0412
Test Date: 04/12/2017
Report Date: 19/04/2018
File Name: HQ03 0412.spt
Test Operator: FM

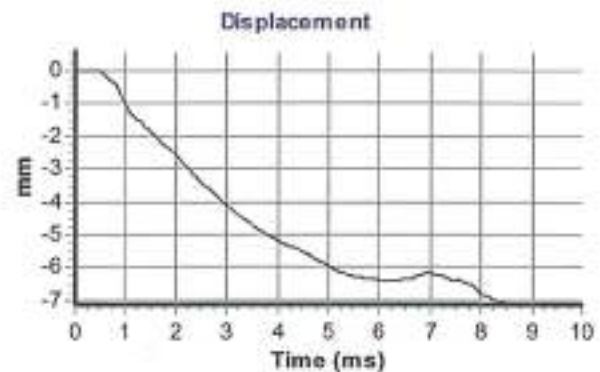
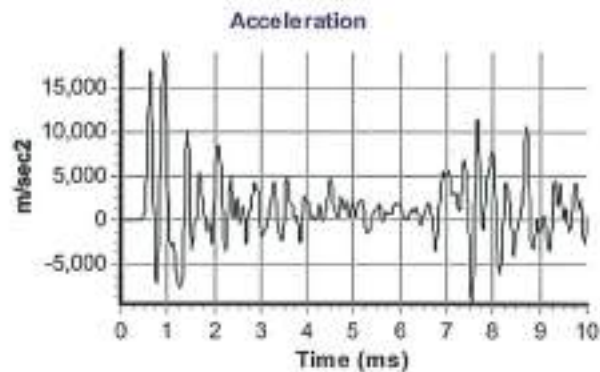
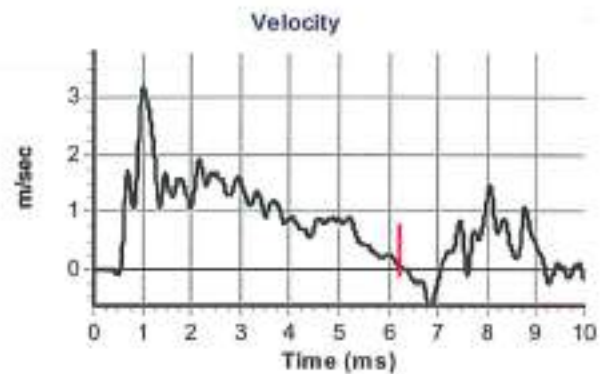
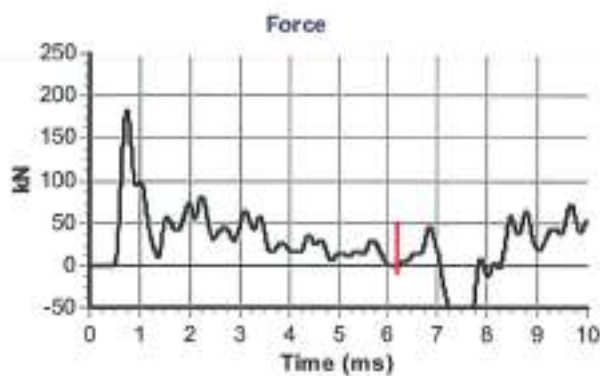
Instrumented Rod Data

Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.7
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 10334
Accelerometer No.2: 11794

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 16.3

Comments / Location



Calculations

Area of Rod A (mm^2): 996
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 346

Energy Ratio E_r (%): **73**

Signed: Fraser Murray

Title: Assistant Contracts Manager

The recommended calibration interval is 6 months



HOLEQUEST
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SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Holequest Ltd
Winston Road
Galashiels
TD1 2DA

SPT Hammer Ref: HQ04 0412
Test Date: 04/12/2017
Report Date: 19/04/2018
File Name: HQ04 0412.spt
Test Operator: FM

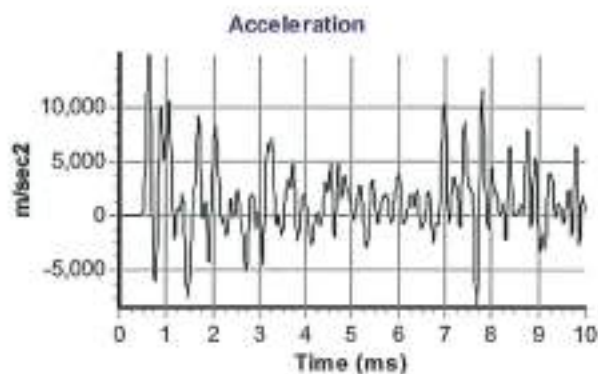
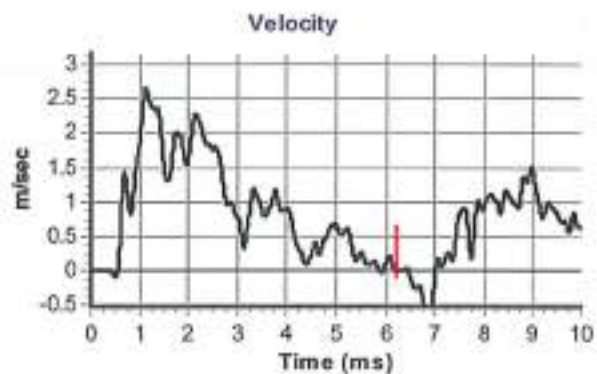
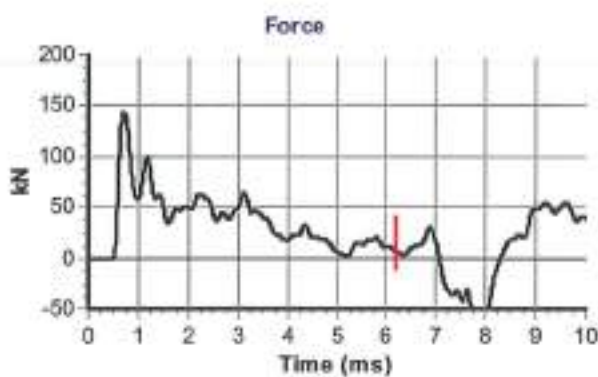
Instrumented Rod Data

Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.7
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 10334
Accelerometer No.2: 11794

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 16.3

Comments / Location



Calculations

Area of Rod A (mm^2): 996
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 334

Energy Ratio E_r (%): **71**

Signed: Fraser Murray
Title: Assistant Contracts Manager

The recommended calibration interval is 6 months