Appendix 10-7: Daa Surveys – Ground Investigation

DAA Surveys – Ground Investigation

Client:	DAA
Client's Representative:	Balfour Beatty
Report No.:	18-0577
Date:	October 2018
Status:	Final for Issue

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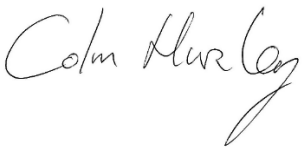
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Document Control Sheet

Report No.:		18-0577			
Project Title:		DAA Surveys			
Client:		DAA			
Client's Representative:		Balfour Beatty			
Revision:	A02	**Status:**	Final for Issue	**Issue Date:**	31 October 2018
Prepared by:		**Reviewed by:**		**Approved by:**	
 Sean Ross BSc MSc		 Colm Hurley BSc		 Darren O'Mahony BSc MSc MIEI	

The works were conducted in accordance with:

UK Specification for Ground Investigation 2nd Edition, published by ICE Publishing (2012)

British Standards Institute (2015) BS 5930:2015, Code of practice for site investigations.

BS EN 1997-2: 2007: Eurocode 7 - Geotechnical design - Part 2 Ground investigation and testing.

Geotechnical Society of Ireland (2016), Specification & Related Documents for Ground Investigation in Ireland

Laboratory testing was conducted in accordance with:

British Standards Institute BS 1377:1990 parts 2, 4, 5, 7 and 9

METHODS OF DESCRIBING SOILS AND ROCKS

Soil and rock descriptions are based on the guidance in BS5930:2015, The Code of Practice for Site Investigation.

Abbreviations used on exploratory hole logs	
U	Nominal 100mm diameter undisturbed open tube sample (thick walled sampler)
UT	Nominal 100mm diameter undisturbed open tube sample (thin walled sampler)
P	Nominal 100mm diameter undisturbed piston sample
B	Bulk disturbed sample
LB	Large bulk disturbed sample
D	Small disturbed sample
C	Core sub-sample (displayed in the Field Records column on the logs)
L	Liner sample from dynamic sampled borehole
W	Water sample
ES / EW	Soil sample for environmental testing / Water sample for environmental testing
SPT (s)	Standard penetration test using a split spoon sampler (small disturbed sample obtained)
SPT (c)	Standard penetration test using 60 degree solid cone
x,x/x,x,x,x	Blows per increment during the standard penetration test. The initial two values relate to the seating drive (150mm) and the remaining four to the 75mm increments of the test length. The length achieved is stated (mm) for any test increment less than 75mm
N=X	SPT blow count 'N' given by the summation of the blows 'X' required to drive the full test length (300mm)
N=X/Z	Incomplete standard penetration test where the full test length was not achieved. The blows 'X' represent the total blows for the given test length 'Z' (mm)
V VR	Shear vane test (borehole) Hand vane test (trial pit) Shear strength stated in kPa V: undisturbed vane shear strength VR: remoulded vane shear strength
dd/mm/yy: 1.0 dd/mm/yy: dry	Date & water level at the borehole depth at the end of shift and the start of the following shift
Abbreviations relating to rock core – reference Clause 36.4.4 of BS 5930: 2015	
TCR (%)	Total Core Recovery: Ratio of rock/soil core recovered (both solid and non-intact) to the total length of core run.
SCR (%)	Solid Core Recovery: Ratio of solid core to the total length of core run. Solid core has a full diameter, uninterrupted by natural discontinuities, but not necessarily a full circumference and is measured along the core axis between natural fractures.
RQD (%)	Rock Quality Designation: Ratio of total length of solid core pieces greater than 100mm to the total length of core run.
FI	Fracture Index: Number of natural discontinuities per metre over an indicated length of core of similar intensity of fracturing.
NI	Non Intact: Used where the rock material was recovered fragmented, for example as fine to coarse gravel size particles.
AZCL	Assessed zone of core loss: The estimated depth range where core was not recovered.
DIF	Drilling induced fracture: A fracture of non-geological origin brought about by the rock coring.
(xxx/xxx/xxx)	Spacing between discontinuities (minimum/average/maximum).

DAA Surveys

1 AUTHORITY

On the instructions of Balfour Beatty, ("the Client's Representative"), acting on the behalf of DAA ("the Client"), a ground investigation was undertaken at the above location to provide geotechnical and environmental information to the Client.

This report details the work carried out both on site and in the geotechnical and chemical testing laboratories; it contains a description of the site and the works undertaken, the exploratory hole logs and the laboratory test results.

All information given in this report is based upon the ground conditions encountered during the site investigation works, and on the results of the laboratory and field tests performed. However, there may be conditions at the site that have not been taken into account, such as unpredictable soil strata, contaminant concentrations, and water conditions between or below exploratory holes. It should be noted that groundwater levels usually vary due to seasonal and/or other effects and may at times differ to those recorded during the investigation. No responsibility can be taken for conditions not encountered through the scope of work commissioned, for example between exploratory hole points, or beneath the termination depths achieved.

This report was prepared by Causeway Geotech Ltd for the use of the Client and the Client's Representative in response to a particular set of instructions. Any other parties using the information contained in this report do so at their own risk and any duty of care to those parties is excluded.

2 SCOPE

The extent of the investigation, as instructed by the Client's Representative, included boreholes, trial pits, soil and rock core sampling, environmental sampling, in-situ and laboratory testing, and the preparation of a factual report on the findings.

3 DESCRIPTION OF SITE

As shown on the site location plan in Appendix A, the works were conducted on six different sites in the vicinity of Dublin Airport, hereby named Site A – F.

Site A

Site A is located south of the western end of Runway 10/28 and is bounded to the north by R108, to the east by Dublin Airport car parking, to the south by warehouses and to the west by dwellings

Site B

Site B is located south of Dublin Airport occupied by GAA pitches belonging to Starlights GAA Club and Na Fianna GAA Club. The site is bounded to the north by the Old Airport Road and to the east, south and west by agricultural lands.

Site C

Site C is located south east of Dublin Airport and is occupied by several playing pitches. The site is bounded to the west by the R132, to the north by ALSAA sports club and Dublin Airport car parking, to the east by the M1 motorway and to the south by Dardistown Cemetery and Dublin Airport Car Parking.

Site D

Site D is located north east of Dublin Airport and is the location of Halpenny Driving Range.

Site E

Site E is located immediately west of Dublin Airport and north of Runway 10/28. The site is bounded to the north and east by the R108 and to the south and west by agricultural lands.

Site F

Site F is located west of Dublin Airport and north of the western extent of Runway 10/28. The site is bounded by the R122 to the west, the R108 to the north, Dunbro Land to the east and agricultural fields to the south.

4 SITE OPERATIONS

4.1 Summary of site works

Site operations, which were conducted between 30th July and 23rd August 2018, comprised:

- seven light cable percussion boreholes continued by rotary drilling methods; and
- thirty machine dug trial pits.

The exploratory holes and in-situ tests were located as instructed by the Client's Representative, as shown on the exploratory hole location plan in Appendix A.

4.2 Boreholes

Seven boreholes (BH01-BH07) were put down by a combination of light cable percussion boring using a Dando 2000 rig and rotary follow-on drilling techniques using a Hanji-8D rig with core recovery in overburden strata and bedrock.

Hand dug inspection pits were carried out between ground level and 1.20m depth to ensure boreholes were put down at locations clear of services or subsurface obstructions.

In the light cable percussive holes disturbed (bulk and small bag) samples were taken within the encountered strata as well as undisturbed (U100) samples, taken where appropriate and as directed within fine soils. All light cable percussive holes were taken down to 5m or to virtual refusal on obstructions above this depth.

Standard penetration tests were carried out in accordance with BS EN 22476-3: 2005 at standard depth intervals throughout the overburden using the split spoon sampler ($SPT_{(s)}$) or solid cone attachment ($SPT_{(c)}$). The penetrations are stated for those tests for which the full 150mm seating drive or 300mm test drive was not possible. The N-values provided on the borehole logs are uncorrected and no allowance has been made for energy ratio corrections. The SPT hammer energy measurement report is provided in Appendix H.

Any water strikes encountered during boring were recorded along with any changes in their levels as the borehole proceeded.

Where water was added to assist with boring, a note has been added to the log to account for same.

Where coring was carried out within overburden bedrock strata, Geobor-S Coring was used. The core was extracted in up to 1.5m lengths using a SK6L core barrel, which produced core of nominal 102mm diameter, and was placed in single channel wooden core boxes.

The core was subsequently photographed and examined by a qualified and experienced Engineering Geologist, thus enabling the production of an engineering log in accordance with *BS 5930: 2015: Code of practice for ground investigations*.

Appendix B presents the borehole logs, with core photographs presented in Appendix C.

4.3 Trial Pits

Thirty trial pits (TP01–TP30) were excavated using an 8t tracked excavator fitted with a 600mm wide bucket, to depths of 2.0m.

Environmental samples were taken at depths of 0.5m and 1.5m in each trial pit.

Disturbed (small jar and bulk bag) samples were taken at standard depth intervals and at change of strata.

Any water strikes encountered during excavation were recorded along with any changes in their levels as the excavation proceeded. The stability of the trial pit walls was noted on completion.

Appendix D presents the trial pit logs with photographs of the pits and arising provided in Appendix E.

5 LABORATORY WORK

Upon their receipt in the laboratory, all disturbed samples were carefully examined and accurately described, and their descriptions incorporated into the borehole logs.

5.1 Geotechnical laboratory testing of soils

Laboratory testing of soils comprised:

- **soil classification:** moisture content measurement, Atterberg Limit tests and particle size distribution analysis.
- **compressibility:** one dimensional consolidation (oedometer)
- **shear strength** (total stress): unconsolidated undrained triaxial tests, consolidated undrained triaxial tests, lab vanes
- **compaction related:** dry density/moisture content relationship, Moisture Condition Value, California bearing ratio tests
- **soil chemistry:** pH, water soluble sulphate content, organic matter content

Laboratory testing of soils samples was carried out in accordance with British Standards Institute: *BS 1377, Methods of test for soils for civil engineering purposes; Part 1 (2016), and Parts 2-9 (1990).*

The test results are presented in Appendix F.

5.2 Environmental laboratory testing of soils

Environmental testing, as specified by the Client's Representative was conducted on selected environmental soil samples by Chemtest at its laboratory in Newmarket, Suffolk.

Twenty Rialta suites of testing and twenty Murphy suites of testing were carried out on samples recovered from site.

Testing was carried out for a range of determinants, including:

- Metals
- Speciated total petroleum hydrocarbons (TPH)
- Speciated polycyclic aromatic hydrocarbons (PAH)
- Cyanides
- Asbestos screen
- pH.

Waste acceptance criteria (WAC) testing was carried out on all forty samples.

Results of environmental laboratory testing are presented in Appendix G.

6 GROUND CONDITIONS

6.1 General geology of the area

Published geological mapping indicate the superficial deposits underlying the site comprise Glacial Till. These deposits are underlain by limestones and shales of the Lucan Formation and argillaceous limestone and shales of the Malahide Formation.

6.2 Ground types encountered during investigation of the site

A summary of the ground types encountered in the exploratory holes at each site. is listed below, in approximate stratigraphic order:

Site A

- **Topsoil:** encountered typically in 200-250mm thickness across the site.

- **Glacial Till:** sandy gravelly clay, frequently with low cobble content, typically firm or stiff in upper horizons, becoming very stiff with increasing depth. Granular pockets are located throughout the strata consisting of angular fine to coarse gravel.

Site A

- **Topsoil:** encountered typically in 200-250mm thickness across the site.
- **Glacial Till:** sandy gravelly clay, frequently with low cobble content, typically firm or stiff in upper horizons, becoming very stiff with increasing depth. Granular pockets are located throughout the strata consisting of angular fine to coarse gravel.

Site B

- **Topsoil:** encountered typically in 200-300mm thickness across the site.
- **Made Ground (fill):** angular gravel fill used as temporary car park, 150mm in thickness at TP05
- **Glacial Till:** sandy gravelly clay, frequently with low cobble content, typically firm or stiff in upper horizons, becoming very stiff with increasing depth.

Site C

- **Topsoil:** encountered typically in 100-400mm thickness across the site.
- **Glacial Till:** sandy gravelly clay, frequently with low cobble content, typically firm or stiff in upper horizons, becoming very stiff with increasing depth. Granular pockets are located throughout the strata consisting of angular fine to coarse gravel.

Site D

- **Topsoil:** encountered typically in 200mm thickness across the site.
- **Glacial Till:** sandy gravelly clay, frequently with low cobble content, typically firm or stiff in upper horizons, becoming very stiff with increasing depth. Granular pockets are located throughout the strata consisting of gravelly sand/silty sandy subangular gravel.

Site E

- **Topsoil:** encountered typically in 200-400mm thickness across the site.
- **Glacial Till:** sandy gravelly clay, frequently with low cobble content, typically firm or stiff in upper horizons, becoming very stiff with increasing depth. A zone of softer sandy gravelly clay is present in BH05, likely to be part of a weathered horizon just above bedrock.
- **Bedrock (Limestone):** Rockhead was encountered at depths ranging from 2.0m in BH07 to about 4.6m in boreholes BH05. BH06 did not encounter rock, however it is believed that the borehole was drilled through a fault zone. Drill cores returned repeated cycles of stiff clay and fault breccia. The

extent of this fault has been mapped by the GSI in a north/south extent, however it's east/west extent is unknown. Further ground investigation by rotary methods would be needed to delineate competent unaltered bedrock.

Site F

- **Topsoil:** encountered typically in 300-500mm thickness across the site.
- **Glacial Till:** sandy gravelly clay, frequently with low cobble content, typically firm or stiff in upper horizons, becoming very stiff with increasing depth. Granular pockets are located throughout the strata consisting of gravelly sand/silty sandy subangular gravel.
- **Bedrock (Limestone):** Rockhead was encountered at depths ranging from 3.5m in BH02 to about 7.1m in borehole BH03. Bedrock was not encountered during drilling in BH04 however, it is believed that the borehole encountered a fault zone consisting of bedrock which has been highly weathered and altered to a clay. The extent of this fault has been mapped by the GSI in a north/south extent, however it's east/west extent is unknown. Further ground investigation by rotary methods would be needed to delineate competent unaltered bedrock.

6.3 Groundwater

Groundwater was encountered during drilling and as seepage in trial pits as shown in Table 1 below:

Table 1 Groundwater strikes encountered during ground investigation

GI ref	Site	Depth (mbgl)	Comments
BH02	Site F	3.5	Strike
BH04	Site F	1.7	Rose to 1.6m after 20 mins
BH06	Site E	4.6	Rose to 4.5m after 20 mins
TP01	Site A	1.8	Seepage
TP18	Site D	1.9	Seepage

Details of the individual groundwater strikes, along with any relative changes in levels as works proceeded, are presented on the exploratory hole logs for each location.

Groundwater was not noted during drilling at any of the other borehole locations or during excavation of any of the other trial pits.

However, it should be noted that the casing used in supporting the borehole walls during drilling may have sealed out any/additional groundwater strikes and the possibility of encountering groundwater during excavation works should not be ruled out. Seasonal variation in groundwater levels should also be factored into design considerations.

It should be noted that any groundwater strikes within bedrock may have been masked by the fluid used as the drilling flush medium.

7 REFERENCES

Geotechnical Society of Ireland (2016), Specification & Related Documents for Ground Investigation in Ireland

IS EN 1997-2: 2007: Eurocode 7 - Geotechnical design - Part 2 Ground investigation and testing.

BS 1377: 1990: Methods of test for soils for civil engineering purposes. British Standards Institution.

BS 5930: 2015: Code of practice for ground investigations. British Standards Institution.

BS EN 1997-2: 2007: Eurocode 7 - Geotechnical design - Part 2 Ground investigation and testing. British Standards Institution.

BS EN ISO 14688-1:2018: Geotechnical investigation and testing. Identification and classification of soil. Part 1 Identification and description. British Standards Institution.

BS EN ISO 14688-2:2004+A1:2013: Geotechnical investigation and testing. Identification and classification of soil. Part 2 Principles for a classification.

BS EN ISO 14689-1:2018: Geotechnical investigation and testing. Identification and classification of rock. Identification and description.

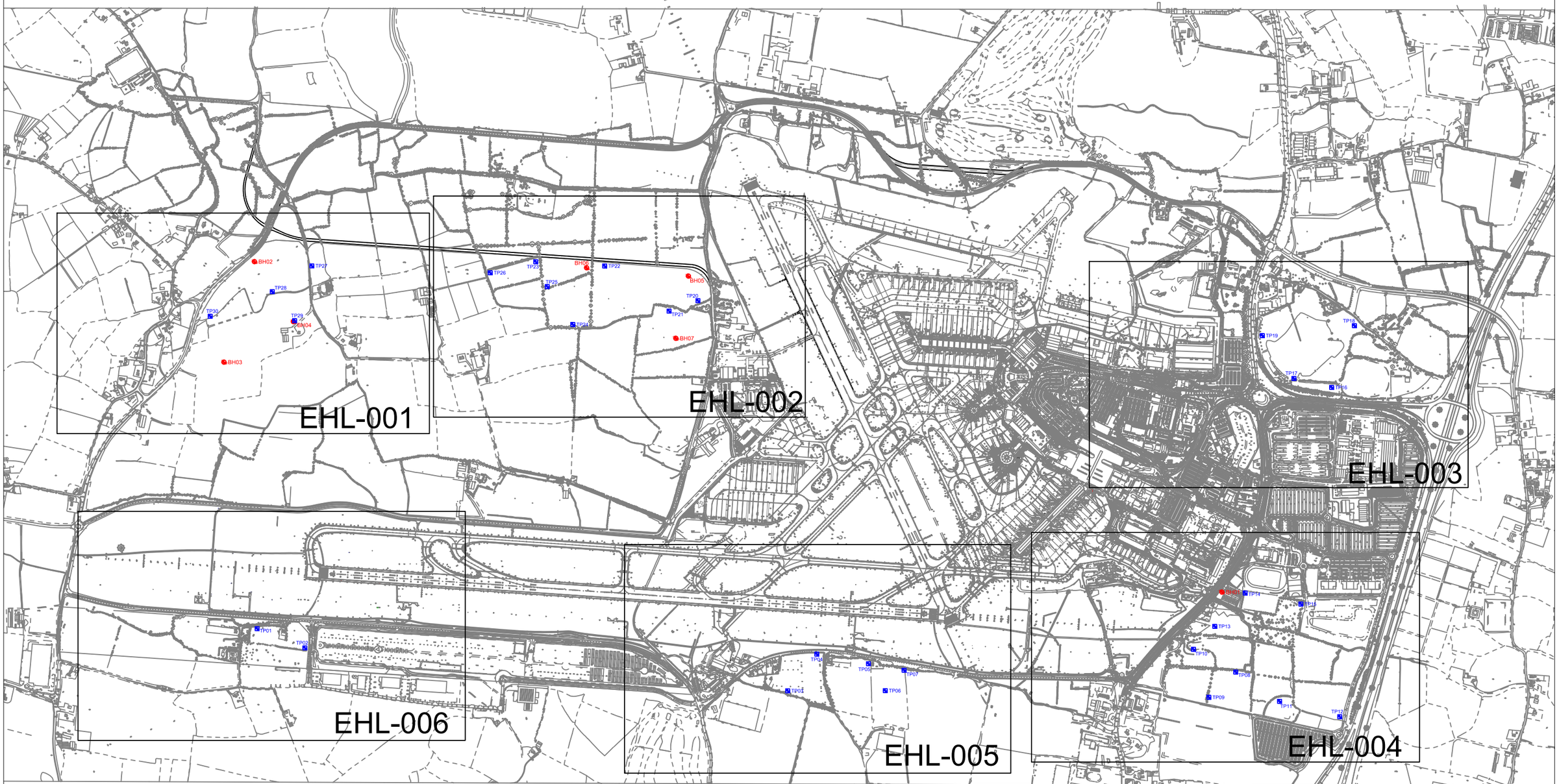
BS EN ISO 22476-3:2005+A1:2011: Geotechnical investigation and testing. Field testing. Standard penetration test.

CAUSEWAY GEOTECH

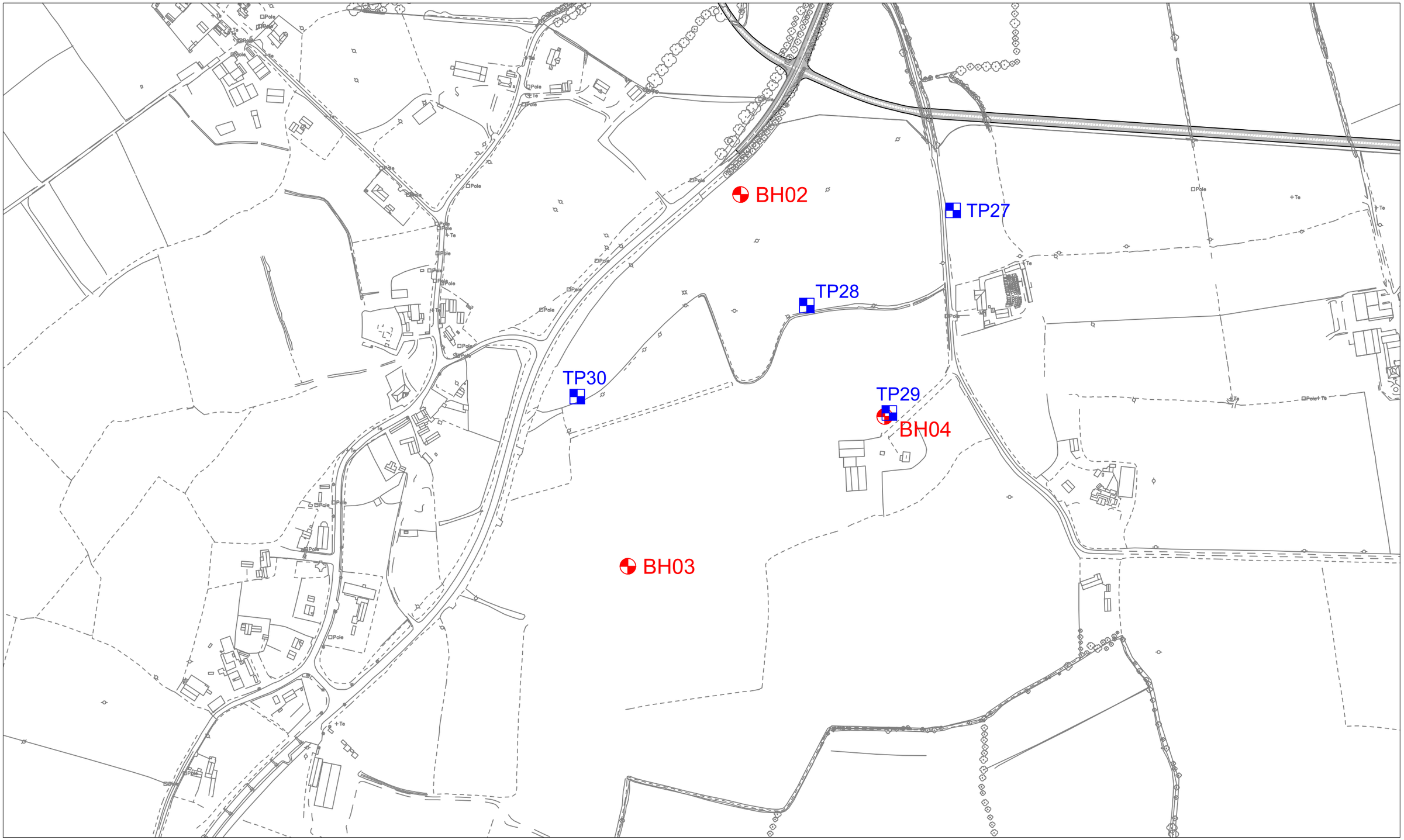
APPENDIX A

SITE AND EXPLORATORY HOLE LOCATION PLANS

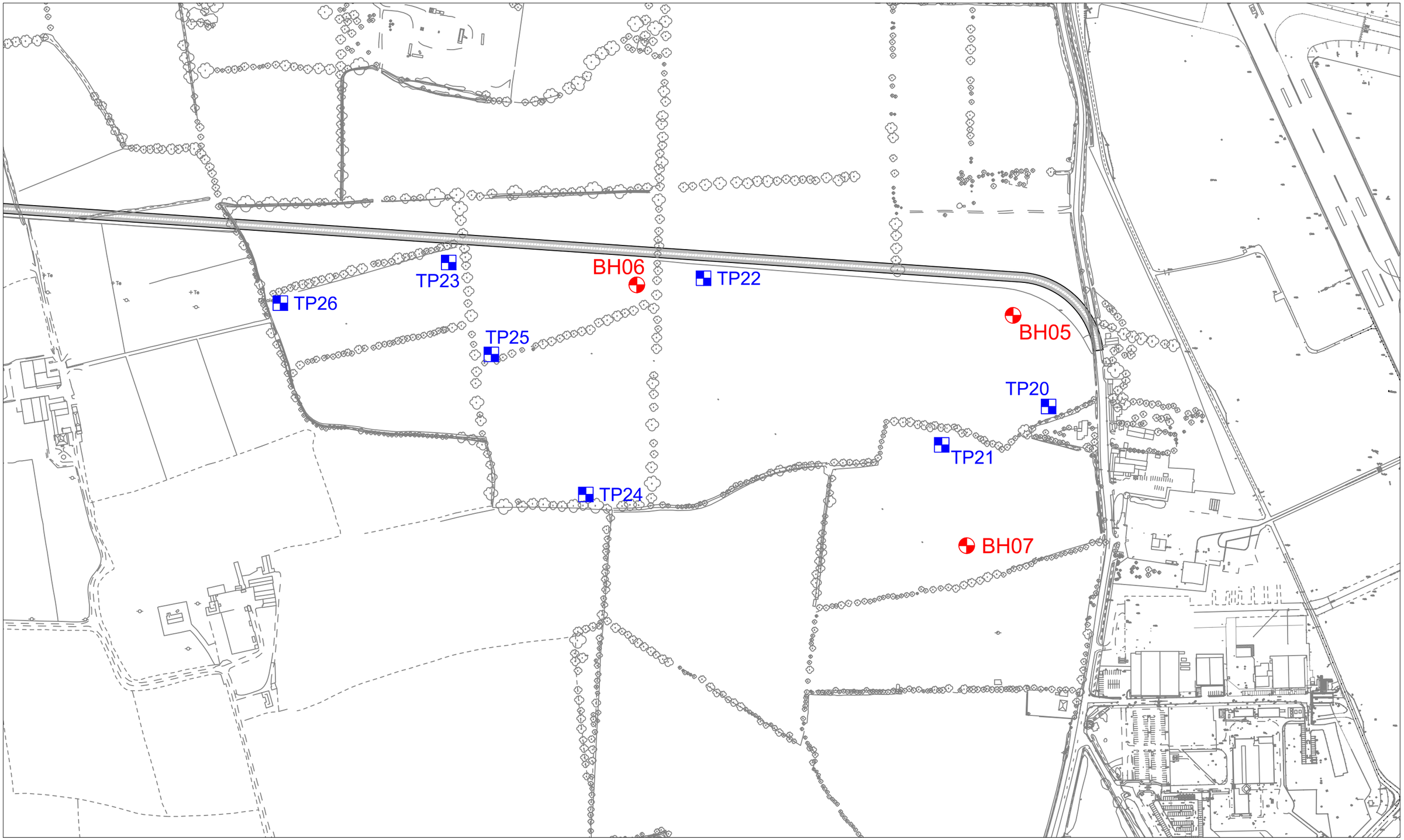




PROJECT: DAA Surveys and Investigations		TITLE: Exploratory hole location plan			
CLIENT: Dublin Airport Authority	KEY: Borehole, Trial Pits	CAUSEWAY GEOTECH	SCALE: NTS@A3	DATE: 27/08/2018	
ENGINEER: Balfour Beatty			DRWN: BS CHCK: CH	SERIES: 1 of 1	DWG No: 18-0577-EHL-Overview



PROJECT: DAA Surveys and Investigations		TITLE: Exploratory hole location plan			
CLIENT: Dublin Airport Authority	KEY: Borehole, Trial Pits	CAUSEWAY GEOTECH	SCALE: NTS@A3	DATE: 29/08/2018	
ENGINEER: Balfour Beatty			DRWN: BS CHCK: CH	SERIES: 1 of 6	DWG No: 18-0577-EHL-001



PROJECT: DAA Surveys and Investigations

TITLE: Exploratory hole location plan

CLIENT: Dublin Airport Authority

KEY:
- Borehole
- Trial Pits

ENGINEER: Balfour Beatty

CAUSEWAY GEOTECH

SCALE: NTS@A3

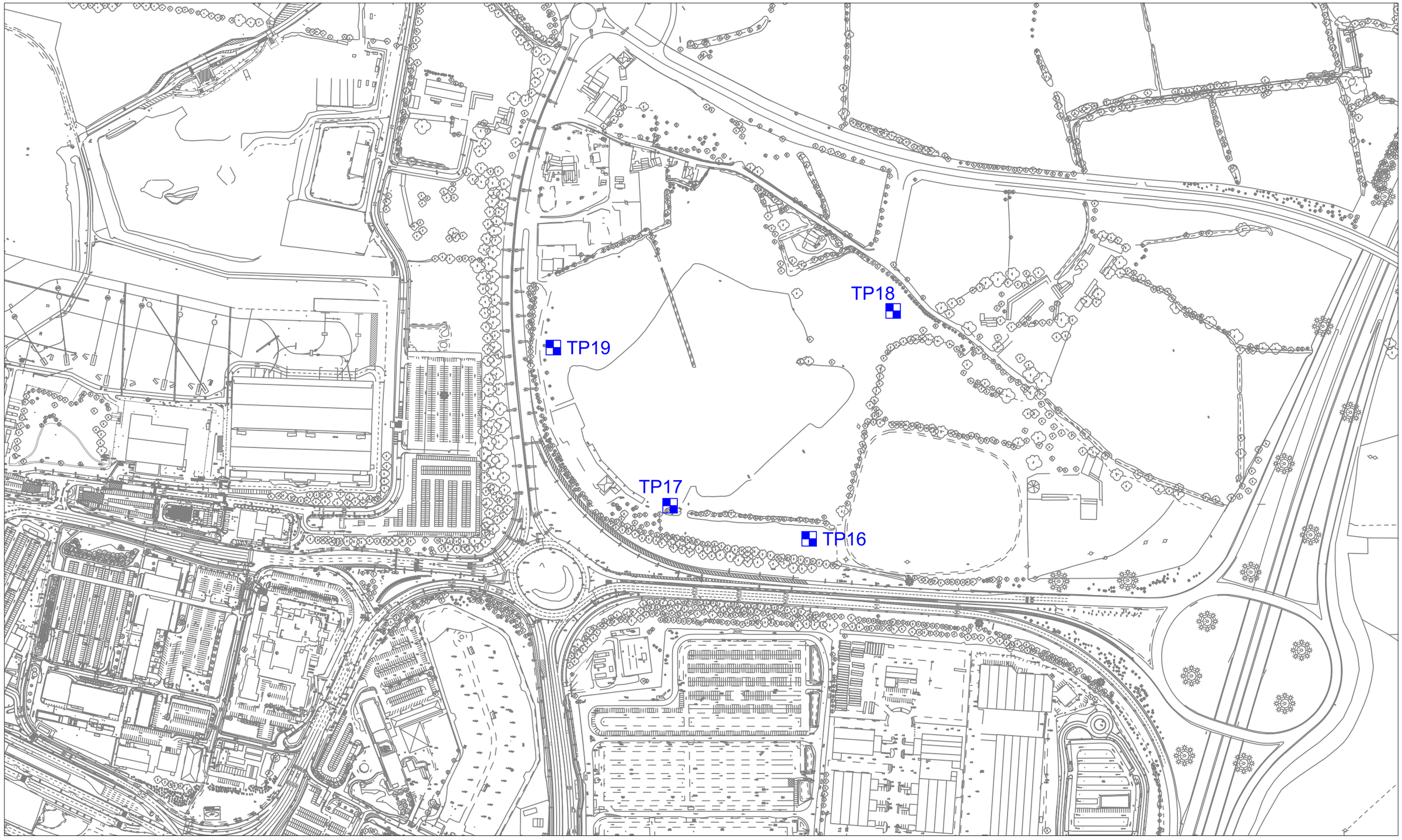
DATE: 29/08/2018

DRWN: BS

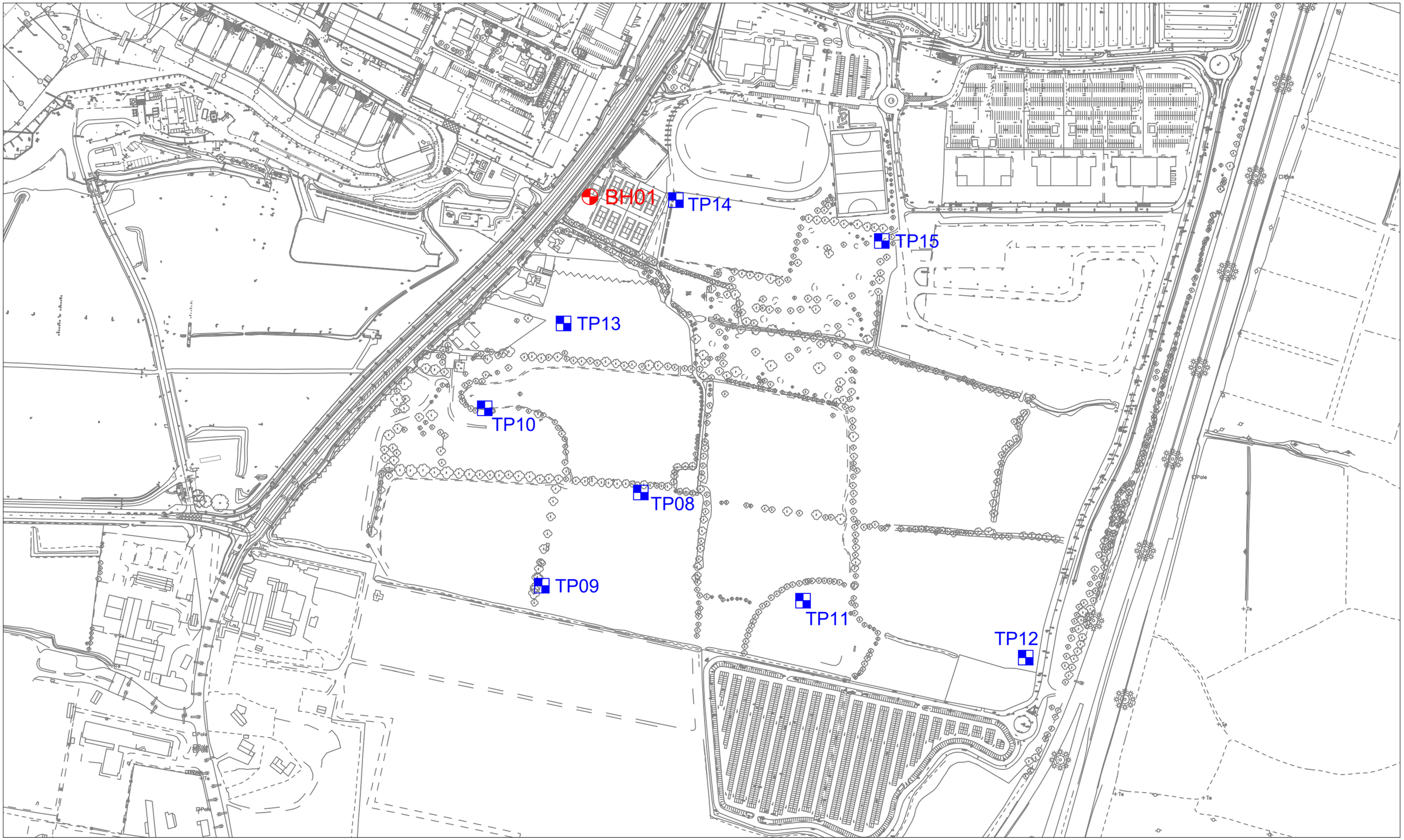
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SERIES: 2 of 6

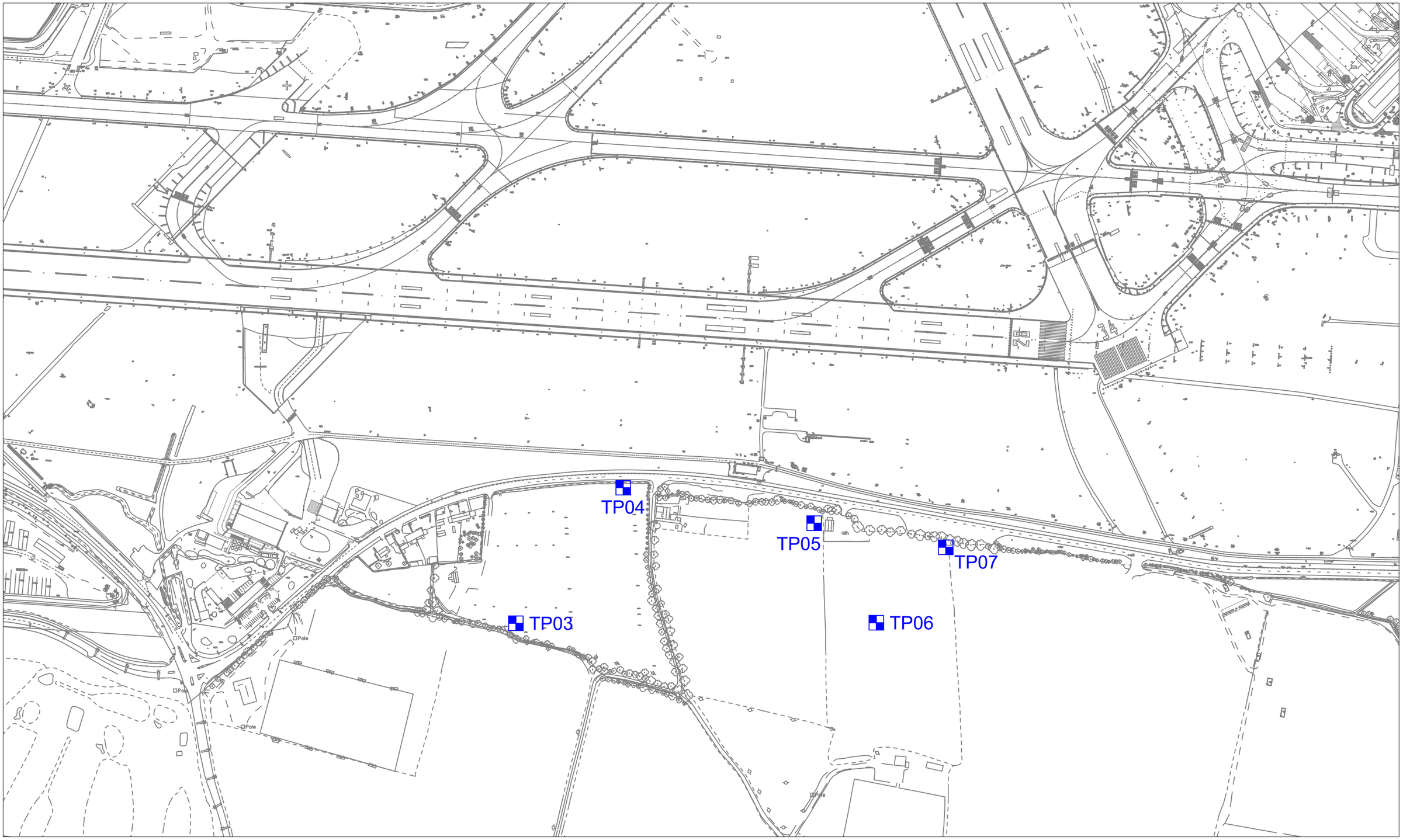
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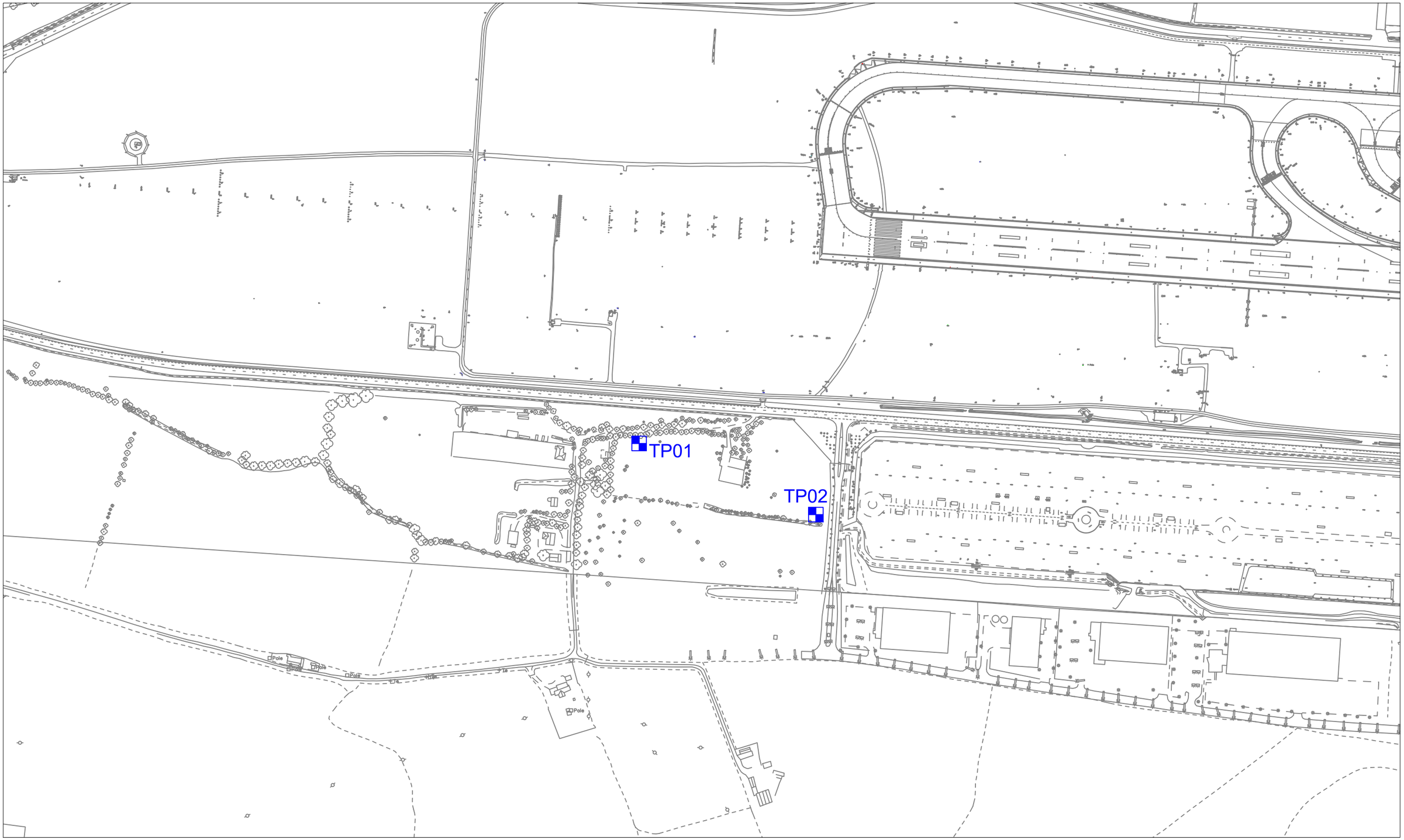
PROJECT: DAA Surveys and Investigations		TITLE: Exploratory hole location plan			
CLIENT: Dublin Airport Authority	KEY: Borehole, Trial Pits	CAUSEWAY GEOTECH	SCALE: NTS@A3	DATE: 29/08/2018	
ENGINEER: Balfour Beatty			DRWN: BS CHCK: CH	SERIES: 3 of 6	DWG No: 18-0577-EHL-003



PROJECT: DAA Surveys and Investigations		TITLE: Exploratory hole location plan			
CLIENT: Dublin Airport Authority	KEY: Borehole, Trial Pits	CAUSEWAY GEOTECH	SCALE: NTS@A3	DATE: 29/08/2018	
ENGINEER: Balfour Beatty			DRWN: BS CHCK: CH	SERIES: 4 of 6	DWG No: 18-0577-EHL-004



PROJECT: DAA Surveys and Investigations		TITLE: Exploratory hole location plan			
CLIENT: Dublin Airport Authority	KEY: Borehole, Trial Pits	CAUSEWAY GEOTECH	SCALE: NTS@A3	DATE: 29/08/2018	
ENGINEER: Balfour Beatty			DRWN: BS CHCK: CH	SERIES: 5 of 6	DWG No: 18-0577-EHL-005



PROJECT: DAA Surveys and Investigations

TITLE: Exploratory hole location plan

CLIENT: Dublin Airport Authority

KEY:
- Borehole
- Trial Pits

ENGINEER: Balfour Beatty

CAUSEWAY GEOTECH

SCALE: NTS@A3

DATE: 29/08/2018

DRWN: BS

CHCK: CH

SERIES: 6 of 6

DWG No: 18-0577-EHL-006

CAUSEWAY GEOTECH

APPENDIX B

BOREHOLE LOGS



CAUSEWAY GEOTECH

Method	Plant Used	Top	Base
Cable Percussion Rotary Coring	Dando 2000 Hanjin 8D	0.00 5.45	5.45 17.00

Project No.: 18-0577

Project Name: DAA Surveys and Investigations

Borehole No.: BH01

Coordinates: 317564.27 E, 242624.23 N

Client: Dublin Airport Authority

Client's Representative: Balfour Beatty

Ground Level: 54.60 mOD

Dates: 10/08/2018 - 23/08/2018

Sheet 1 of 2

Scale: 1:50

Driller: BM

Logger: CH+MMC

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Backfill
					54.30	(0.30) 0.30		TOPSOIL: Firm brown slightly sandy slightly gravelly organic CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse and of limestone.		
0.50	B1							Firm brownish grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse and of limestone.		
1.00	B2					(1.10)				
1.20 - 1.65	U10	1.20		Ublow=50 90%	53.20	1.40		Stiff becoming very stiff black slightly sandy slightly gravelly CLAY with low cobble and boulder content. Sand is fine to coarse. Gravel is subangular to subrounded, fine to medium and predominantly of limestone. Cobbles and boulders are subangular to subrounded and a range of sizes.		
2.00	B3 D7									
2.00 - 2.45	SPT (S) N=30	2.00		N=30 (5,6/7,7,7,9)						
3.00	B4 D8					(3.60)				
3.00 - 3.45	SPT (S) N=37	3.00		N=37 (8,8/8,9,10,10)						
4.00	B5									
4.00 - 4.45	U11	4.00		Ublow=100 50%						
5.00	B6 D9				49.60	5.00		Stiff dark grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subrounded, fine to coarse and predominantly of limestone. Cobbles are subrounded of limestone		
5.00 - 5.45	SPT (S) N=50	5.00		N=50 (9,10/12,12,16,10)						
5.15 - 5.60	C 100 0 0					(1.50)				
6.50					48.10	6.50		Firm becoming stiff light brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subrounded, fine to coarse and predominantly of limestone. Cobbles are subrounded predominantly of limestone		
6.85 - 7.36	C 100 0 0									
8.00						(3.00)				
8.70 - 9.15	C 100 0 0									
9.50					45.10	9.50		Greyish brown sandy slightly silty subangular fine to coarse GRAVEL, predominantly of limestone. Sand is fine to coarse.		
	55 0 0					(1.50)				
	TCR SCR RQD FI									

Remarks

Hand dug inspection pit excavated.
No groundwater encountered

Terminated at scheduled depth

Core Barrel: SK6L

Flush Type: Polymer

Water Strikes				Chiselling Details		
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)	From (m)	To (m)	Time (hh:mm)

Water Added		Casing Details	
From (m)	To (m)	To (m)	Diam (mm)
		5.00	200

CAUSEWAY GEOTECH

Method	Plant Used	Top	Base
Cable Percussion Rotary Coring	Dando 2000 Hanjin 8D	0.00 5.45	5.45 17.00

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations	**Borehole No.:** BH01	
Coordinates: 317564.27 E 242624.23 N	**Client:** Dublin Airport Authority	Sheet 2 of 2	
	Client's Representative: Balfour Beatty	**Scale:** 1:50	**Driller:** BM
Ground Level: 54.60 mOD	**Dates:** 10/08/2018 - 23/08/2018	**Logger:** CH+MMC	

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Backfill
									Greyish brown sandy slightly silty subangular fine to coarse GRAVEL, predominantly of limestone. Sand is fine to coarse.		
11.00						43.60	11.00		Stiff dark brownish grey slightly sandy gravelly CLAY with low to medium cobble content. Sand is fine to coarse. Gravel is subangular, fine to coarse and predominantly of limestone. Cobbles are subangular, predominantly of limestone and a range of sizes.		
11.80 - 12.30	100	0	0		C						
12.50											
13.00 - 13.50	100	0	0		C						
14.00							(6.00)				
14.25 - 14.60	100	0	0		C						
15.50											
16.30 - 16.70	100	0	0		C						
17.00						37.60	17.00		End of Borehole at 17.00m		

TCR	SCR	RQD	FI

Remarks
Hand dug inspection pit excavated.
No groundwater encountered

Terminated at scheduled depth

Core Barrel
SK6L

Flush Type
Polymer

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Water Added		Casing Details	
From (m)	To (m)	To (m)	Diam (mm)
		5.00	200

Chiselling Details		
From (m)	To (m)	Time (hh:mm)

CAUSEWAY GEOTECH

Method	Plant Used	Top	Base
Cable Percussion Rotary Coring	Dando Terrier Hanjin 8D	0.00 3.60	3.60 8.80

Project No.: 18-0577

Project Name: DAA Surveys and Investigations

Borehole No.: BH02

Coordinates: 313447.70 E, 244030.42 N

Client: Dublin Airport Authority

Sheet 1 of 1

Client's Representative: Balfour Beatty

Scale: 1:50

Driller: BM+JG

Ground Level: 73.34 mOD

Dates: 07/08/2018 - 16/08/2018

Logger: CH+GH

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Backfill
						(0.50)		TOPSOIL: Firm brown slightly sandy slightly gravelly organic CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.		
0.50	B1				72.84	0.50		Very stiff brown slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular, fine to medium and of limestone.		
1.00	B2									
1.20	D5 U5									
1.20 - 1.65	SPT (S) N=37			N=37 (7,7/8,9,10,10)		(2.50)				
2.00	B3									
2.00 - 2.45	U8			Ublow=80 80%						
2.50	D6									
3.00	B4 D7				70.34	3.00		Very stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular, fine to medium and of limestone.		
3.00 - 3.32	SPT (S)			N=50 (10,15/50 for 175mm)		(0.50)				
3.60 - 3.65	SPT (S)			Water strike at 3.50 N=50 (75 for 50mm/50 for 0mm)	69.84	3.50			▼	
	100 95 66		12			(0.90)		Medium strong dark grey argillaceous LIMESTONE. Distinctly weathered: reduced strength, much closer fracture spacing, brown staining on some fracture surfaces. Discontinuities: 1. 10 to 20 degree closely spaced fractures (30/150/210) undulating, rough, some brown staining on joint surfaces. 2. 30 to 40 degree closely spaced fractures (50/190/250) undulating, rough, some brown staining on joint surfaces. 3. 70 to 90 degree closely spaced joints, undulating, rough, some brown staining on joint surfaces.		
5.00	100 100 97		3		68.94	4.40		Medium strong dark grey argillaceous LIMESTONE. Largely unweathered; some brown staining on fracture surfaces. Discontinuities: 1. 0 to 20 degree closely spaced fractures (70/190/270) undulating, rough, some brown staining on fracture surfaces. 2. 20 to 40 degree closely spaced fractures (80/180/240) undulating, rough, some brown staining on fracture surfaces. 3. 70 to 90 degree closely spaced joints, undulating, rough, some brown staining on joint surfaces.		
6.50	100 97 96		5			(4.40)				
8.00	100 93 88									
8.80					64.54	8.80		End of Borehole at 8.80m		
	TCR SCR RQD FI									

Remarks
Hand dug inspection pit excavated

Terminated on instruction of engineer

Core Barrel
SK6L

Flush Type
Polymer

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)
3.50	3.50		

Water Added

From (m)	To (m)

Casing Details

To (m)	Diam (mm)

Chiselling Details

From (m)	To (m)	Time (hh:mm)
3.40	3.60	

CAUSEWAY GEOTECH

Method	Plant Used	Top	Base
Cable Percussion Rotary Coring	Dando Terrier Hanjin 8D	0.00 3.50	3.50 11.70

Project No.: 18-0577
Project Name: DAA Surveys and Investigations
Borehole No.: BH03
Coordinates: 313318.06 E, 243602.71 N
Client: Dublin Airport Authority
Sheet 1 of 2
Client's Representative: Balfour Beatty
Scale: 1:50
Driller: BM+JG
Ground Level: 73.42 mOD
Dates: 08/08/2018 - 14/08/2018
Logger: CH+GH

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Backfill
					73.12	(0.30) 0.30		TOPSOIL: Firm brown slightly sandy slightly gravelly organic CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.		
0.50	B1							Very stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded, fine to medium and of mixed lithologies.		
1.00	B2									
1.20	D6					(2.90)				
2.00	B3 D7									
2.00 - 2.10	U9			Ublow=50 0%						
2.50 - 2.95	SPT (S) N=31			N=31 (5,7/7,8,8,8)						
3.00	B4									
3.00 - 3.65	U10			Ublow=80 90%	70.22	3.20				
					69.92	(0.30) 3.50		Stiff brown slightly sandy slightly gravelly CLAY with low cobble content.		
					69.82	(0.30) 3.60		Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse and of limestone. Cobbles are subrounded of limestone and a range of sizes.		
4.00	B5 D8							Dark grey slightly sandy slightly clayey angular fine to coarse GRAVEL. Sand is fine to coarse.		
4.00 - 4.38	100			N=50 (12,14/50 for 235mm)				Stiff dark grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular, fine to medium and of limestone. Cobbles are subrounded of limestone and a range of sizes.		
4.30 - 4.80				C						
4.70 - 4.90				N=50 (17,25/50 for 50mm)		(2.10)				
5.00										
5.10 - 5.50	100			C	67.72	5.70		Dark grey slightly sandy gravelly CLAY with medium cobble content and occasional limestone boulder. Sand is fine to coarse. Gravel is subangular fine to coarse predominantly of limestone. Cobbles are subrounded of limestone and a range of sizes.		
6.50						(1.40)				
	100	60	26		66.32	7.10		Medium strong dark grey argillaceous LIMESTONE. Distinctly weathered: reduced strength, much closer fracture spacing, orangish brown staining on fracture surfaces.		
				>20		(0.90)		Discontinuities: 1. 10 to 30 degree closely spaced fractures (50/170/2030) undulating, rough, orangish brown staining on fracture surfaces. 2. 70 to 90 degree joints closely spaced, undulating, rough, orangish brown staining on joint surfaces.		
8.00	100	93	77	5	65.42	8.00		Medium strong dark grey argillaceous LIMESTONE. Partially weathered: slightly reduced strength, slightly closer fracture spacing, orangish brown staining on fracture surfaces. Discontinuities: 1. 10 to 30 degree closely spaced fractures (30/190/280) mostly planar, smooth, occasionally undulating, some orangish brown staining on fracture surfaces.		
9.50	100	95	76		63.92	(1.50) 9.50		Medium strong dark grey argillaceous LIMESTONE. Largely unweathered. Discontinuities: 1. 0 to 20 degree closely spaced fractures (20/70/150) mostly undulating, rough, occasionally planar, smooth.		
	TCR	SCR	RQD	FI						

Remarks
Hand dug inspection pit excavated.
No groundwater encountered.

Terminated on instruction of engineer

Core Barrel: SK6L

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)
4.60	4.80	01:00

Flush Type: Polymer

Water Added

From (m)	To (m)

Casing Details

To (m)	Diam (mm)

CAUSEWAY GEOTECH

Project No.:	Project Name:	Borehole No.:
18-0577	DAA Surveys and Investigations	BH03
Coordinates:	**Client:**	Sheet 2 of 2
313318.06 E	Dublin Airport Authority	
243602.71 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:50
Ground Level: 73.42 mOD	**Dates:** 08/08/2018 - 14/08/2018	**Driller:** BM +JG
		Logger: CH+GH

Method	Plant Used	Top	Base
Cable Percussion Rotary Coring	Dando Terrier Hanjin 8D	0.00 3.50	3.50 11.70

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Backfill
11.00	100	94	23	11			(2.20)		Medium strong dark grey argillaceous LIMESTONE. Largely unweathered. Discontinuities: 1. 0 to 20 degree closely spaced fractures (20/70/150) mostly undulating, rough, occasionally planar, smooth.		
11.70						61.72	11.70		End of Borehole at 11.70m		

10.5 11.0 11.5 12.0 12.5 13.0 13.5 14.0 14.5 15.0 15.5 16.0 16.5 17.0 17.5 18.0 18.5 19.0 19.5 20.0 20.5

Remarks
Hand dug inspection pit excavated.
No groundwater encountered.

Terminated on instruction of engineer

Core Barrel
SK6L

Flush Type
Polymer

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Water Added

From (m)	To (m)

Casing Details

To (m)	Diam (mm)

Chiselling Details

From (m)	To (m)	Time (hh:mm)
4.60	4.80	01:00

CAUSEWAY GEOTECH

Method	Plant Used	Top	Base
Cable Percussion	Dando Terrier	0.00	3.60
Rotary Drilling	Hanjin 8D	3.60	4.00
Rotary Coring	Hanjin 8D	4.00	16.00

Project No.: 18-0577

Project Name: DAA Surveys and Investigations

Borehole No.: BH04

Coordinates: 313613.57 E, 243774.99 N

Client: Dublin Airport Authority

Sheet 1 of 2

Client's Representative: Balfour Beatty

Scale: 1:50

Ground Level: 72.35 mOD

Dates: 08/08/2018 - 15/08/2018

Driller: BM+JG

Logger: CH+GH

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Backfill
						(0.30)		TOPSOIL: Firm brown sandy gravelly organic CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.		
					72.05	0.30		Firm brown slightly sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is subangular to subrounded, fine to medium and of limestone.		
0.50	B1									
1.00	B2					(1.30)				
1.20	D5									
1.20 - 1.65	SPT (S) N=11			N=11 (2,2/3,2,3,3)						
				Water strike at 1.70m	70.75	1.60		Very stiff brownish grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse and of limestone.	▼	
2.00	B3									
2.00 - 2.45	U8			Ublow=75 50%						
2.50	D6					(2.40)				
3.00	B4 D7									
3.00 - 3.45	SPT (S) N=39			N=39 (3,13/11,11,8,9)						
3.60 - 3.65	SPT (S)			N=50 (25 for 25mm/50 for 25mm)						
	100				68.35	4.00		Medium strong dark grey argillaceous LIMESTONE. Partially weathered: reduced strength, closer fracture spacing with some clay infill and organish brown staining on fracture surfaces. Discontinuities: 1. 10 to 20 degree closely spaced fractures (50/170/280) undulating, rough, some clay infill between joints. 2. 30 to 40 degree closely spaced fractures (70/190/300) undulating, rough, some clay infill between joints. 3. 70 to 90 degree closely paced joints undulating, rough, some clay infill between joints.		
						(0.75)				
					67.60	4.75				
5.10 - 5.40				C		(0.75)				
5.50					66.85	5.50		Firm reddish brow slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular, fine to coarse and predominately of limestone.		
	100					(1.30)		Firm locally stiff greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular, fine to coarse and predominately of limestone.		
6.65 - 6.95				C				*6.60m: Gravel infill*		
					65.55	6.80		Firm locally soft reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular, fine to coarse and predominately of limestone.		
7.00										
	85									
8.50						(3.70)				
9.25 - 9.70	100			C						
10.00										
	TCR	SCR	RQD	FI						

Remarks
Hand dug inspection pit excavated.

Terminated at scheduled depth

Core Barrel: SK6L

Flush Type: Polymer

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)
1.70	1.70	20	1.60

Chiselling Details		
From (m)	To (m)	Time (hh:mm)
3.60	3.70	01:00

Water Added		Casing Details	
From (m)	To (m)	To (m)	Diam (mm)

CAUSEWAY GEOTECH

Method	Plant Used	Top	Base
Cable Percussion	Dando Terrier	0.00	3.60
Rotary Drilling	Hanjin 8D	3.60	4.00
Rotary Coring	Hanjin 8D	4.00	16.00

Project No.: 18-0577

Project Name: DAA Surveys and Investigations

Borehole No.: BH04

Coordinates: 313613.57 E, 243774.99 N

Client: Dublin Airport Authority

Sheet 2 of 2

Client's Representative: Balfour Beatty

Scale: 1:50

Driller: BM +JG

Ground Level: 72.35 mOD

Dates: 08/08/2018 - 15/08/2018

Logger: CH+GH

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Backfill
	95					61.85	10.50		Firm locally soft reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular, fine to coarse and predominately of limestone. Firm locally stiff reddish brown slightly sandy gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular, fine to coarse and predominately of limestone.		
11.50											
11.80 - 12.30	90				C		(4.30)				
13.00											
	100										
14.50											
14.65 - 15.05	85				C	57.55	14.80		Dark grey slightly sandy clayey angular fine to coarse GRAVEL predominately of limestone. Sand is fine to coarse, (Possible weathered bedrock)		
							(1.20)				
16.00						56.35	16.00		End of Borehole at 16.00m		
	TCR	SCR	RQD	FI							

Remarks
Hand dug inspection pit excavated.

Terminated at scheduled depth

Core Barrel
SK6L

Flush Type
Polymer

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)
1.70	1.70	20	1.60

Chiselling Details

From (m)	To (m)	Time (hh:mm)
3.60	3.70	01:00

Water Added

From (m)	To (m)

Casing Details

To (m)	Diam (mm)

CAUSEWAY GEOTECH

Method	Plant Used	Top	Base
Cable Percussion	Dando Terrier	0.00	1.70
Rotary Drilling	Hanjin 8D	1.70	2.00
Rotary Coring	Hanjin 8D	2.00	9.50

Project No.: 18-0577

Project Name: DAA Surveys and Investigations

Borehole No.: BH05

Coordinates: 315294.12 E, 243968.97 N

Client: Dublin Airport Authority

Sheet 1 of 1

Client's Representative: Balfour Beatty

Scale: 1:50

Driller: BM

Ground Level: 68.04 mOD

Dates: 09/08/2018 - 21/08/2018

Logger: CH+MMC

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Backfill
					67.74	(0.30) 0.30		TOPSOIL: Firm brown slightly sandy slightly gravelly organic CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.		
0.50	B1							Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse and of limestone.		
1.00	B2					(1.70)				
1.20	D4									
1.20 - 1.65	SPT (S) N=12			N=12 (3,3/3,3,3,3)						
1.80	B3									
					66.04	2.00 (0.30)		Brownish grey slightly sandy silty angular fine to coarse GRAVEL of predominately limestone. Sand is fine to coarse.		
	55 55	0			65.74	2.30		Soft becoming firm brown slightly sandy slightly gravelly silty CLAY with low cobble content. Sand is fine to coarse. Gravel is angular, fine to coarse and predominately limestone. Cobbles are angular predominately of limestone and a range of sizes.		
3.50						(1.20)				
	100 98	30			64.54	3.50		Dark grey slightly sandy silty subangular fine to coarse GRAVEL of predominately limestone with low cobble content. Sand is fine to coarse. Cobbles are angular.		
						(1.10)				
					63.44	4.60		Medium strong dark grey argillaceous LIMESTONE. Partially weathered in places, reduced strength, closer fracture spacing. Discontinuities: 1. 10 to 30 degree medium spaced fractures, undulating, rough surfaces. 2.10 to 20 degree closely spaced fractures, undulating, tough surfaces, silty infill between fractures.		
5.00	100 86	73	4							
6.50	100 93	69	18 7			(4.90)				
			10							
8.00	100 98	88	6							
9.50			>20		58.54	9.50		End of Borehole at 9.50m		
	TCR	SCR	RQD	FI						

Remarks
Hand dug inspection pit excavated.
No groundwater encountered.

Terminated on instruction of engineer.

Core Barrel
SK6L

Flush Type
Polymer

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Water Added		Casing Details	
From (m)	To (m)	To (m)	Diam (mm)

Chiselling Details		
From (m)	To (m)	Time (hh:mm)

CAUSEWAY GEOTECH

Method	Plant Used	Top	Base
Cable Percussion Rotary Coring	Dando 2000 Hanjin 8D	0.00 5.00	5.00 11.80

Project No.: 18-0577

Project Name: DAA Surveys and Investigations

Borehole No.: BH06

Coordinates: 314861.22 E, 244004.07 N

Client: Dublin Airport Authority

Sheet 1 of 2

Client's Representative: Balfour Beatty

Scale: 1:50

Driller: BM+JG

Ground Level: 68.24 mOD

Dates: 09/08/2018 - 09/08/2018

Logger: CH+GH

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Backfill
						(0.40)		TOPSOIL: Firm brown slightly sandy slightly gravelly organic CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.		
					67.84	0.40				
0.50	B2							Soft brownish grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded, fine to medium and predominately of limestone.		
						(0.80)				
1.00	B3									
1.20 - 1.65	U1			Ublow=50 100%	67.04	1.20		Stiff black slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded, fine to medium and of limestone. Cobbles are subrounded.		
2.00	B4 D7									
2.00 - 2.45	SPT (S) N=18			N=18 (3,4/4,4,5,5)						
						(3.00)				
3.00	B5 D8									
3.00 - 3.45	SPT (S) N=20			N=20 (4,5/5,5,5,5)						
4.00	B6 D9									
					64.04	4.20				
4.00 - 4.45	SPT (S) N=15			N=15 (4,5/5,3,4,3) Water strike at 4.60m				Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse and of limestone.	▼	
						(0.80)				
5.00	D10			D10	63.24	5.00				
5.00 - 5.45	SPT (S) N=13			N=13 (6,4/4,3,3,3)				Firm dark brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular, fine to coarse and of mixed lithologies.		
						(0.75)				
5.75 - 6.20	90			C	62.49	5.75		Firm organish grey slightly sandy silty CLAY. Sand is fine to coarse.		
						(0.90)				
6.50					61.59	6.65		Weak orangish beige BRECCIA boulder. Distinctly weathered: reduced strength, closer fracture spacing orangish staining fracture surface. Discontinuities: 1. 10 to 30 degree closely spaced fractures (60/170/220) undulating, rough, orangish staining on fracture surface. 2. 70 to 90 degree closely spaced joints, undulating, rough, orangish staining on fracture surfaces.		
	100					(0.80)				
					60.79	7.45		Firm brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular, fine to coarse and of limestone.		
8.00						(1.15)				
8.60 - 9.05	100			C	59.64	8.60		Firm grey silty CLAY.		
						(0.35)				
					59.29	8.95		Soft becoming firm reddish brown sandy CLAY. Sand is fine to coarse.		
						(0.40)				
9.50					58.89	9.35		Firm beige brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular, fine to coarse and of limestone.		
						(0.35)				
					58.54	9.70		Medium strong multicoloured mainly grey fault BRECCIA. Largely unweathered. Discontinuities: 1. 30 to 40 degree closely spaced (30/80/170) undulating, rough.		
	100	97	86			(1.30)				
	TCR	SCR	RQD	FI						

Remarks
Hand dug inspection pit excavated

Terminated on instruction of engineer

Core Barrel	Water Strikes				Chiselling Details		
	Struck at (m)	Casing to (m)	Time (min)	Rose to (m)	From (m)	To (m)	Time (hh:mm)
SK6L	4.60	4.60	20	4.50			

Flush Type	Water Added		Casing Details	
	From (m)	To (m)	To (m)	Diam (mm)
Polymer				

CAUSEWAY GEOTECH

Project No.:	Project Name:	Borehole No.:
18-0577	DAA Surveys and Investigations	BH06
Coordinates:	**Client:**	Sheet 2 of 2
314861.22 E	Dublin Airport Authority	
244004.07 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:50
Ground Level: 68.24 mOD	**Dates:** 09/08/2018 - 09/08/2018	**Driller:** BM +JG
		Logger: CH+GH

Method	Plant Used	Top	Base
Cable Percussion	Dando 2000	0.00	5.00
Rotary Coring	Hanjin 8D	5.00	11.80

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Backfill
				3					Medium strong multicoloured mainly grey fault BRECCIA. Largely unweathered. Discontinuities: 1. 30 to 40 degree closely spaced (30/80/170) undulating, rough.		
11.00 - 11.55 11.00					C	57.24	11.00 (0.50)		Firm reddish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse. (Weathered rock recovered as CLAY)		
	100					56.74	11.50 (0.30)		Medium strong multicoloured fault BRECCIA. Largely unweathered: Discontinuities: 1. 10 to 30 degree closely spaced fractures (30/150/200) undulating, rough.		
11.80						56.44	11.80		End of Borehole at 11.80m		

TCR	SCR	RQD	FI

Remarks
Hand dug inspection pit excavated

Terminated on instruction of engineer

Core Barrel	Flush Type
SK6L	Polymer

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)
4.60	4.60	20	4.50

Water Added

From (m)	To (m)

Casing Details

To (m)	Diam (mm)

Chiselling Details

From (m)	To (m)	Time (hh:mm)

CAUSEWAY GEOTECH

Method	Plant Used	Top	Base
Cable Percussion Rotary Coring	Dando 2000 Hanjin 8D	0.00 2.00	2.00 7.40

Project No.: 18-0577

Project Name: DAA Surveys and Investigations

Borehole No.: BH07

Coordinates: 315240.80 E, 243704.07 N

Client: Dublin Airport Authority

Sheet 1 of 1

Client's Representative: Balfour Beatty

Scale: 1:50

Driller: BM

Ground Level: 65.57 mOD

Dates: 10/08/2018 - 10/08/2018

Logger: CH+MMC

Depth (m)	Sample / Tests		Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Backfill
							(0.30)		TOPSOIL: Firm brown slightly sandy slightly gravelly organic CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse		
						65.27	0.30		Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse and of limestone.		
0.50	B1										
1.00	B2						(1.30)				
1.20 - 1.65	U5		1.20		Ublow=50 50%						
1.20 - 1.50	SPT (S)		1.20		N=50 (9,9/50 for 150mm)						
						63.97	1.60		Brown slightly gravelly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse		
2.00	~~B3~~						(0.40)				
2.00	D4				B3 D4	63.57	2.00		Medium strong pale grey LIMESTONE. Distinctly weathered reduced strength close fracture spacing, pale brown mud and staining on fracture surfaces Discontinuities: 1. 10-20 degree fractures, closely spaced (10/150/200), undulating, rough, brown staining		
	100	77	62	13							
2.90							(1.75)				
	100	98	85	12							
						61.82	3.75		Medium strong argillaceous LIMESTONE. Partially weathered, reduced strength mud filled fractures Discontinuities: 1. 20-70 degree fractures, medium spaced (20/300)		
4.40				>20		61.17	(0.65) 4.40		Medium strong pale grey LIMESTONE. Distinctly weathered, reduced strength, close fractures spacing, pale brown mud on fractures Discontinuities: 1. 30-85 degree fractures, closely spaced (50/100/220), undulating and rough, brown staining 2. 10-20 degree fractures, medium spaced (300/500), undulating, rough with brown staining		
	100	98	78	11							
5.90							(3.00)				
	100	96	90	4							
7.40						58.17	7.40		End of Borehole at 7.40m		
	TCR	SCR	RQD	FI							

Remarks

Hand dug inspection pit excavated.

No groundwater encountered.

Terminated on instruction of engineer.

Core Barrel: SK6L

Flush Type: Polymer

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Water Added		Casing Details	
From (m)	To (m)	To (m)	Diam (mm)
		2.30	200

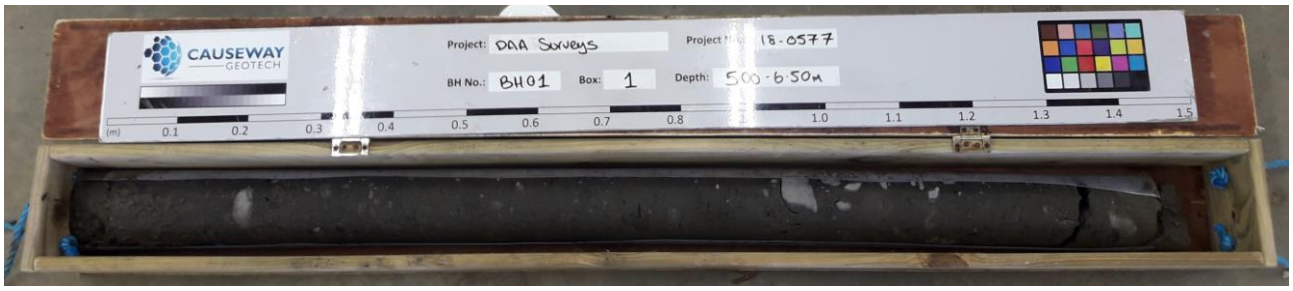
Chiselling Details		
From (m)	To (m)	Time (hh:mm)

CAUSEWAY GEOTECH

APPENDIX C

CORE PHOTOGRAPHS

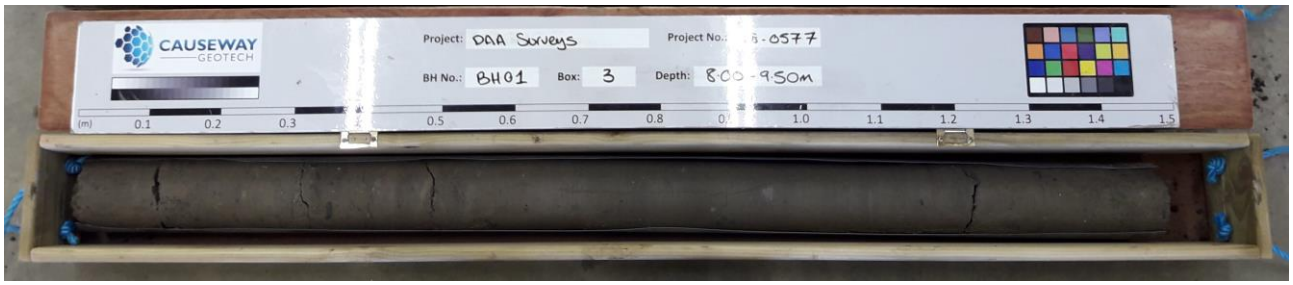




BH01 Box 1 5.0-6.5m



BH01 Box 2 6.5-8.0m



BH01 Box 3 8.0-9.5m



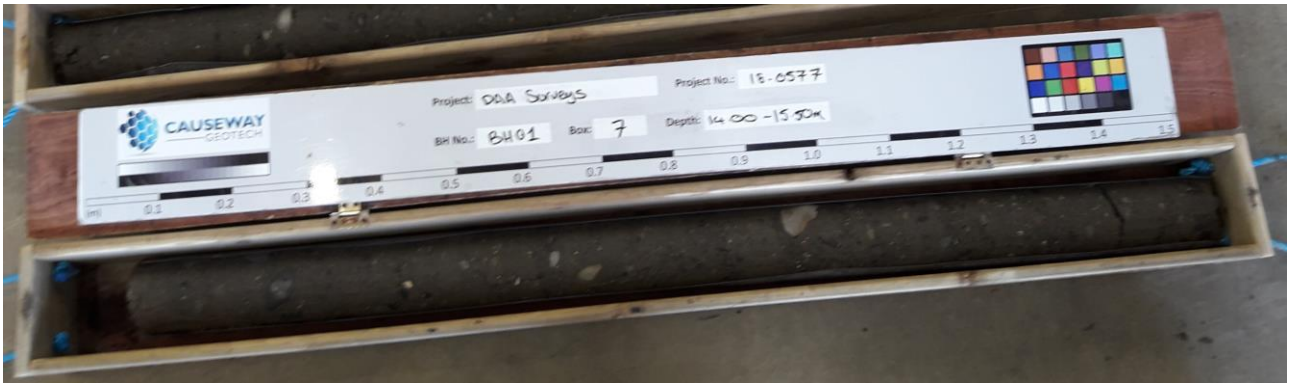
BH01 Box 4 9.5-11.0m



BH01 Box 5 11.0-12.5m



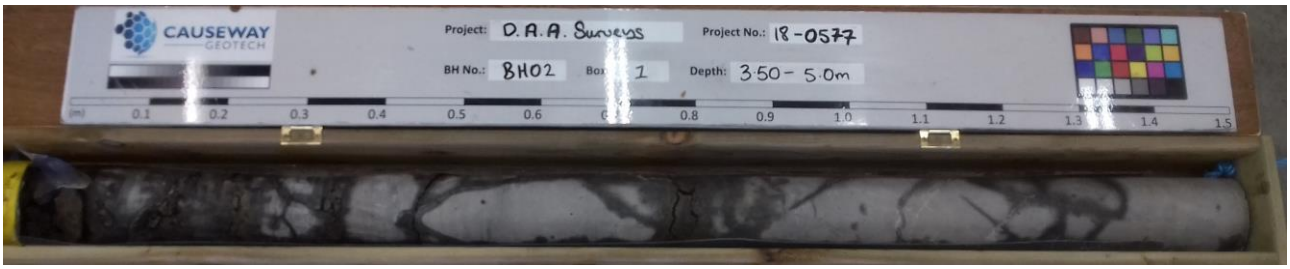
BH01 Box 6 12.5-14.0m



BH01 Box 7 14.0-15.5m



BH01 Box 8 15.5-17.0m



BH02 Box 1 3.5-5.0m



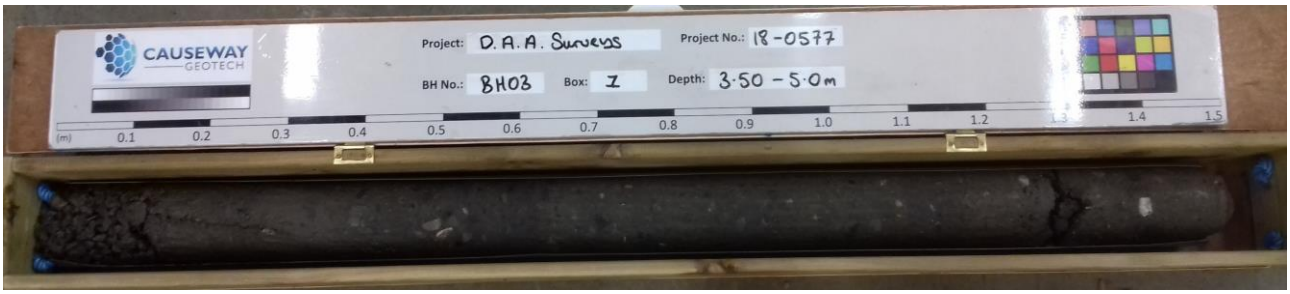
BH02 Box 2 5.0-6.5m



BH02 Box 3 6.5-8.0m



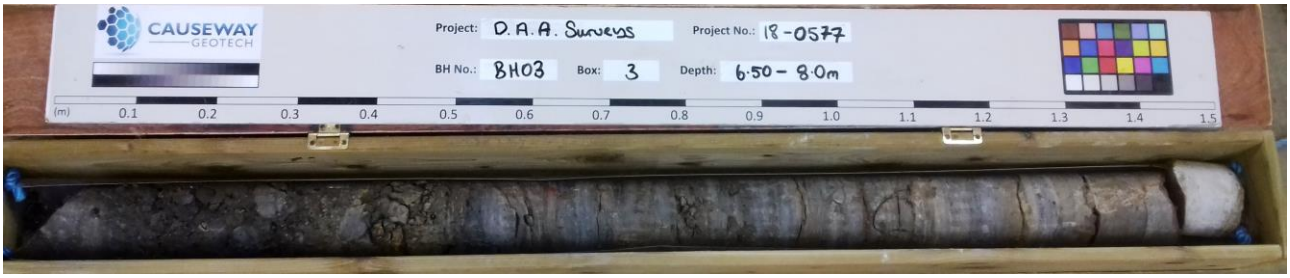
BH02 Box 4 8.0-8.8m



BH03 Box 1 3.5-5.0m



BH03 Box 2 5.0-6.5m



BH03 Box 3 5.0-6.5m



BH03 Box 4 8.0-9.5m



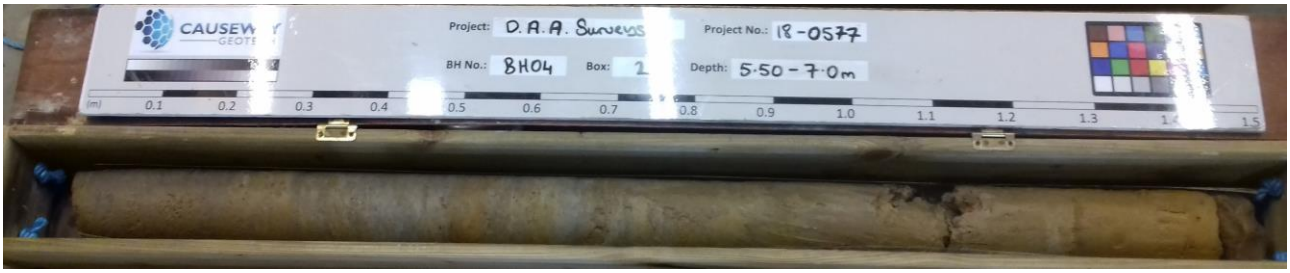
BH03 Box 5 9.5-11.0m



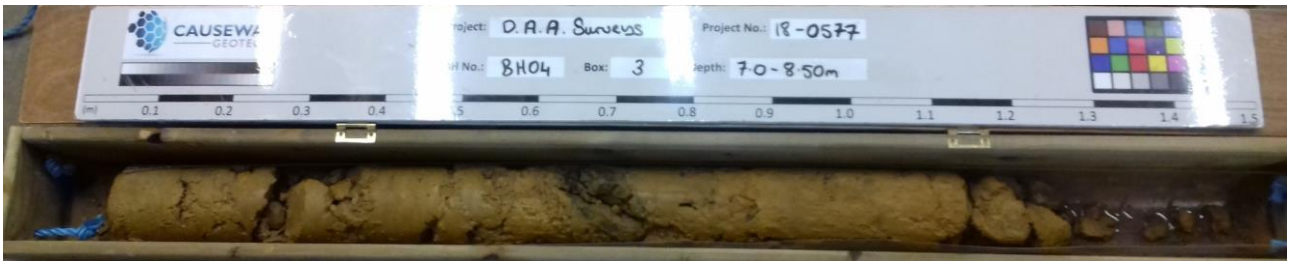
BH03 Box 6 11.0-11.7m



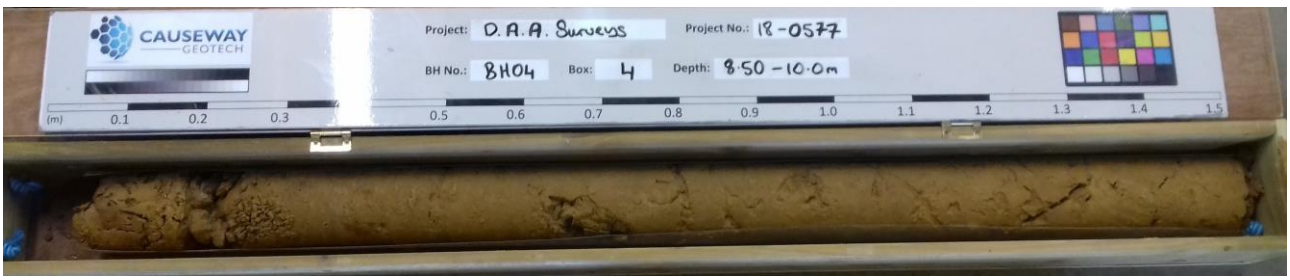
BH04 Box 1 4.0-5.5m



BH04 Box 2 5.5-7.0m



BH04 Box 3 7.0-8.0m



BH04 Box 4 8.5-10.0m



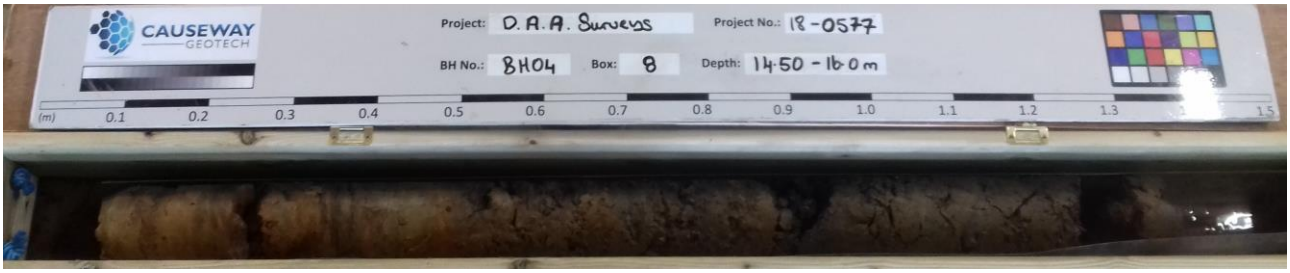
BH04 Box 5 10.0-11.5m



BH04 Box 6 11.5-13.0m



BH04 Box 7 13.0-14.5m



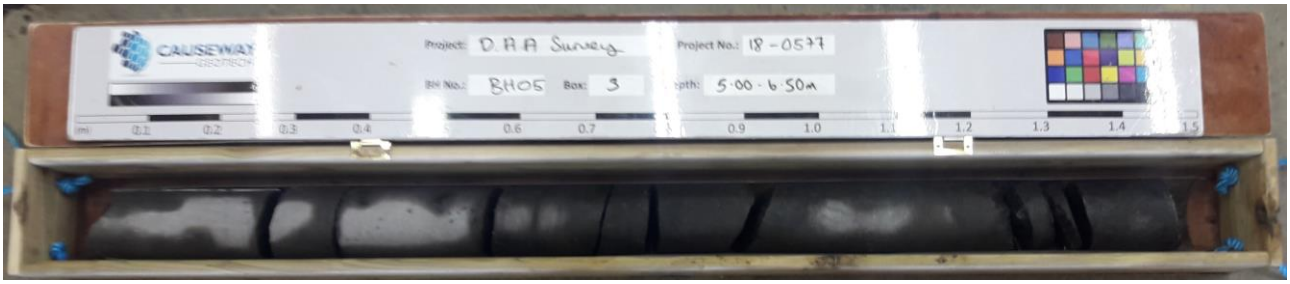
BH04 Box 8 14.5-16.0m



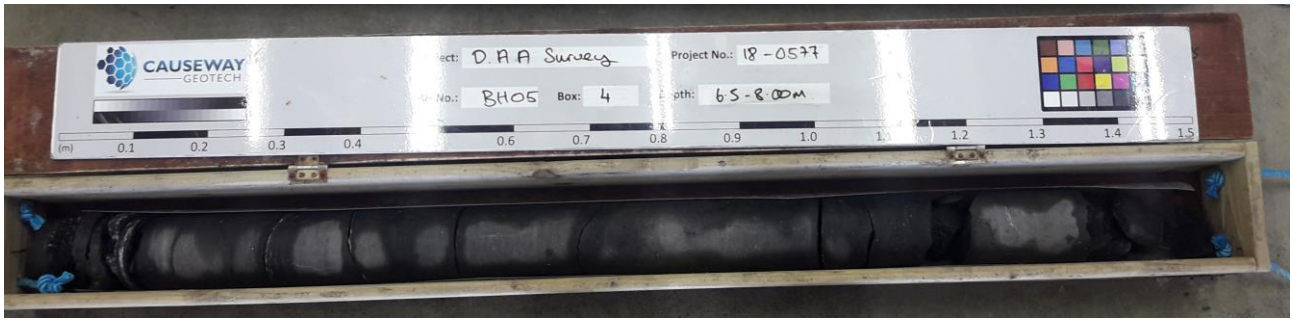
BH05 Box 1 2.0-3.5m



BH05 Box 2 3.5-5.0m



BH05 Box 3 5.0-6.5m



BH05 Box 4 6.5-8.0m

CAUSEWAY GEOTECH



BH05 Box 5 8.0-9.5m



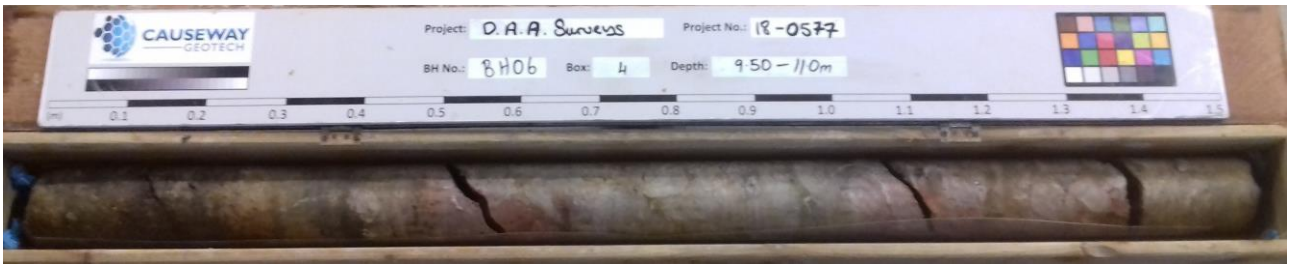
BH06 Box 1 5.0-6.5m



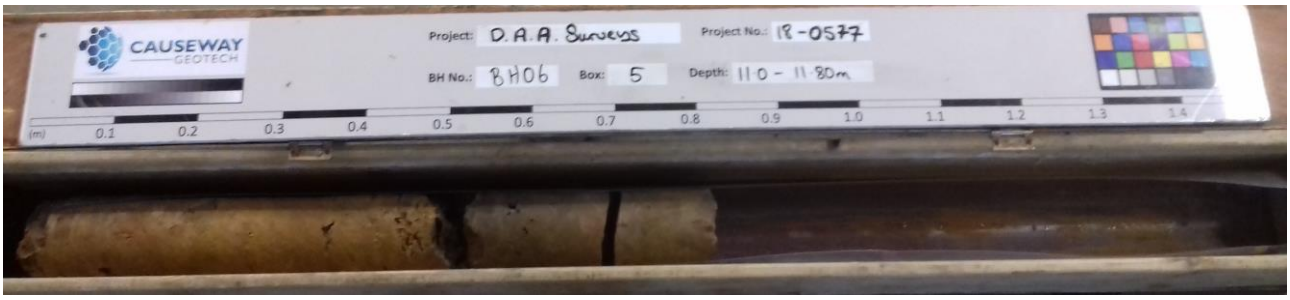
BH06 Box 2 6.5-8.0m



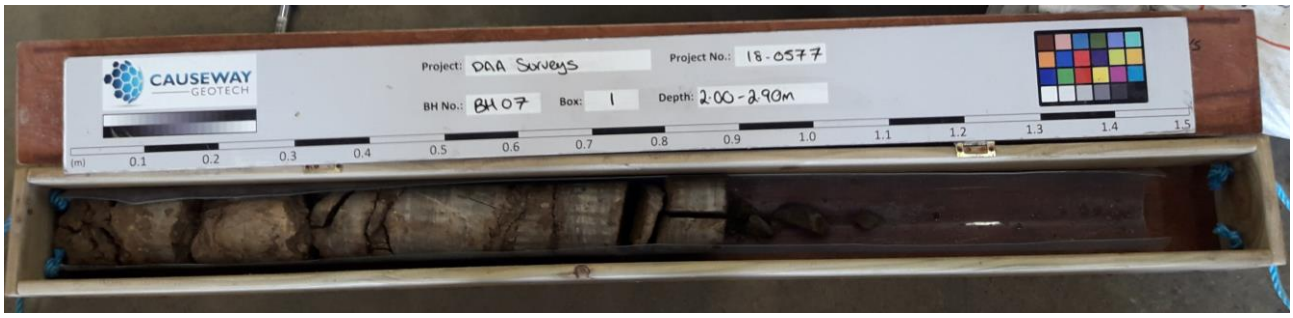
BH06 Box 3 8.0-9.5m



BH06 Box 4 9.5-11.0m



BH06 Box 5 11.0-11.8m



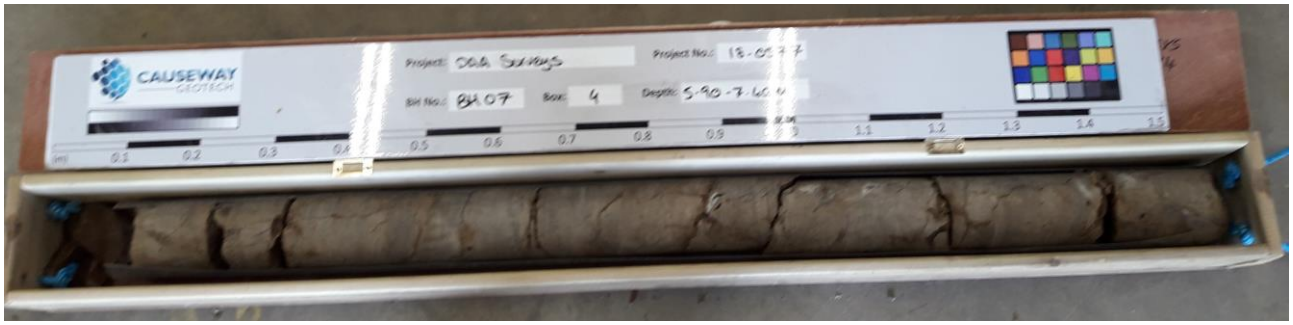
BH07 Box 1 2.0-2.9m



BH07 Box 2 2.9-4.4m



BH07 Box 3 4.4-5.9m



BH07 Box 4 5.9-7.4m

CAUSEWAY GEOTECH

APPENDIX D

TRIAL PIT LOGS



CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP01**
Co-ordinates: 313459.28 E 242468.72 N	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	**Client's Representative:** Balfour Beatty		**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 72.36 mOD	**Date:** 31/07/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.25)		TOPSOIL	
			72.11	0.25			
				(0.15)		Stiff yellowish brown slightly sandy CLAY. Sand is fine to coarse	
			71.96	0.40			
0.50	B1					Firm locally stiff grey sandy gravelly CLAY with 2 cobbles. Sand is fine to coarse. Gravel is subangular to subrounded, fine to medium and of limestone. Cobbles are subangular to angular of limestone	
0.50	D2						
0.50	ES3			(0.70)			
1.00	B3						
			71.26	1.10		Firm locally stiff dark grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular and tabular, fine to medium and of limestone.	
1.50	B6						
1.50	D5			(0.90)			
1.50	ES4						
		Water Strike at 1.80m					▼
2.00	B5		70.36	2.00		End of trial pit at 2.00m	

Remarks

Terminated at scheduled depth.

Water Strikes:

Struck at (m):	Remarks:
1.80	Water Strike at 1.80m

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP02**
Co-ordinates: 313662.61 E	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	242386.90 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 70.35 mOD	**Date:** 31/07/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.20)		TOPSOIL: Firm brown slightly sandy CLAY with some rootlets. Sand is fine to coarse	
			70.15	0.20		Stiff brown becoming yellowish brown at 0.40m, slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to angular, fine to coarse and of limestone.	
0.50	B1						
0.50	D2			(0.70)			
0.50	ES3						
			69.45	0.90		Stiff grey slightly mottled brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse and of limestone.	
1.00	B3						
1.00	D6						
1.00	ES5			(0.70)			
			68.75	1.60		Dark grey sandy slightly silty angular and tabular fine to coarse GRAVEL of sandstone. Sand is fine to coarse	
1.70	B7			(0.20)			
1.70	D8		68.55	1.80		End of trial pit at 1.80m	
2.00	B5						

Remarks
No groundwater encountered

Terminated on possible bedrock.

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP03**
Co-ordinates: 315716.99 E	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	242204.32 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 61.48 mOD	**Date:** 01/08/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.20)		TOPSOIL: Firm brown slightly sandy CLAY with some rootlets. Sand is fine to coarse	
			61.28	0.20		Stiff brown slightly sandy slightly gravelly SILT with low cobble content below 0.60m. Sand is fine to coarse. Gravel is subrounded, fine to coarse and of limestone. Cobbles are subrounded and of limestone.	
0.50	B1						
0.50	B2						
0.50	D1			(0.90)			
0.50	ES3						
			60.38	1.10		Stiff dark grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse and of limestone. Cobbles are subangular of limestone	
				(0.60)			
1.50	B3						
1.50	B4						
1.50	D5						
1.50	ES6		59.78	1.70		Firm locally stiff dark grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded, fine to medium and of limestone. Cobbles are subangular of limestone.	
				(0.40)			
2.00	B7						
2.00	D8		59.38	2.10		End of trial pit at 2.10m	

Remarks
No groundwater encountered.

Terminated at scheduled depth.

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP04**
Co-ordinates: 315840.61 E 242360.46 N	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	**Client's Representative:** Balfour Beatty		**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 62.56 mOD	**Date:** 01/08/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description
				(0.30)		TOPSOIL: Firm light brown slightly sandy CLAY with rootlets. Sand is fine to coarse.
			62.26	0.30		Stiff light greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular, fine to coarse and of limestone.
0.50	B1			(0.90)		
			61.36	1.20		Stiff grey slightly sandy gravelly CLAY with 2 cobbles. Sand is fine to coarse. Gravel is subangular, fine to coarse and of limestone. Cobbles are subangular of limestone
1.50	B3			(0.40)		
			60.96	1.60		Stiff dark grey slightly sandy gravelly CLAY with 2 cobbles. Sand is fine to coarse. Gravel is subangular, fine to coarse and of limestone. Cobbles are subangular of limestone
				(0.40)		
			60.56	2.00		End of trial pit at 2.00m

Water

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered.

Terminated at scheduled depth.

Water Strikes:

Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH	**Project No.:** 18-0577	**Project Name:** DAA Surveys and Investigations	**Trial Pit No.:** **TP05**
	Co-ordinates: 316060.48 E	**Client:** Dublin Airport Authority	Sheet 1 of 1
Method: Trial Pitting	242319.54 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 61.89 mOD	**Date:** 01/08/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.15)		Grey medium to coarse angular GRAVEL of limestone.	
			61.74	0.15		Firm yellowish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular, fine to coarse and of limestone.	
0.50	B1			(0.75)			
0.50	D2						
0.50	ES3						
			60.99	0.90		Firm brown mottled grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse and of limestone. Cobbles are subrounded to subangular of limestone.	
1.50	B4			(1.20)			
1.50	D5						
1.50	ES6						
			59.79	2.10		End of trial pit at 2.10m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered

Terminated at scheduled depth

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP06**
Co-ordinates: 316132.06 E 242204.95 N	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	**Client's Representative:** Balfour Beatty		**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 61.19 mOD	**Date:** 01/08/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.30)		TOPSOIL: Firm brown slightly sandy CLAY with some rootlets. Sand is fine to coarse.	
			60.89	0.30		Stiff yellowish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular, fine to medium and of limestone.	
0.50	B1			(0.30)			
0.50	D2						
0.50	ES3		60.59	0.60		Stiff slightly sandy very gravelly CLAY. Sand is fine to coarse. Gravel is subangular, fine to coarse and of limestone.	
				(0.50)			
			60.09	1.10		Firm grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular, fine to coarse and of limestone.	
1.50	B4						
1.50	D5			(0.90)			
1.50	ES6						
			59.19	2.00		End of trial pit at 2.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered

Terminated at scheduled depth

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP07**
Co-ordinates: 316211.95 E	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	242291.79 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 60.81 mOD	**Date:** 01/08/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.30)		TOPSOIL: Firm light brown sandy CLAY with rootlets. Sand is fine to coarse.	
			60.51	0.30		Firm light yellowish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular, fine to coarse and of limestone.	
0.50	B1			(0.30)			
0.50	D2						
0.50	ES3		60.21	0.60		Stiff grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to angular, fine to coarse and of limestone.	
				(1.10)			
1.50	B4						
1.50	D5						
			59.11	1.70		Firm locally stiff dark brownish grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular, fine to medium and of limestone.	
				(0.40)			
2.00	B6						
2.00	D7		58.71	2.10		End of trial pit at 2.10m	

Remarks
No groundwater encountered

Terminated at scheduled depth

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH	**Project No.:** 18-0577	**Project Name:** DAA Surveys and Investigations	**Trial Pit No.:** **TP08**
	Co-ordinates: 317622.88 E	**Client:** Dublin Airport Authority	Sheet 1 of 1
Method: Trial Pitting	242284.01 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 53.44 mOD	**Date:** 02/08/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
0.00	ES3			(0.20)		TOPSOIL: Firm brown slightly sandy CLAY with rootlets. Sand is fine to coarse.	
			53.24	0.20		Stiff yellowish brown slightly sandy SILT. Sand is fine to coarse.	
0.50	B1			(0.60)			
0.50	D2						
			52.64	0.80		Stiff grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse Gravel is subrounded to rounded, fine to coarse and of limestone.	
				(1.20)			
1.50	B4						
1.50	D5						
1.50	ES6						
			51.44	2.00		End of trial pit at 2.00m	

0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5

Remarks
No groundwater encountered

Terminated at scheduled depth

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP09**
Co-ordinates: 317508.94 E 242176.73 N	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	**Client's Representative:** Balfour Beatty		**Scale:** 1:25
Plant: 8T Tracked Excavatir	**Ground Level:** 54.20 mOD	**Date:** 02/08/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.20)		TOPSOIL	
			54.00	0.20		Stiff light yellowish brown slightly sandy SILT. Sand is fine to coarse.	
				(0.40)			
0.50	B1						
0.50	D2		53.60	0.60		Stiff yellowish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to angular fine to coarse of limestone.	
0.50	ES3			(0.70)			
			52.90	1.30		Stiff locally very stiff slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse and of limestone. Cobbles are subangular to subrounded of limestone.	
				(0.70)			
			52.20	2.00		End of trial pit at 2.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered

Terminated at scheduled depth

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP10**
Co-ordinates: 317443.22 E	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	242380.91 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 55.05 mOD	**Date:** 02/08/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.30)		TOPSOIL: Firm light brown slightly sandy CLAY with rootlets. Sand is fine to coarse.	
			54.75	0.30		Stiff yellowish brown slightly sandy CLAY. Sand is fine to coarse.	
				(0.30)			
			54.45	0.60			
0.70	B1					Stiff light grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular, fine to medium and of limestone.	
0.70	D2						
				(1.40)			
1.60	B3						
1.60	D4						
			53.05	2.00		End of trial pit at 2.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered

Terminated at scheduled depth

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH	**Project No.:** 18-0577	**Project Name:** DAA Surveys and Investigations	**Trial Pit No.:** **TP11**
	Co-ordinates: 317809.53 E	**Client:** Dublin Airport Authority	Sheet 1 of 1
Method: Trial Pitting	242159.52 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 52.49 mOD	**Date:** 02/08/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.20)		TOPSOIL	
			52.29	0.20		Stiff light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to angular, fine to medium and of limestone.	
				(0.40)			
0.50	B1						
0.50	D2						
0.50	ES3		51.89	0.60		Stiff grey mottled brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular, fine to coarse and of limestone. Cobbles are subangular to subrounded of limestone.	
1.00	B4						
1.00	D5						
				(1.10)			
1.50	ES6						
			50.79	1.70		Firm locally stiff dark grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of limestone.	
1.90	B7			(0.40)			
1.90	D8						
			50.39	2.10		End of trial pit at 2.10m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered

Terminated at scheduled depth

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP12**
Co-ordinates: 318065.77 E	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	242094.05 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 51.48 mOD	**Date:** 02/08/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.20)		TOPSOIL: Firm light brown slightly sandy CLAY with rootlets. Sand is fine to coarse.	
			51.28	0.20		Stiff brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular, fine to medium and of limestone.	
0.50	B1			(0.60)			
0.50	D2						
			50.68	0.80		Stiff grey mottled brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of limestone. cobbles are subangular of limestone.	
1.30	B3			(1.00)			
1.30	D4						
			49.68	1.80		Firm locally stiff greyish brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse and of limestone. Cobbles are subrounded to subangular of limestone.	
2.00	B5			(0.30)			
2.00	D6		49.38	2.10		End of trial pit at 2.10m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered

Terminated at scheduled depth

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

	Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations	**Trial Pit No.:** **TP13**
	Co-ordinates: 317534.01 E	**Client:** Dublin Airport Authority	Sheet 1 of 1
Method: Trial Pitting	242478.52 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 54.05 mOD	**Date:** 02/08/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
			53.95	(0.10) 0.10		TOPSOIL	
						Very stiff brownish grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to angular, fine to medium and of limestone.	
0.60	B1			(0.70)			
0.60	D2						
			53.25	0.80		Very stiff brown slightly slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to angular, fine to medium and of limestone.	
				(0.50)			
			52.75	1.30		Stiff brown slightly sandy gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse and of limestone. Cobbles are subrounded of limestone.	
1.60	B3						
1.60	D4			(0.70)			
			52.05	2.00		End of trial pit at 2.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered

Terminated at scheduled depth

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP14**
Co-ordinates: 317663.23 E	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	242620.45 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 55.02 mOD	**Date:** 01/08/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.30)		TOPSOIL	
			54.72	0.30		Stiff brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular, fine to medium and of limestone.	
0.50	B1			(0.30)			
0.50	D2						
0.50	ES3		54.42	0.60		Stiff greyish brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular, fine to medium and of limestone.	
				(0.70)			
1.30	B4		53.72	1.30		End of trial pit at 1.30m	
1.30	D5						
1.30	ES6						

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered

Terminated due to services

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP15**
Co-ordinates: 317900.18 E	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	242573.41 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 55.14 mOD	**Date:** 02/08/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.20)		TOPSOIL: Firm light brown slightly sandy CLAY with rootlets. Sand is fine to coarse.	
			54.94	0.20		Stiff light yellowish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular, fine to medium and of limestone.	
0.50	B1						
0.50	D2			(0.90)			
			54.04	1.10		Stiff greyish brown slightly sandy slightly gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is subangular, fine to medium and of limestone. Cobbles are subangular to subrounded of limestone.	
1.30	B3						
1.30	D4			(0.90)			
			53.14	2.00		End of trial pit at 2.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered

Terminated at scheduled depth

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP16**
Co-ordinates: 318031.13 E	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	243495.17 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 50.87 mOD	**Date:** 03/08/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.20)		TOPSOIL	
			50.67	0.20		Stiff light brown slightly sandy CLAY. Sand is fine to coarse.	
				(0.30)			
0.50	B1		50.37	0.50		Stiff brownish grey slightly sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is subangular, fine to medium and of limestone.	
0.50	D2						
				(0.90)			
1.00	D4						
			49.47	1.40		Stiff grey mottled brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to sub rounded, fine to coarse and of mixed lithologies. Cobbles are subrounded of limestone.	
1.70	B3						
				(0.70)			
			48.77	2.10		End of trial pit at 2.10m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered

Terminated at scheduled depth

Water Strikes:

Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP17**
Co-ordinates: 317870.71 E	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	243533.35 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 54.53 mOD	**Date:** 03/08/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.20)		TOPSOIL: Firm brown slightly sandy CLAY with rootlets. Sand is fine to coarse.	
			54.33	0.20		Stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular, fine to medium and of limestone.	
0.50	B1						
0.50	D2			(0.75)			
0.50	ES3						
			53.58	0.95		Stiff greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of limestone.	
1.50	B4			(1.05)			
1.50	D5						
1.50	ES6						
			52.53	2.00		End of trial pit at 2.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered

Terminated at scheduled depth

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP18**
Co-ordinates: 318127.96 E 243757.91 N	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	**Client's Representative:** Balfour Beatty		**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 49.02 mOD	**Date:** 03/08/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.20)		TOPSOIL: Firm brown slightly sandy CLAY with rootlets. Sand is fine to coarse.	
			48.82	0.20		Stiff light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of limestone.	
0.50	B1						
0.50	D2			(0.90)			
			47.92	1.10		Grey very gravelly silty fine to coarse SAND with low cobble content. Sand is fine to coarse. Gravel is subrounded, fine to medium and of limestone. Cobbles are subrounded of limestone.	
				(0.60)			
1.50	B3						
1.50	D4						
1.50	ES5						
			47.32	1.70		Brownish grey sandy very silty subrounded fine to coarse GRAVEL of limestone with low cobble content. Sand is fine to coarse. Cobbles are subrounded of limestone.	
		Groundwater encountered at 1.90m		(0.40)			
2.00	B6						
2.00	D7						
			46.92	2.10		End of trial pit at 2.10m	

Remarks

Terminated at scheduled depth

Water Strikes:

Struck at (m):	Remarks:
1.90	Groundwater encountered at 1.90m

Stability: Unstable from 1.10m

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP19**
Co-ordinates: 317736.10 E	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	243715.68 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 56.34 mOD	**Date:** 03/08/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.20)		TOPSOIL: Firm brown slightly sandy CLAY with rootlets. Sand is fine to coarse.	
			56.14	0.20		Stiff yellowish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded, fine to medium and of mixed lithologies.	
0.50	B1			(0.60)			
0.50	D2						
0.50	ES3						
			55.54	0.80		Stiff grey slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subrounded to rounded, fine to medium and of limestone. Cobbles are subangular to subrounded.	
				(1.20)			
1.50	B4						
1.50	D5						
1.50	ES6						
			54.34	2.00		End of trial pit at 2.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered

Terminated at scheduled depth

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP20**
Co-ordinates: 315335.04 E 243864.17 N	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	**Client's Representative:** Balfour Beatty		**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 67.09 mOD	**Date:** 31/07/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.20)		TOPSOIL: Firm brown slightly sandy CLAY with some rootlets. Sand is fine to coarse	
			66.89	0.20		Stiff light brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded, fine to medium and of limestone	
				(0.40)			
0.50	B1						
0.50	D2						
0.50	ES3		66.48	0.60		Stiff greyish brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of limestone. Cobbles are subangular of limestone	
				(0.40)			
			66.08	1.00		Firm locally stiff greyish brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular, fine to medium and of limestone. Cobbles are subangular of limestone	
1.50	B4						
1.50	D5			(1.10)			
1.50	ES6						
			64.98	2.10		End of trial pit at 2.10m	

Remarks
No groundwater encountered.

Terminated at scheduled depth.

Water Strikes:

Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH	**Project No.:** 18-0577	**Project Name:** DAA Surveys and Investigations	**Trial Pit No.:** **TP21**
	Co-ordinates: 315212.09 E	**Client:** Dublin Airport Authority	Sheet 1 of 1
Method: Trial Pitting	243819.98 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 67.13 mOD	**Date:** 31/07/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.20)		TOPSOIL: Firm light brown slightly sandy CLAY with rootlets. Sand is fine to coarse	
			66.93	0.20		Stiff light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of limestone	
				(0.70)			
			66.23	0.90		Brownish grey slightly gravelly clayey fine to coarse SAND with low cobble content. Gravel is subangular to angular, fine to coarse and of limestone. Cobbles are subrounded to subangular of limestone	
				(1.10)		*medium cobble content below 1.50m*	
			65.13	2.00		End of trial pit at 2.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered.

Terminated at scheduled depth.

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP22**
Co-ordinates: 314938.06 E 244011.75 N	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	**Client's Representative:** Balfour Beatty		**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 69.31 mOD	**Date:** 31/07/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.20)		TOPSOIL: Firm light brown slightly sandy CLAY with some rootlets. Sand is fine to coarse	
			69.11	0.20		Stiff light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse and of various lithologies	
				(0.50)			
0.50	B2						
0.50	D1						
0.50	ES3						
			68.61	0.70		Stiff brownish grey slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular, fine to medium of limestone. Cobbles are subangular of limestone	
				(0.90)			
1.50	B4						
1.50	D5						
1.50	ES6		67.71	1.60		Firm locally stiff brownish grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular, fine to coarse and of limestone. Cobbles are subangular of limestone	
				(0.50)			
			67.21	2.10		End of trial pit at 2.10m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered.

Terminated at scheduled depth.

Water Strikes:

Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.50

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP23**
Co-ordinates: 314644.79 E	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	244029.85 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 70.78 mOD	**Date:** 30/07/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.35)		TOPSOIL: Firm brown slightly sandy CLAY with rootlets. Sand is fine to coarse.	
			70.43	0.35			
0.50	B1					Firm locally stiff light brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular, fine to medium and of limestone.	
0.50	D2			(0.45)			
0.50	ES3						
			69.98	0.80			
						Stiff grey slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies.	
1.00	B4						
1.00	D5			(0.60)			
			69.38	1.40			
1.50	B6					Firm dark grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to rounded, fine to medium and of mixed lithologies. Cobbles are of limestone.	
1.50	D7						
1.50	ES8			(0.70)			
			68.68	2.10			
						End of trial pit at 2.10m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered

Terminated at scheduled depth

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP24**
Co-ordinates: 314802.61 E	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	243762.98 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 69.77 mOD	**Date:** 30/07/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.30)		TOPSOIL: Firm brown slightly sandy CLAY with rootlets. Sand is fine to coarse.	
			69.47	0.30		Light greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular, fine to coarse and of limestone.	
0.50	B1			(0.40)			
0.50	D2						
0.50	ES3						
			69.07	0.70		Stiff brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular, fine to medium and of limestone. Cobbles are subangular of limestone.	
				(1.10)			
1.50	B4						
1.50	D5						
1.50	ES6						
			67.97	1.80		Dark greyish brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular, fine to medium and of limestone. Cobbles are subangular of limestone.	
				(0.30)			
			67.67	2.10		End of trial pit at 2.10m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered

Terminated at scheduled depth

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP25**
Co-ordinates: 314693.85 E 243924.12 N	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	**Client's Representative:** Balfour Beatty		**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 70.54 mOD	**Date:** 30/07/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.40)		TOPSOIL: Firm brown slightly sandy slightly gravelly CLAY with rootlets. Sand is fine to coarse/ Gravel is subangular fine to coarse.	
			70.14	0.40			
0.50	B1			(0.20)		Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse and of mixed lithologies.	
0.50	D2						
0.50	ES3		69.94	0.60			
						Stiff light brown slightly sandy slightly gravelly SILT with medium cobble content. Sand is fine to coarse. Gravel is subangular, fine to coarse and of limestone. Cobbles are subangular of limestone.	
0.90	B4			(0.60)			
0.90	D5						
			69.34	1.20		End of trial pit at 1.20m	
1.50	B6						
1.50	D7						
1.50	ES8						

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered

Terminated at scheduled depth

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP26**
Co-ordinates: 314451.06 E	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	243983.07 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 71.18 mOD	**Date:** 30/07/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.40)		TOPSOIL: Brown slightly sandy CLAY with rootlets. Sand is fine to coarse.	
			70.78	0.40			
0.50	B2					Firm locally stiff light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded, fine to medium and of sandstone.	
0.50	D3						
0.50	ES1			(0.50)			
			70.28	0.90			
						Stiff grey mottled brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular of sandstone, fine to medium and of limestone. Cobbles are subrounded to subangular of limestone.	
1.50	B4			(1.10)			
1.50	D5						
1.50	ES6						
			69.18	2.00		End of trial pit at 2.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered

Terminated at scheduled depth

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP27**
Co-ordinates: 313692.29 E 244012.20 N	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	**Client's Representative:** Balfour Beatty		**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 71.71 mOD	**Date:** 31/07/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.20)		TOPSOIL: Firm light brown slightly sandy CLAY with rootlets. Sand is fine to coarse	
			71.51	0.20		Stiff light greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse and of limestone	
0.50	B1			(0.50)			
0.50	D2						
0.50	ES3						
			71.01	0.70		Light grey sandy slightly clayey subangular to angular fine to coarse GRAVEL of limestone. Sand is fine to coarse (possible weathered rock)	
				(1.00)			
1.50	B4						
1.50	D5						
1.50	ES6						
			70.01	1.70		End of trial pit at 1.70m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered.

Terminated on possible bedrock.

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP28**
Co-ordinates: 313523.91 E 243902.71 N	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	**Client's Representative:** Balfour Beatty		**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 72.84 mOD	**Date:** 31/07/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.30)		TOPSOIL	
			72.54	0.30		Stiff light orangish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to angular, fine to coarse and of limestone	
0.50	B1						
0.50	D2						
0.50	ES3			(0.80)			
						below 0.80m: becoming very gravelly	
			71.74	1.10		Grey gravelly very clayey fine to coarse SAND with rare pockets of firm clay. Gravel is subangular, fine to coarse and of limestone	
1.50	B4			(0.70)			
1.50	D5						
1.50	ES6						
			71.04	1.80		Soft locally firm grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular, fine to medium, and of limestone	
2.00	B7			(0.40)			
2.00	D8						
			70.64	2.20		End of trial pit at 2.20m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered.

Terminated at scheduled depth.

Water Strikes:

Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

Project No.: 18-0577	**Project Name:** DAA Surveys and Investigations		**Trial Pit No.:** **TP29**
Co-ordinates: 313618.91 E 243779.09 N	**Client:** Dublin Airport Authority		Sheet 1 of 1
Method: Trial Pitting	**Client's Representative:** Balfour Beatty		**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 72.39 mOD	**Date:** 01/08/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.30)		TOPSOIL: Firm brown slightly sandy CLAY with some rootlets. Sand is fine to coarse	
			72.09	0.30		Firm locally stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to angular, fine to coarse and of limestone	
0.50	B1						
0.50	D2						
0.50	ES3			(0.60)			
			71.49	0.90		Firm locally stiff light grey slightly sandy gravelly silty CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular, fine to coarse and of limestone. Cobbles are subangular to subrounded of limestone	
1.10	B4						
1.10	D5			(0.50)			
			70.99	1.40		Firm brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular, fine to coarse and of limestone. Cobbles are subangular to subrounded of limestone	
1.50	B6						
1.50	D7						
1.50	ES8			(0.70)			
			70.29	2.10		End of trial pit at 2.10m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered.

Terminated at scheduled depth.

Water Strikes:

Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH	**Project No.:** 18-0577	**Project Name:** DAA Surveys and Investigations	**Trial Pit No.:** **TP30**
	Co-ordinates: 313259.77 E	**Client:** Dublin Airport Authority	Sheet 1 of 1
Method: Trial Pitting	243797.96 N	**Client's Representative:** Balfour Beatty	**Scale:** 1:25
Plant: 8T Tracked Excavator	**Ground Level:** 74.39 mOD	**Date:** 31/07/2018	**Logger:** MMC

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
				(0.30)		TOPSOIL	
			74.09	0.30		Stiff orangish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular, fine to medium and of sandstone	
0.50	B1						
0.50	D2						
0.50	ES3						
				(1.10)			
			72.99	1.40		Grey very gravelly clayey fine to coarse SAND with rare pockets of stiff clay. Sand is fine to coarse. Gravel is subangular, fine to coarse and of limestone	
1.50	B4						
1.50	D5						
1.50	ES6						
				(0.60)			
			72.39	2.00		End of trial pit at 2.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Remarks
No groundwater encountered.

Terminated at scheduled depth.

Water Strikes:	
Struck at (m):	Remarks:

Stability: Stable

Width: 1.00

Length: 3.00

CAUSEWAY GEOTECH

APPENDIX E

TRIAL PIT PHOTOGRAPHS





TP01





TP01





TP01





TP01



TP02





TP02





TP02





TP03





TP03





TP03





TP03



TP04





TP04





TP04



TP05





TP05





TP06





TP06



TP06



TP06



TP06



TP07





TP07





TP07



TP08





TP08





TP08





TP09





TP09





TP09





TP09



TP10





TP10





TP11





TP11





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TP12





TP12





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TP13





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TP26





TP26





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TP27





TP27





TP27





TP28





TP28





TP28





TP28



TP29





TP29





TP30





TP30





TP30



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APPENDIX F

GEOTECHNICAL LABORATORY TEST RESULTS



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SOIL AND ROCK SAMPLE ANALYSIS
LABORATORY TEST REPORT

Project Name:	DAA Surveys and Investigations
Project No.:	18-0577
Client:	Dublin Airport Authority
Engineer:	Balfour Beatty
Date:	03/10/18

We are pleased to attach the results of laboratory testing carried out for the above project. This memo and its attachments constitute a report of the results of tests as detailed in the Contents page(s).

The attached results complete the testing requested and we would therefore wish to confirm that samples will be retained without charge for a period of 28 days from the above date after which they will be appropriately disposed of unless we receive written instructions to the contrary prior to that date.

We trust our report meets with your approval but if you have any queries or require additional information, please do not hesitate to contact the undersigned.

Approved Signatory



Stephen Watson
Laboratory Manager

Signed for and on behalf of Causeway Geotech Ltd

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Project Name: DAA Surveys and Investigations

Report Reference: Soils Schedule 1 - FINAL

The table below details the tests carried out, the specifications used, and the number of tests included in this report.

Tests marked with* in this report are not United Kingdom Accreditation Service (UKAS) accredited and are not included in Causeway Geotech Limited's scope of UKAS Accreditation Schedule of Tests. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL	Moisture Content of Soil	BS 1377-2: 1990: Cl 3.2	50
SOIL	Liquid and Plastic Limits of soil-1 point cone penetrometer method	BS 1377-2: 1990: Cl 4.4, 5.3 & 5.4	32
SOIL	Bulk and dry density by Linear Measurement Method	BS 1377-2: 1990: Cl 7.2	18
SOIL	Particle size distribution - wet sieving	BS 1377-2: 1990: Cl 9.2	41
SOIL	Particle size distribution - sedimentation hydrometer method	BS 1377-2: 1990: Cl 9.5	40
SOIL	California Bearing Ratio (CBR)	BS 1377-4: 1990: Cl 7	6
SOIL	Dry density/moisture content relationship (2.5 kg rammer)	BS 1377-4: 1990: Cl 3.3 & 3.4	17
SOIL	Dry density/moisture content relationship (4.5 kg rammer)	BS 1377-4: 1990: Cl 3.5 & 3.6	5
SOIL	Moisture Condition Value at natural moisture content	BS 1377-4: 1990: Cl 5.4	7
SOIL	Moisture Condition Value / Moisture Content Relationship	BS 1377-4: 1990: Cl 5.5	8

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SUB-CONTRACTED TESTS

In agreement with Client, the following tests were conducted by an approved sub-contractor. All sub-contracting laboratories used are UKAS accredited.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL – Subcontracted to Chemtest Ltd *(UKAS 2183))*	pH Value of Soil		6
SOIL – Subcontracted to Chemtest Ltd *(UKAS 2183)*	Sulphate Content water extract		6
SOIL – Subcontracted to Chemtest Ltd *(UKAS 2183)*	Organic Matter Content		6
SOIL – Subcontracted to Chemtest Ltd *(UKAS 2183)*	Soil Resistivity		3
SOIL – Subcontracted to Chemtest Ltd *(UKAS 2183)*	Redox Potential		3

CAUSEWAY GEOTECH

Summary of Classification Test Results

Project No.	Project Name
18-0577	DAA Surveys and Investigations

Hole No.	Sample				Soil Description	Density bulk / dry Mg/m^3		*w* %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m^3	Casagrande Classification
	Ref	Top	Base	Type										
TP01	1	0.50		B	Grey sandy gravelly silty CLAY.			13	53	31 -1pt	14	17		CL
TP01	5	1.50		D	Grey sandy gravelly silty CLAY.			14						
TP02	7	1.70		B	Dark grey slightly silty sandy angular and tabular fine to coarse GRAVEL.			7.0						
TP03	2	0.50		B	Brown sandy slightly gravelly clayey SILT.			18	82	29 -1pt	27	2		ML
TP03	7	2.00		B	Dark grey sandy gravelly silty CLAY.			14	58	31 -1pt	20	11		CL
TP05	1	0.50		B	Yellowish brown sandy gravelly silty CLAY.			20	76	41 -1pt	23	18		CI
TP05	4	1.50		B	Grey sandy gravelly silty CLAY.			7.9	64	25 -1pt	14	11		CL
TP06	4	1.50		B	Yellowish brown sandy gravelly SILT/CLAY.			13	66	28 -1pt	22	6		ML/CL
TP07	1	0.50		B	Light yellowish brown sandy gravelly silty CLAY.			11	73	54 -1pt	27	27		CH
TP07	4	1.50		B	Grey sandy gravelly silty CLAY.			6.6	61	28 -1pt	16	12		CL
TP07	6	2.00		B	Dark brownish grey sandy gravelly silty CLAY.			12	59	25 -1pt	15	10		CL
TP08	1	0.50		B	Yellowish brown sandy slightly gravelly clayey SILT.			11	80	54 -1pt	31	23		MH

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknometer
wd - water displacement	cas - Casagrande method	gj - gas jar
wi - immersion in water	1pt - single point test	

Date Printed: 18/09/2018

Approved By: Stephen.Watson

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CAUSEWAY GEOTECH

Summary of Classification Test Results

Project No.	Project Name
18-0577	DAA Surveys and Investigations

Hole No.	Sample				Soil Description	Density bulk / dry Mg/m^3		*w* %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m^3	Casagrande Classification
	Ref	Top	Base	Type										
TP09	1	0.50		B	Yellowish brown slightly sandy CLAY.			12	71	28 -1pt	23	5		ML
TP10	3	1.60		B	Light grey slightly sandy slightly gravelly CLAY.			9.2	57	53 -1pt	28	25		CH
TP11	7	1.90		B	Dark grey sandy slightly gravelly SILT/CLAY.			9.1	62	51 -1pt	28	23		MH/CH
TP12	1	0.50		B	Brown sandy gravelly silty CLAY.			21	90	54 -1pt	28	26		CH
TP13	2	0.60		D	Possible MADE GROUND: Brownish grey sandy gravelly silty CLAY.			11						
TP13	3	1.60		B	Brown sandy gravelly clayey SILT.			10	64	29 -1pt	27	2		ML
TP14	1	0.50		B	Brown sandy gravelly silty CLAY.			13	73	34 -1pt	20	14		CL
TP14	4	1.30		B	Greyish brown sandy slightly gravelly CLAY.			19	71	40 -1pt	21	19		CI
TP15	2	0.50		D	Yellowish brown sandy gravelly silty CLAY.			11						
TP15	3	1.30		B	Greyish brown sandy gravelly clayey SILT.			9.0	68	29 -1pt	27	2		ML
TP16	1	0.50		B	Brownish grey sandy gravelly clayey SILT.			12	66	28 -1pt	23	5		ML
TP17	2	0.50		D	Brown sandy slightly gravelly SILT.			12						

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key

Density test | Liquid Limit | Particle density

Linear measurement unless : | 4pt cone unless : | sp - small pyknometer

wd - water displacement | cas - Casagrande method | gj - gas jar

wi - immersion in water | 1pt - single point test

Date Printed: 18/09/2018

Approved By: Stephen.Watson

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Summary of Classification Test Results

Project No.	Project Name
18-0577	DAA Surveys and Investigations

Hole No.	Sample				Soil Description	Density bulk	Density dry	w	Passing 425µm	LL	PL	PI	Particle density	Casagrande Classification
	Ref	Top	Base	Type		Mg/m^3		%	%	%	%	%	Mg/m^3	
TP17	4	1.50		B	Greyish brown sandy gravelly clayey SILT.			1.5	64	28 -1pt	26	2		ML
TP18	1	0.50		B	Light brown sandy slightly gravelly silty CLAY.			13	88	34 -1pt	19	15		CL
TP19	1	0.50		B	Yellowish brown sandy slightly gravelly silty CLAY.			12	74	42 -1pt	21	21		CI
TP19	5	1.50		D	Grey slightly sandy gravelly silty CLAY.			9.8						
TP20	2	0.50		D	Light brown sandy gravelly silty CLAY.			17						
TP20	4	1.50		B	Greyish brown sandy gravelly silty CLAY.			17	63	54 -1pt	26	28		CH
TP22	4	1.50		B	Brownish grey sandy gravelly SILT/CLAY.			17	63	27 -1pt	21	6		ML/CL
TP23	2	0.50		D	Light brown sandy gravelly silty CLAY.			14						
TP23	4	1.00		B	Grey sandy gravelly silty CLAY.			38	99	54 -1pt	26	28		CH
TP23	7	1.50		D	Dark grey slightly sandy gravelly CLAY.			11						
TP24	1	0.50		B	Greyish brown slightly sandy slightly gravelly CLAY.			11	85	34 -1pt	20	14		CL
TP24	5	1.50		D	Brown sandy gravelly silty CLAY.			8.3						

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknometer
wd - water displacement	cas - Casagrande method	gj - gas jar
wi - immersion in water	1pt - single point test	

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CAUSEWAY GEOTECH

Summary of Classification Test Results

Project No.	Project Name
18-0577	DAA Surveys and Investigations

Hole No.	Sample				Soil Description	Density bulk / dry Mg/m^3		*w* %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m^3	Casagrande Classification
	Ref	Top	Base	Type										
TP25	2	0.50		D	Brown sandy gravelly silty CLAY.			11						
TP25	4	0.90		B	Light brown slightly sandy slightly gravelly SILT.			17	88	26 -1pt	21	5		ML
TP25	7	1.50		D	Light brown sandy gravelly silty CLAY.			12						
TP26	3	0.50		D	Light brown sandy gravelly silty CLAY.			14						
TP26	4	1.50		B	Grey brown sandy gravelly silty CLAY.			9.3	55	34 -1pt	20	14		CL
TP27	2	0.50		D	Greyish brown slightly sandy slightly gravelly CLAY.			5.4						
TP27	4	1.50		B	Light grey clayey sandy subangular to angular fine to coarse GRAVEL.			5.8	44	34 -1pt	20	14		CL
TP28	2	0.50		D	Orangish brown sandy gravelly CLAY.			9.8						
TP28	4	1.50		B	Grey sandy gravelly silty CLAY.			11	49	25 -1pt	16	9		CL
TP28	8	2.00		D	Grey sandy gravelly silty CLAY.			17						
TP29	2	0.50		D	Brown sandy slightly gravelly silty CLAY.			23						
TP29	5	1.10		D	Light grey slightly sandy gravelly silty CLAY.			11						

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknometer
wd - water displacement	cas - Casagrande method	gj - gas jar
wi - immersion in water	1pt - single point test	

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CAUSEWAY GEOTECH

Summary of Classification Test Results

Project No.	Project Name
18-0577	DAA Surveys and Investigations

Hole No.	Sample				Soil Description	Density bulk Mg/m^3	Density dry Mg/m^3	*w* %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m^3	Casagrande Classification
	Ref	Top	Base	Type										
TP29	6	1.50		B	Brown sandy gravelly silty CLAY.			15	67	39 -1pt	21	18		CI
TP30	4	1.50		B	Grey sandy gravelly silty CLAY.			8.1	52	26 -1pt	14	12		CL

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknometer
wd - water displacement	cas - Casagrande method	gj - gas jar
wi - immersion in water	1pt - single point test	

Date Printed: 18/09/2018

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CAUSEWAY GEOTECH

Density Tests - Summary of Results

Project No.	Project Name
18-0577	DAA Surveys and Investigations

Hole No.	Sample				Soil Description	Linear Measurement			Immersion in water			Water displacement			Remarks
	Ref	Top	Base	Type		Bulk density Mg/m^3	Dry density Mg/m^3	w %	Bulk density Mg/m^3	Dry density Mg/m^3	w %	Bulk density Mg/m^3	Dry density Mg/m^3	w %	
TP01	1	0.50		B	Grey sandy gravelly silty CLAY.	2.22	1.94	14.5							
TP01	6	1.50		B	Grey sandy gravelly silty CLAY.	2.07	1.88	10.4							
TP03	2	0.50		B	Brown sandy slightly gravelly clayey SILT.	1.84	1.55	18.7							
TP05	1	0.50		B	Yellowish brown sandy gravelly silty CLAY.	2.01	1.67	20.3							
TP06	4	1.50		B	Yellowish brown sandy gravelly SILT/CLAY.	2.24	1.99	12.5							
TP07	4	1.50		B	Grey sandy gravelly silty CLAY.	2.08	1.89	9.7							
TP08	1	0.50		B	Yellowish brown sandy slightly gravelly clayey SILT.	1.63	1.44	13.0							
TP09	1	0.50		B	Yellowish brown slightly sandy CLAY.	1.73	1.54	12.4							
TP10	3	1.60		B	Light grey slightly sandy slightly gravelly CLAY.	2.06	1.90	8.7							
TP14	1	0.50		B	Brown sandy gravelly silty CLAY.	1.85	1.63	13.5							
TP17	4	1.50		B	Greyish brown sandy gravelly clayey SILT.	2.22	1.97	12.7							
TP19	1	0.50		B	Yellowish brown sandy slightly gravelly silty CLAY.	1.78	1.60	11.1							
TP22	4	1.50		B	Brownish grey sandy gravelly SILT/CLAY.	2.15	1.95	10.3							
TP24	1	0.50		B	Greyish brown slightly sandy slightly gravelly CLAY.	1.67	1.48	12.8							
TP26	4	1.50		B	Grey brown sandy gravelly silty CLAY.	2.15	1.95	10.2							
TP28	4	1.50		B	Grey sandy gravelly silty CLAY.	2.30	2.06	11.5							
TP29	6	1.50		B	Brown sandy gravelly silty CLAY.	2.11	1.77	19.4							

Legend w moisture content of the density test specimen

Notes

Tests carried out in accordance with BS1377:Part2:1990 and the following clauses unless annotated otherwise

Linear measurement	clause 7.2
Immersion in water	clause 7.3
Water displacement	clause 7.4

Date Printed: 20/09/2018

Approved By: Stephen.Watson

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CAUSEWAY GEOTECH

Density Tests - Summary of Results

Project No.	Project Name
18-0577	DAA Surveys and Investigations

Hole No.	Sample				Soil Description	Linear Measurement			Immersion in water			Water displacement			Remarks
	Ref	Top	Base	Type		Bulk density Mg/m^3	Dry density Mg/m^3	w %	Bulk density Mg/m^3	Dry density Mg/m^3	w %	Bulk density Mg/m^3	Dry density Mg/m^3	w %	
TP30	4	1.50		B	Grey sandy gravelly silty CLAY.	2.25	2.03	10.9							

Legend w moisture content of the density test specimen

Notes

Tests carried out in accordance with BS1377:Part2:1990 and the following clauses unless annotated otherwise

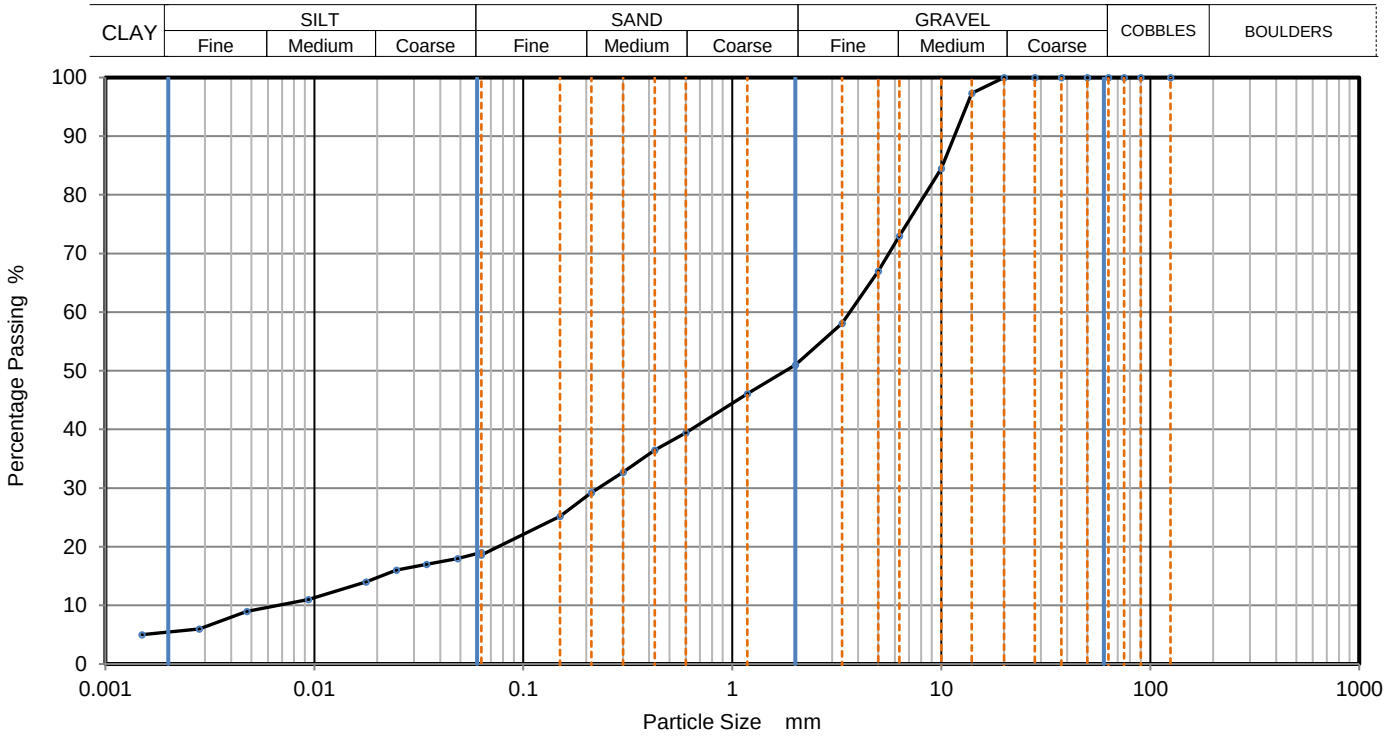
Linear measurement	clause 7.2
Immersion in water	clause 7.3
Water displacement	clause 7.4

Date Printed: 20/09/2018

Approved By: Stephen.Watson

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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP01
Site Name	DAA Surveys and Investigations			Sample No.	6
Soil Description	Grey sandy gravelly silty CLAY.			Depth, m	1.50
Specimen Reference	7	Specimen Depth	1.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080922



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	19
90	100	0.0484	18
75	100	0.0345	17
63	100	0.0247	16
50	100	0.0177	14
37.5	100	0.0094	11
28	100	0.0048	9
20	100	0.0028	6
14	97	0.0015	5
10	85		
6.3	73		
5	67		
3.35	58		
2	51		
1.18	46		
0.6	39	Particle density	(assumed)
0.425	37	2.65	Mg/m3
0.3	33		
0.212	29		
0.15	25		
0.063	19		

Dry Mass of sample, g	1034

Sample Proportions	% dry mass
Cobbles	0
Gravel	49
Sand	32
Silt	13
Clay	6

Grading Analysis		
D100	mm	
D60	mm	3.66
D30	mm	0.23
D10	mm	0.00594
Uniformity Coefficient		620
Curvature Coefficient		2.4

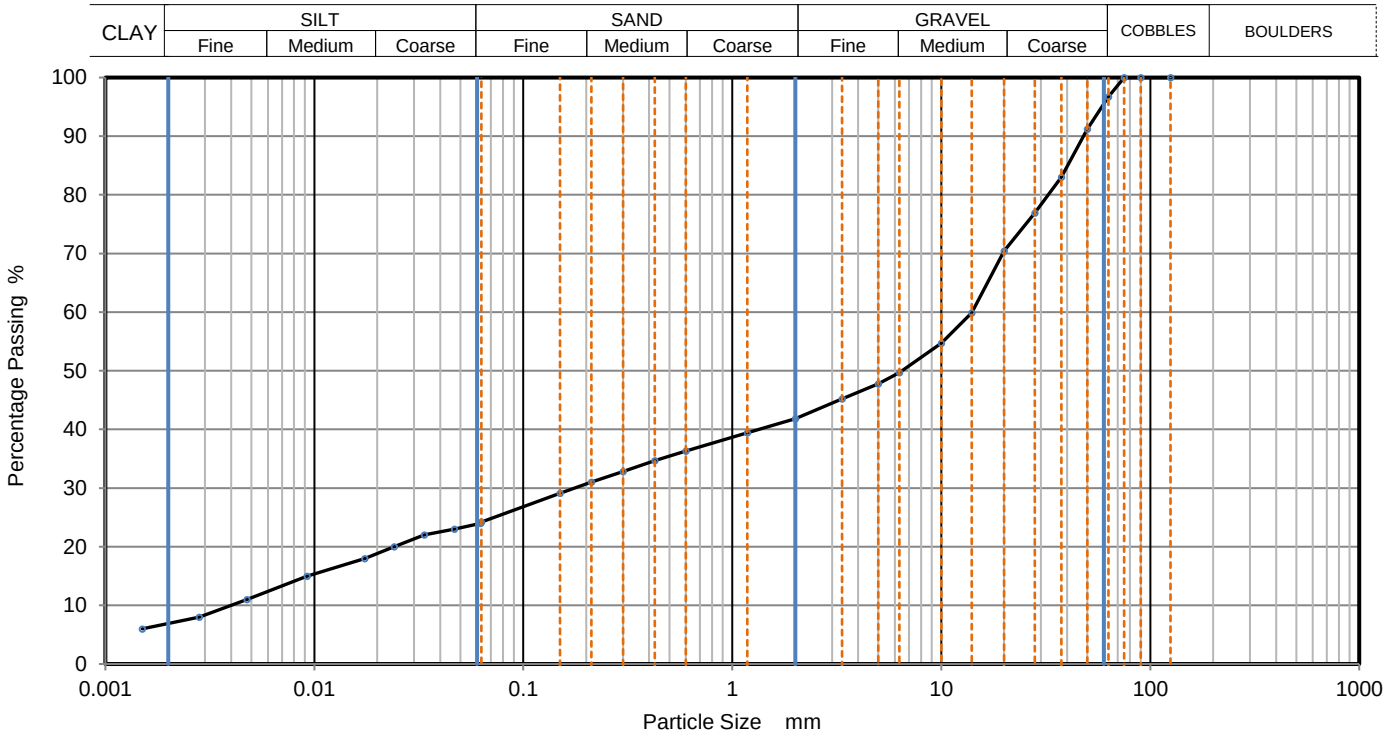
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP02
Site Name	DAA Surveys and Investigations			Sample No.	1
Soil Description	Yellowish brown slightly sandy gravelly silty CLAY with some cobbles.			Depth, m	0.50
Specimen Reference	3	Specimen Depth	0.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080923



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0625	24
90	100	0.0468	23
75	100	0.0336	22
63	97	0.0241	20
50	91	0.0174	18
37.5	83	0.0092	15
28	77	0.0048	11
20	70	0.0028	8
14	60	0.0015	6
10	55		
6.3	50		
5	48		
3.35	45		
2	42		
1.18	39		
0.6	36	Particle density 2.65	(assumed) Mg/m3
0.425	35		
0.3	33		
0.212	31		
0.15	29		
0.063	24		

Dry Mass of sample, g	10533

Sample Proportions	% dry mass
Cobbles	3
Gravel	55
Sand	18
Silt	17
Clay	7

Grading Analysis		
D100	mm	
D60	mm	14
D30	mm	0.177
D10	mm	0.00376
Uniformity Coefficient		3700
Curvature Coefficient		0.6

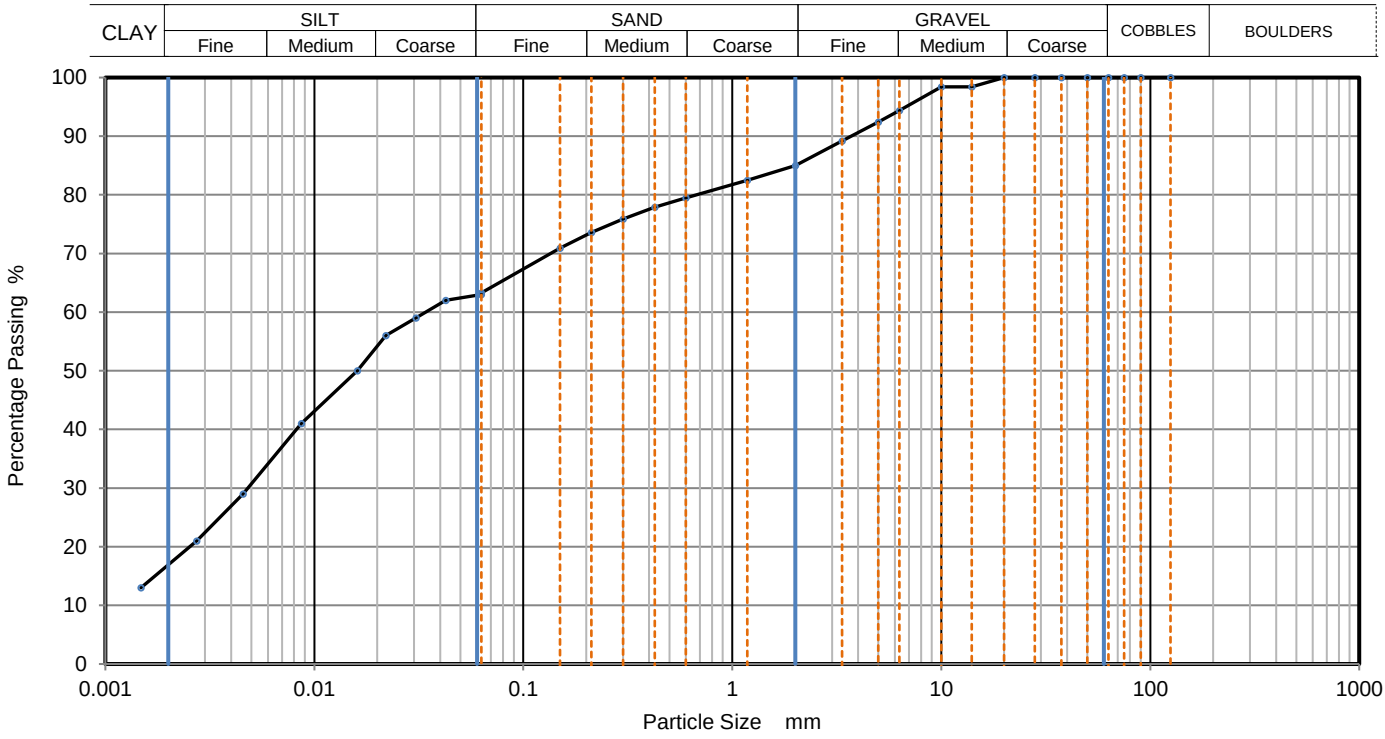
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP03
Site Name	DAA Surveys and Investigations			Sample No.	2
Soil Description	Brown sandy slightly gravelly clayey SILT.			Depth, m	0.50
Specimen Reference	12	Specimen Depth	0.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080930



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	63
90	100	0.0425	62
75	100	0.0306	59
63	100	0.0220	56
50	100	0.0160	50
37.5	100	0.0087	41
28	100	0.0046	29
20	100	0.0027	21
14	98	0.0015	13
10	98		
6.3	94		
5	92		
3.35	89		
2	85		
1.18	83		
0.6	80	Particle density	(assumed)
0.425	78	2.65	Mg/m3
0.3	76		
0.212	74		
0.15	71		
0.063	63		

Dry Mass of sample, g	393

Sample Proportions	% dry mass
Cobbles	0
Gravel	15
Sand	22
Silt	46
Clay	17

Grading Analysis		
D100	mm	
D60	mm	0.0347
D30	mm	0.00471
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

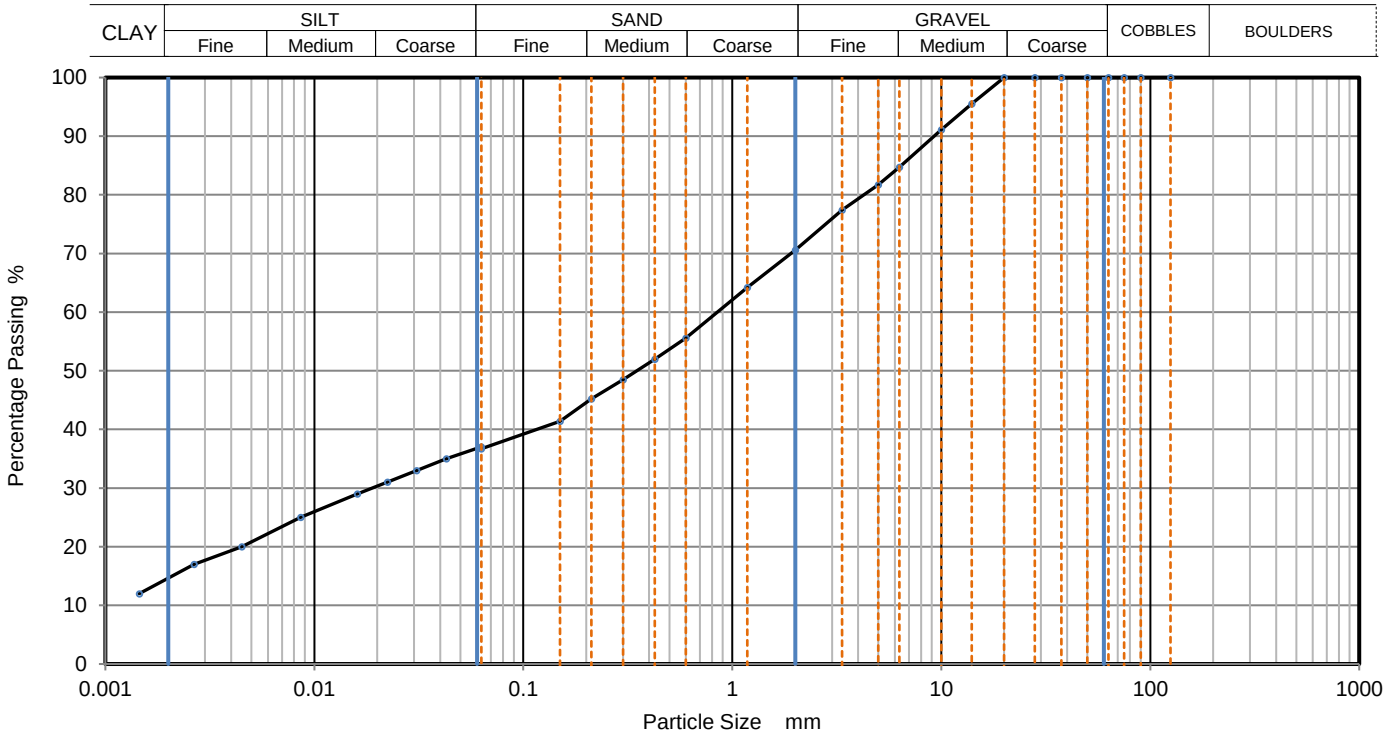
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP03
Site Name	DAA Surveys and Investigations			Sample No.	7
Soil Description	Dark grey sandy gravelly silty CLAY.			Depth, m	2.00
Specimen Reference	8	Specimen Depth	2 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080933



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	37
90	100	0.0429	35
75	100	0.0308	33
63	100	0.0224	31
50	100	0.0161	29
37.5	100	0.0086	25
28	100	0.0045	20
20	100	0.0027	17
14	96	0.0015	12
10	91		
6.3	85		
5	82		
3.35	77		
2	71		
1.18	64		
0.6	56	Particle density	(assumed)
0.425	52	2.65	Mg/m3
0.3	49		
0.212	45		
0.15	41		
0.063	37		

Dry Mass of sample, g	767

Sample Proportions	% dry mass
Cobbles	0
Gravel	29
Sand	34
Silt	22
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.849
D30	mm	0.0189
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

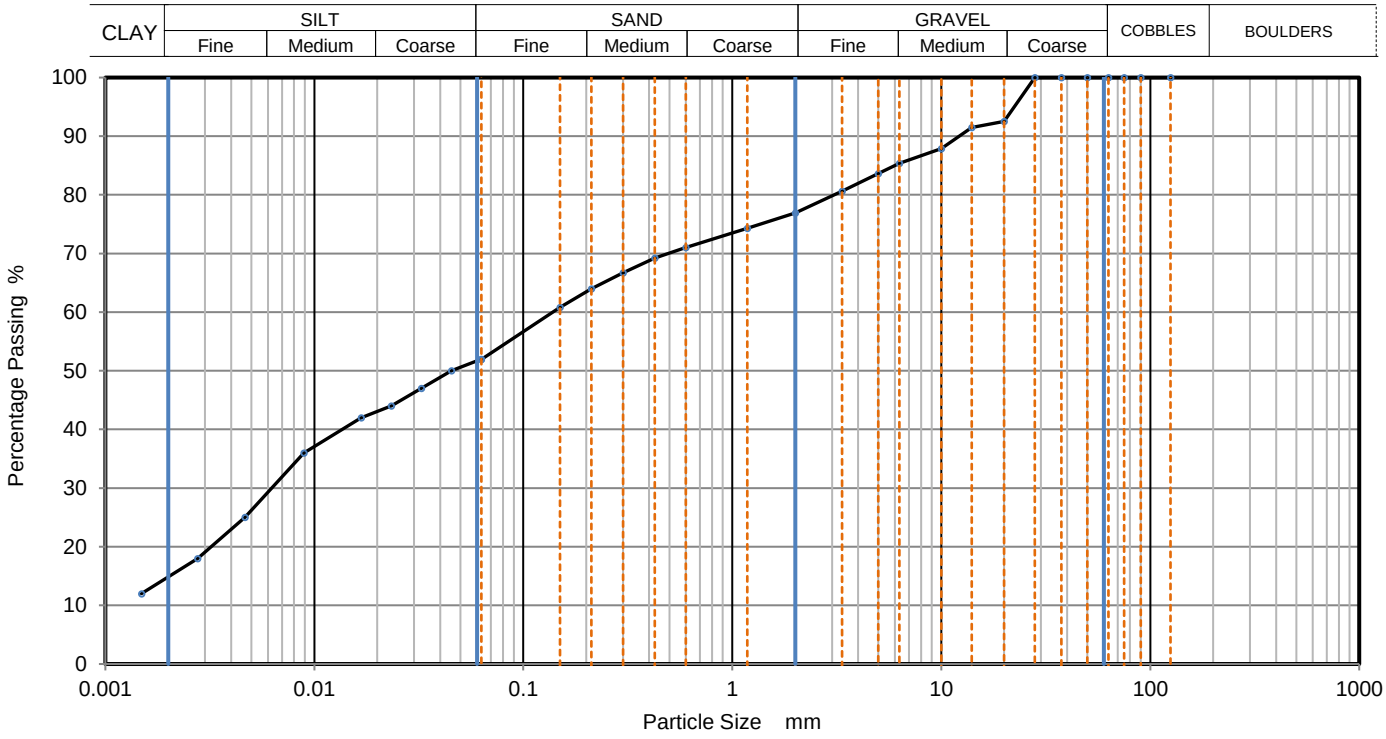
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PARTICLE SIZE DISTRIBUTION

				Job Ref	**18-0577**
				Borehole/Pit No.	TP05
Site Name	DAA Surveys and Investigations			Sample No.	1
Soil Description	Yellowish brown sandy gravelly silty CLAY.			Depth, m	0.50
Specimen Reference	10	Specimen Depth	0.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080935



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	52
90	100	0.0454	50
75	100	0.0326	47
63	100	0.0234	44
50	100	0.0168	42
37.5	100	0.0089	36
28	100	0.0047	25
20	93	0.0028	18
14	92	0.0015	12
10	88		
6.3	85		
5	84		
3.35	81		
2	77		
1.18	74		
0.6	71	Particle density	(assumed)
0.425	69	2.65	Mg/m3
0.3	67		
0.212	64		
0.15	61		
0.063	52		

Dry Mass of sample, g: 547

Sample Proportions	% dry mass
Cobbles	0
Gravel	23
Sand	25
Silt	37
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.139
D30	mm	0.00627
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

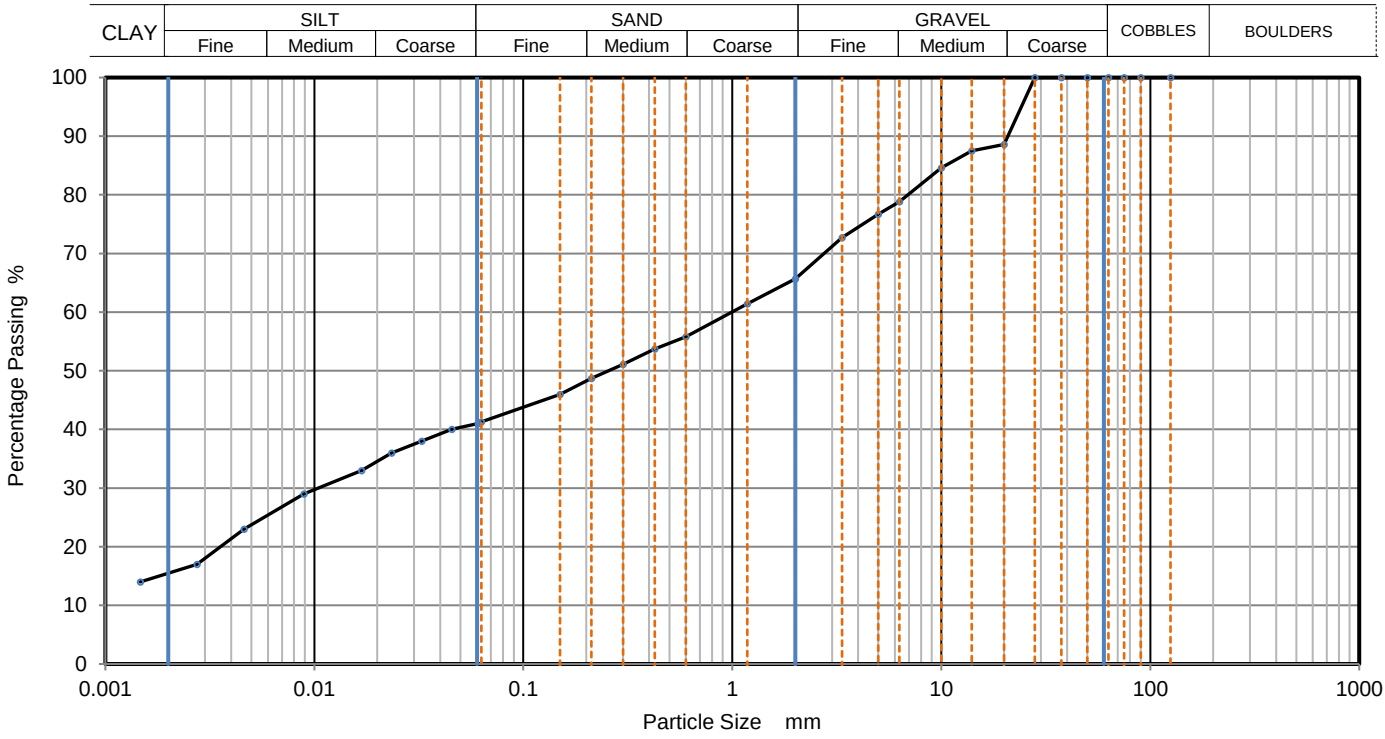
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CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION			Job Ref	18-0577
				Borehole/Pit No.	TP05
Site Name	DAA Surveys and Investigations			Sample No.	4
Soil Description	Grey sandy gravelly silty CLAY.			Depth, m	1.50
Specimen Reference	10	Specimen Depth	1.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080937



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0606	41
90	100	0.0454	40
75	100	0.0326	38
63	100	0.0234	36
50	100	0.0168	33
37.5	100	0.0089	29
28	100	0.0046	23
20	89	0.0027	17
14	88	0.0015	14
10	85		
6.3	79		
5	77		
3.35	73		
2	66		
1.18	61		
0.6	56	Particle density	(assumed)
0.425	54	2.65	Mg/m3
0.3	51		
0.212	49		
0.15	46		
0.063	41		

Dry Mass of sample, g	674

Sample Proportions	% dry mass
Cobbles	0
Gravel	34
Sand	24
Silt	26
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.994
D30	mm	0.0107
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

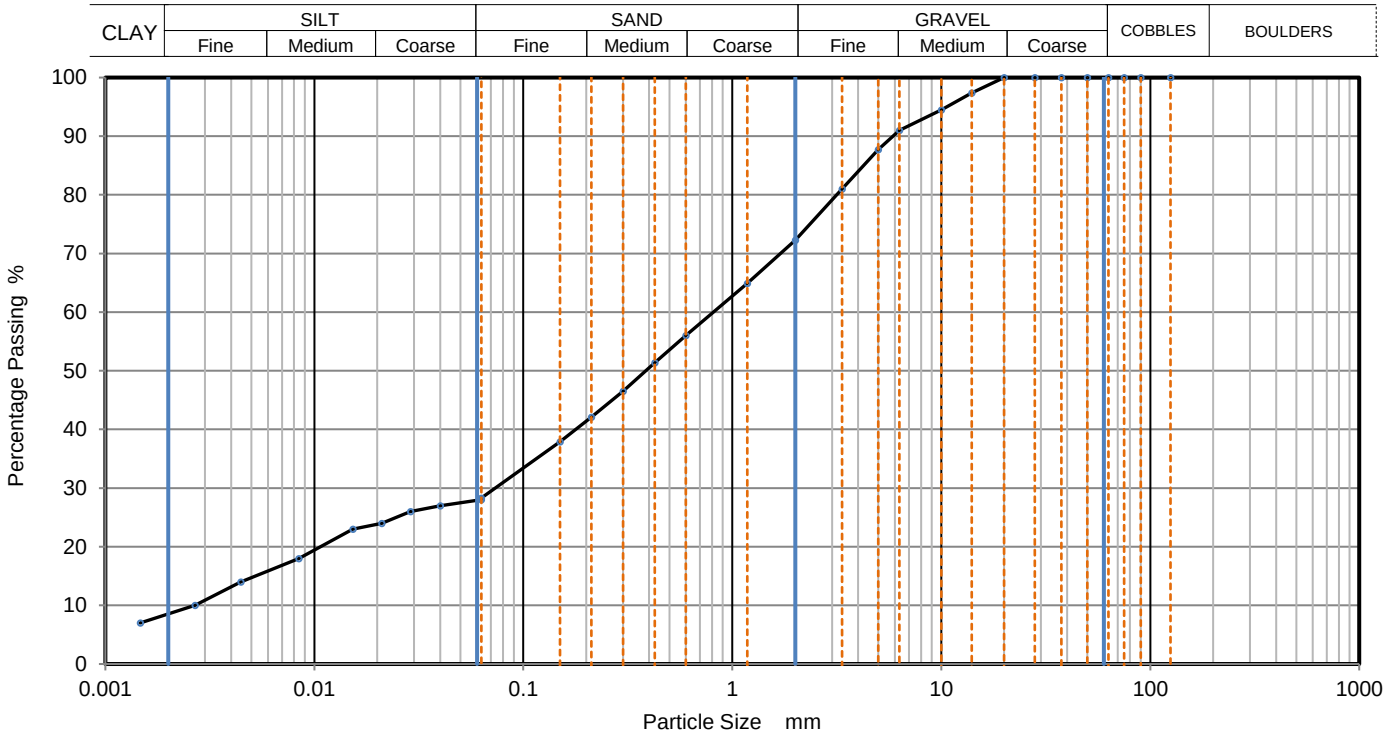
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP06
Site Name	DAA Surveys and Investigations			Sample No.	1
Soil Description	Yellowish brown sandy gravelly SILT/CLAY.			Depth, m	0.50
Specimen Reference	5	Specimen Depth	0.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080939



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	28
90	100	0.0400	27
75	100	0.0289	26
63	100	0.0210	24
50	100	0.0153	23
37.5	100	0.0084	18
28	100	0.0044	14
20	100	0.0027	10
14	97	0.0015	7
10	95		
6.3	91		
5	88		
3.35	81		
2	72		
1.18	65		
0.6	56	Particle density	(assumed)
0.425	51	2.65	Mg/m3
0.3	47		
0.212	42		
0.15	38		
0.063	28		

Dry Mass of sample, g	725

Sample Proportions	% dry mass
Cobbles	0
Gravel	28
Sand	44
Silt	20
Clay	9

Grading Analysis		
D100	mm	
D60	mm	0.813
D30	mm	0.0733
D10	mm	0.0026
Uniformity Coefficient		310
Curvature Coefficient		2.5

Remarks

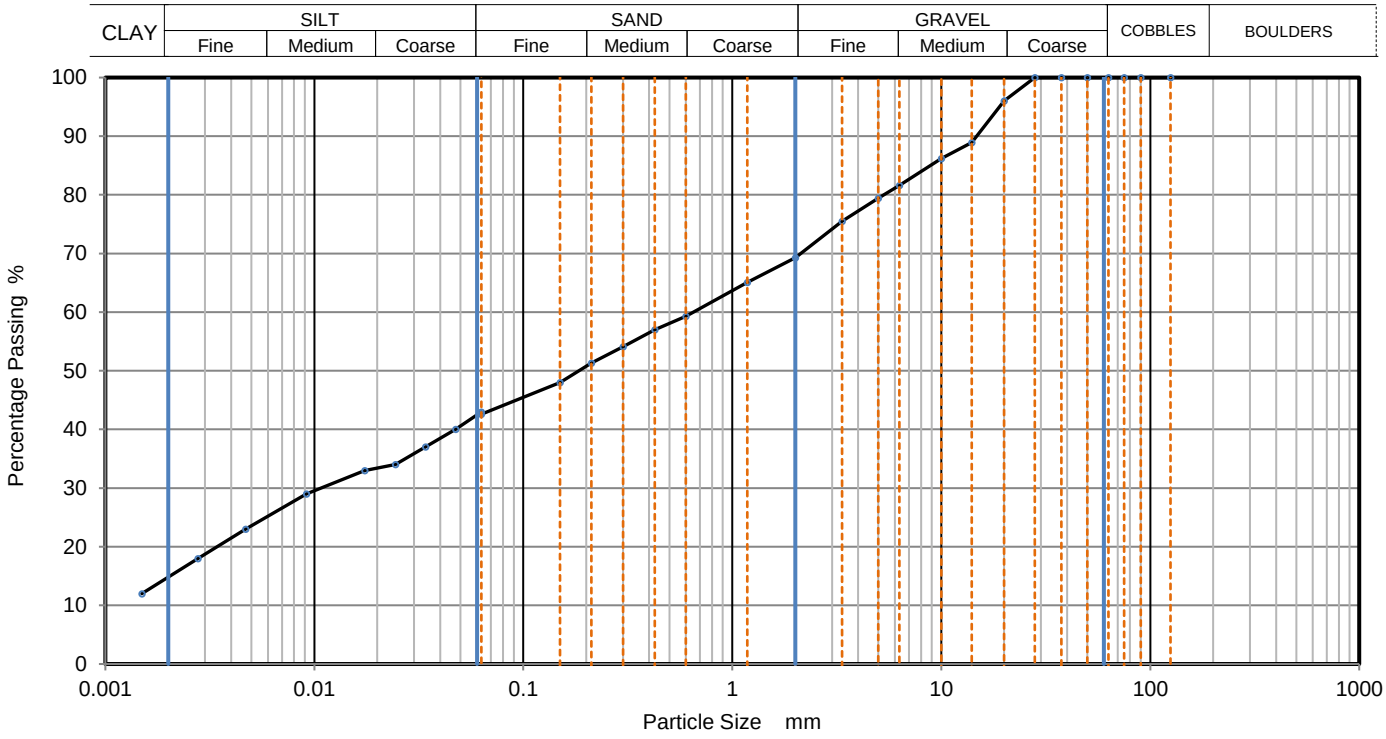
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PARTICLE SIZE DISTRIBUTION

CAUSEWAY GEOTECH				Job Ref	**18-0577**
				Borehole/Pit No.	TP06
Site Name	DAA Surveys and Investigations			Sample No.	4
Soil Description	Yellowish brown sandy gravelly SILT/CLAY.			Depth, m	1.50
Specimen Reference	12	Specimen Depth	1.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080941



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	43
90	100	0.0475	40
75	100	0.0341	37
63	100	0.0244	34
50	100	0.0174	33
37.5	100	0.0092	29
28	100	0.0047	23
20	96	0.0028	18
14	89	0.0015	12
10	86		
6.3	82		
5	79		
3.35	76		
2	69		
1.18	65		
0.6	59	Particle density	(assumed)
0.425	57	2.65	Mg/m3
0.3	54		
0.212	51		
0.15	48		
0.063	43		

Dry Mass of sample, g: 877

Sample Proportions	% dry mass
Cobbles	0
Gravel	31
Sand	27
Silt	28
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.65
D30	mm	0.0109
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

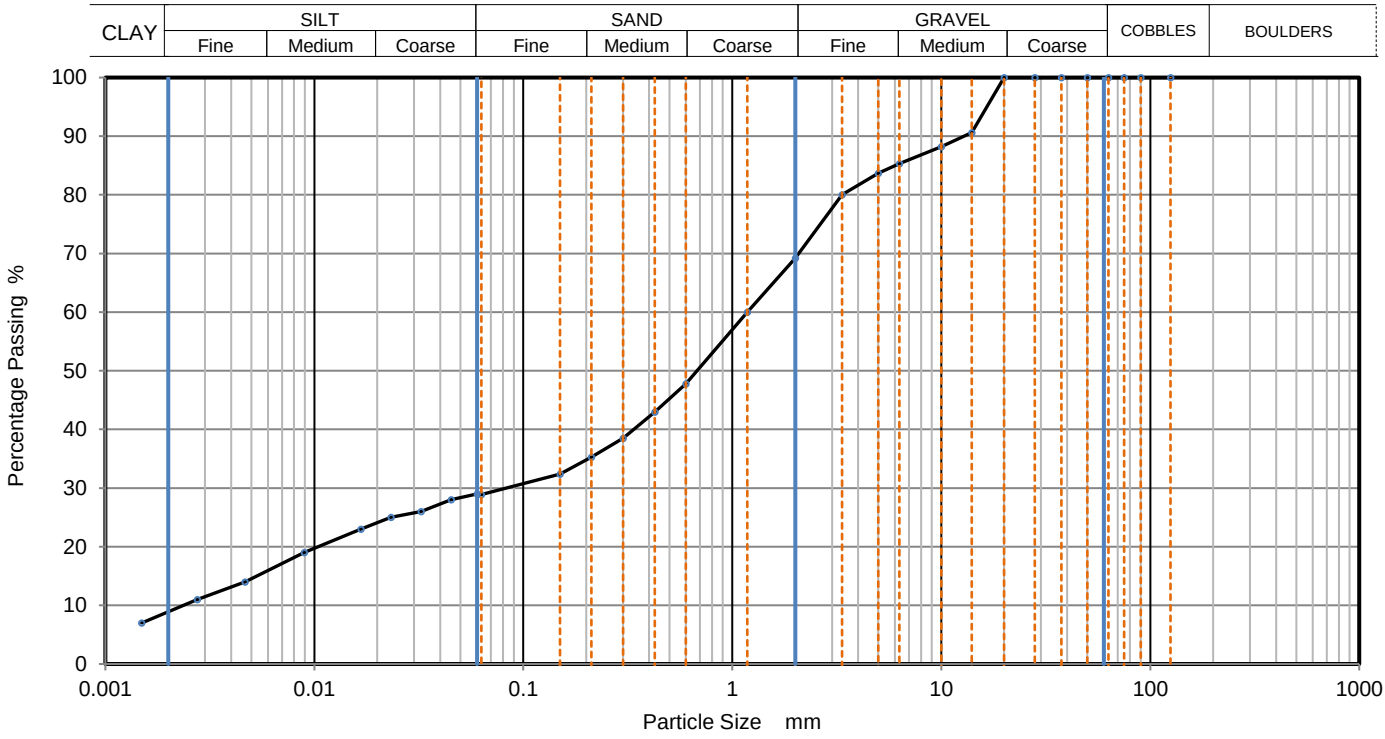
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP07
Site Name	DAA Surveys and Investigations			Sample No.	1
Soil Description	Light yellowish brown sandy gravelly silty CLAY.			Depth, m	0.50
Specimen Reference	10	Specimen Depth	0.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080943



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0602	29
90	100	0.0451	28
75	100	0.0324	26
63	100	0.0233	25
50	100	0.0167	23
37.5	100	0.0089	19
28	100	0.0047	14
20	100	0.0028	11
14	91	0.0015	7
10	88		
6.3	85		
5	84		
3.35	80		
2	69		
1.18	60		
0.6	48	Particle density	(assumed)
0.425	43	2.65	Mg/m3
0.3	39		
0.212	35		
0.15	32		
0.063	29		

Dry Mass of sample, g	968

Sample Proportions	% dry mass
Cobbles	0
Gravel	31
Sand	40
Silt	20
Clay	9

Grading Analysis		
D100	mm	
D60	mm	1.18
D30	mm	0.0834
D10	mm	0.00228
Uniformity Coefficient		520
Curvature Coefficient		2.6

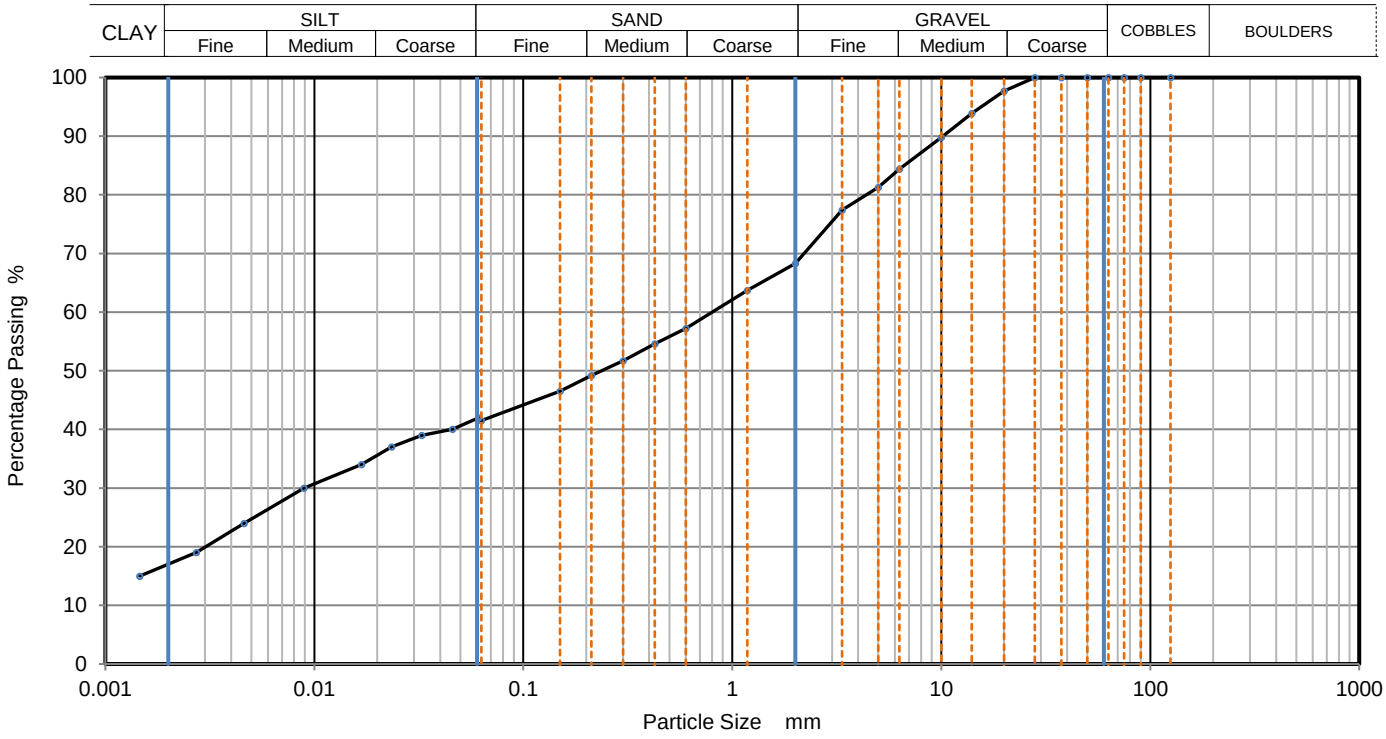
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP07
Site Name	DAA Surveys and Investigations			Sample No.	4
Soil Description	Grey sandy gravelly silty CLAY.			Depth, m	1.50
Specimen Reference	10	Specimen Depth	1.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080945



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0611	42
90	100	0.0458	40
75	100	0.0326	39
63	100	0.0234	37
50	100	0.0168	34
37.5	100	0.0089	30
28	100	0.0046	24
20	98	0.0027	19
14	94	0.0015	15
10	90		
6.3	84		
5	81		
3.35	77		
2	68		
1.18	64		
0.6	57	Particle density	(assumed)
0.425	55	2.65	Mg/m3
0.3	52		
0.212	49		
0.15	47		
0.063	42		

Dry Mass of sample, g	1055

Sample Proportions	% dry mass
Cobbles	0
Gravel	32
Sand	27
Silt	24
Clay	17

Grading Analysis		
D100	mm	
D60	mm	0.805
D30	mm	0.00936
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

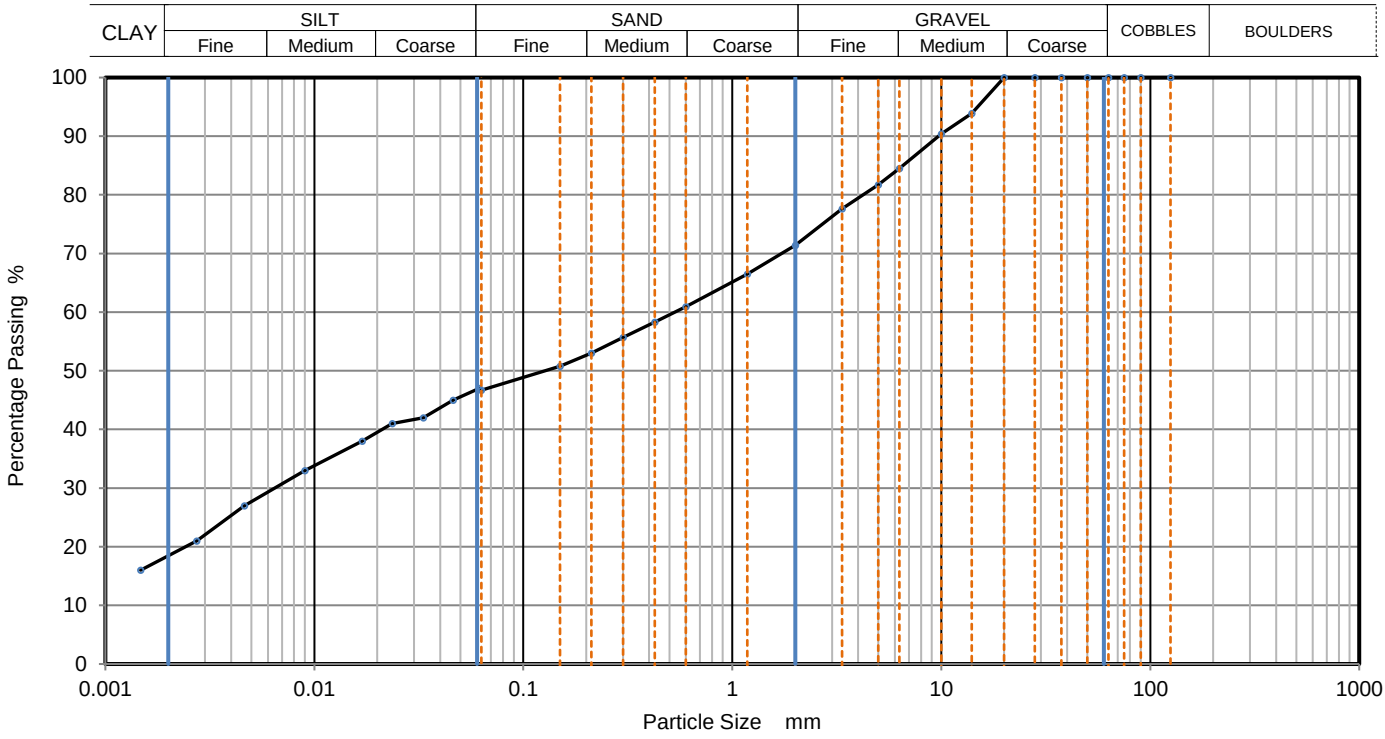
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP07
Site Name	DAA Surveys and Investigations			Sample No.	6
Soil Description	Dark brownish grey sandy gravelly silty CLAY.			Depth, m	2.00
Specimen Reference	10	Specimen Depth	2 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080947



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0616	47
90	100	0.0462	45
75	100	0.0332	42
63	100	0.0236	41
50	100	0.0170	38
37.5	100	0.0090	33
28	100	0.0046	27
20	100	0.0027	21
14	94	0.0015	16
10	90		
6.3	85		
5	82		
3.35	78		
2	71		
1.18	67		
0.6	61	Particle density	(assumed)
0.425	58	2.65	Mg/m3
0.3	56		
0.212	53		
0.15	51		
0.063	47		

Dry Mass of sample, g	947

Sample Proportions	% dry mass
Cobbles	0
Gravel	29
Sand	25
Silt	28
Clay	18

Grading Analysis		
D100	mm	
D60	mm	0.532
D30	mm	0.00667
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

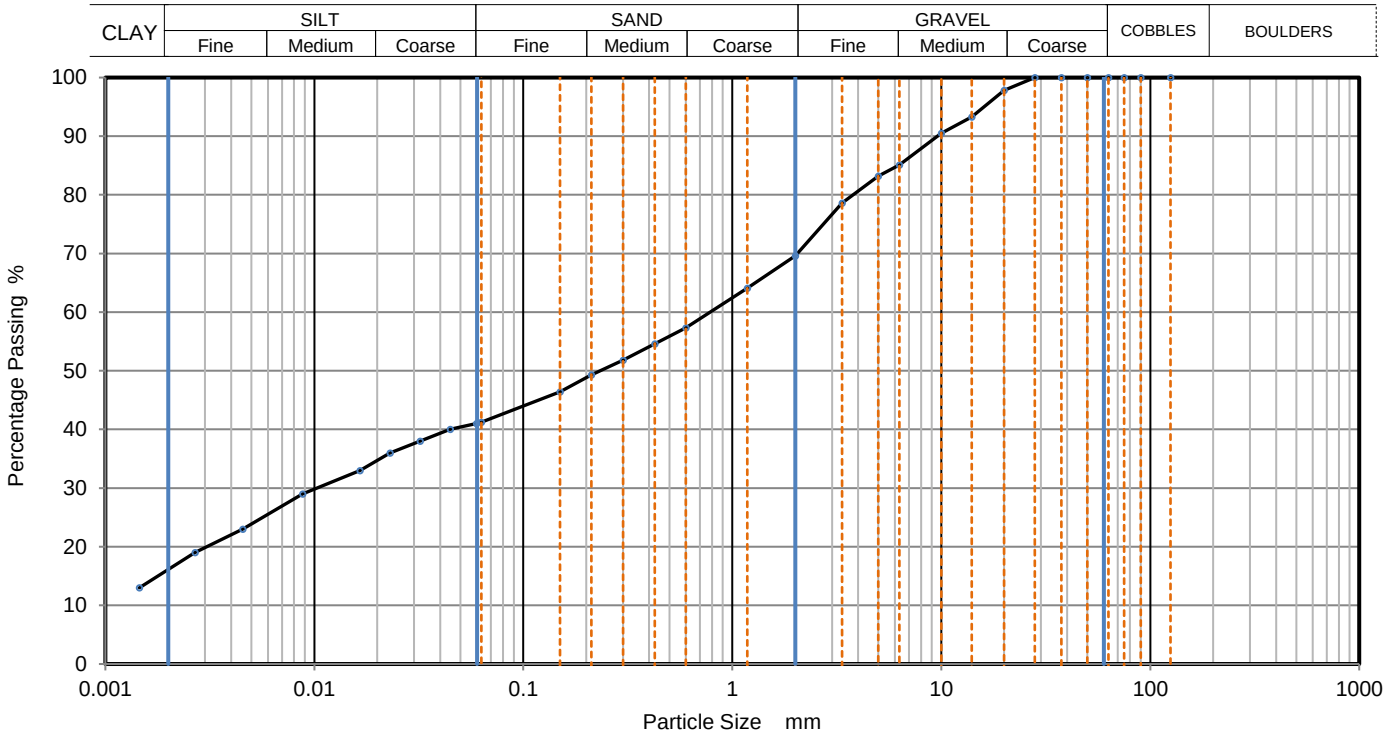
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP08
Site Name	DAA Surveys and Investigations			Sample No.	4
Soil Description	Grey sandy gravelly clayey SILT.			Depth, m	1.50
Specimen Reference	5	Specimen Depth	1.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080951



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0596	41
90	100	0.0447	40
75	100	0.0321	38
63	100	0.0230	36
50	100	0.0165	33
37.5	100	0.0088	29
28	100	0.0045	23
20	98	0.0027	19
14	93	0.0015	13
10	91		
6.3	85		
5	83		
3.35	79		
2	70		
1.18	64		
0.6	57	Particle density	(assumed)
0.425	55	2.65	Mg/m3
0.3	52		
0.212	49		
0.15	46		
0.063	41		

Dry Mass of sample, g	1112

Sample Proportions	% dry mass
Cobbles	0
Gravel	30
Sand	28
Silt	25
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.782
D30	mm	0.0102
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

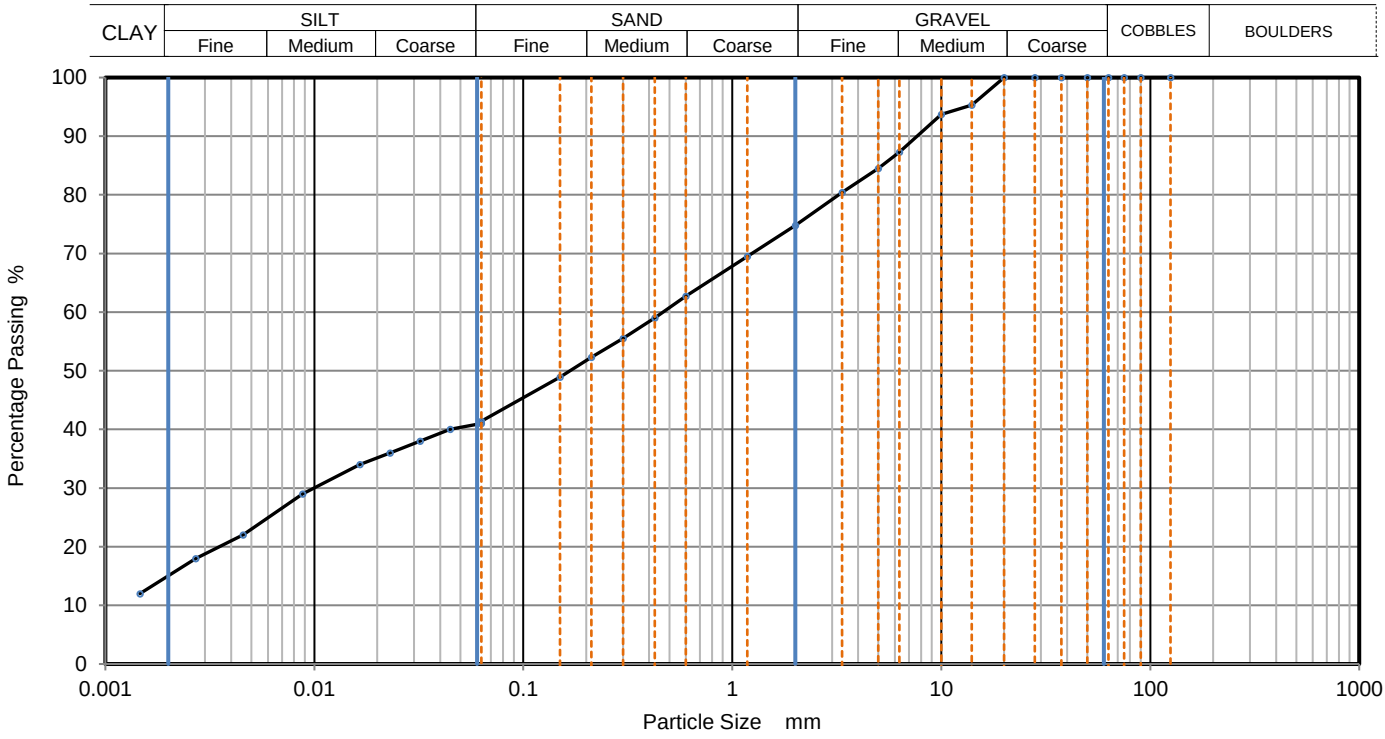
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CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION			Job Ref	18-0577
				Borehole/Pit No.	TP10
Site Name	DAA Surveys and Investigations			Sample No.	1
Soil Description	Light grey sandy gravelly silty CLAY.			Depth, m	0.70
Specimen Reference	5	Specimen Depth	0.7 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080955



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	41
90	100	0.0447	40
75	100	0.0321	38
63	100	0.0230	36
50	100	0.0165	34
37.5	100	0.0088	29
28	100	0.0046	22
20	100	0.0027	18
14	95	0.0015	12
10	94		
6.3	87		
5	85		
3.35	80		
2	75		
1.18	70		
0.6	63	Particle density	(assumed)
0.425	59	2.65	Mg/m3
0.3	56		
0.212	52		
0.15	49		
0.063	41		

Dry Mass of sample, g	1063

Sample Proportions	% dry mass
Cobbles	0
Gravel	25
Sand	33
Silt	26
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.465
D30	mm	0.00998
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

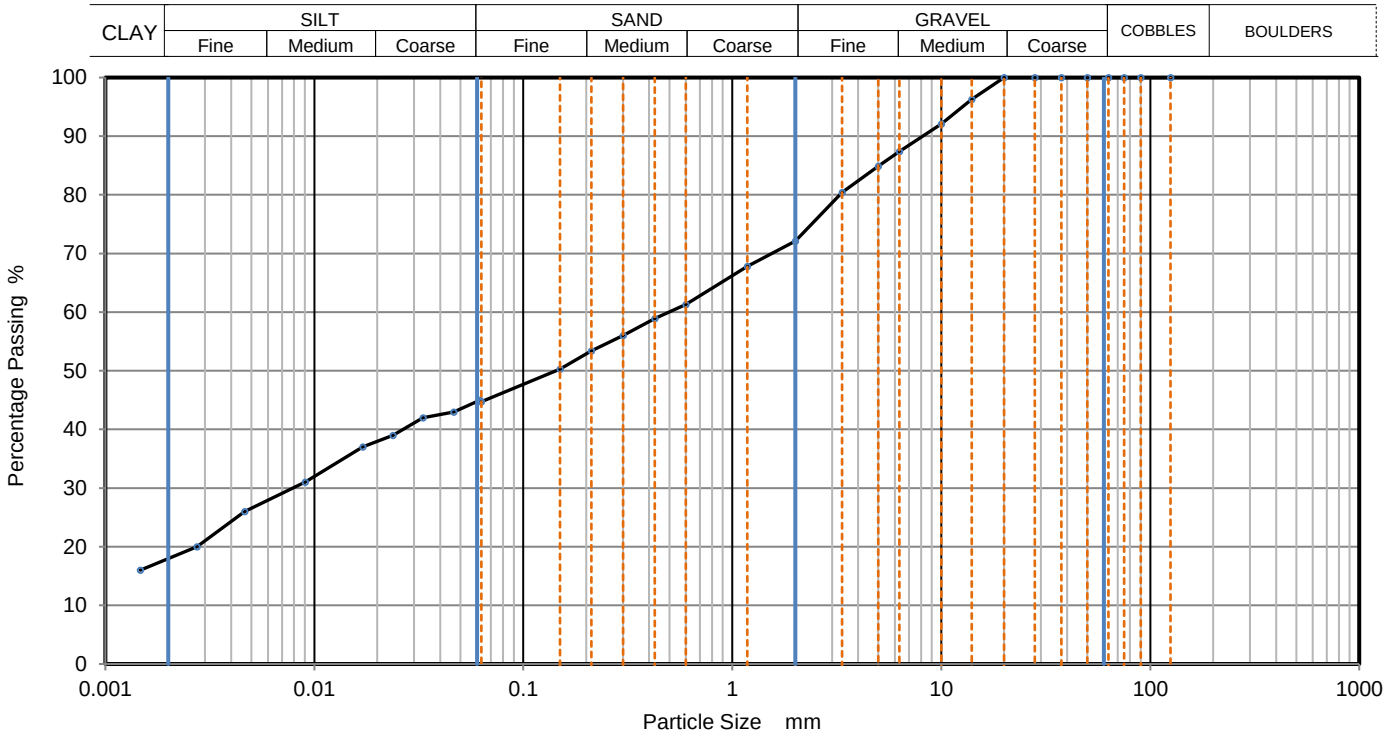
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP10
Site Name	DAA Surveys and Investigations			Sample No.	3
Soil Description	Light grey slightly sandy slightly gravelly CLAY.			Depth, m	1.60
Specimen Reference	10	Specimen Depth	1.6 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080957



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0621	45
90	100	0.0465	43
75	100	0.0331	42
63	100	0.0238	39
50	100	0.0170	37
37.5	100	0.0090	31
28	100	0.0046	26
20	100	0.0027	20
14	96	0.0015	16
10	92		
6.3	87		
5	85		
3.35	80		
2	72		
1.18	68		
0.6	61	Particle density	(assumed)
0.425	59	2.65	Mg/m3
0.3	56		
0.212	53		
0.15	50		
0.063	45		

Dry Mass of sample, g	888

Sample Proportions	% dry mass
Cobbles	0
Gravel	28
Sand	27
Silt	26
Clay	18

Grading Analysis		
D100	mm	
D60	mm	0.497
D30	mm	0.00784
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

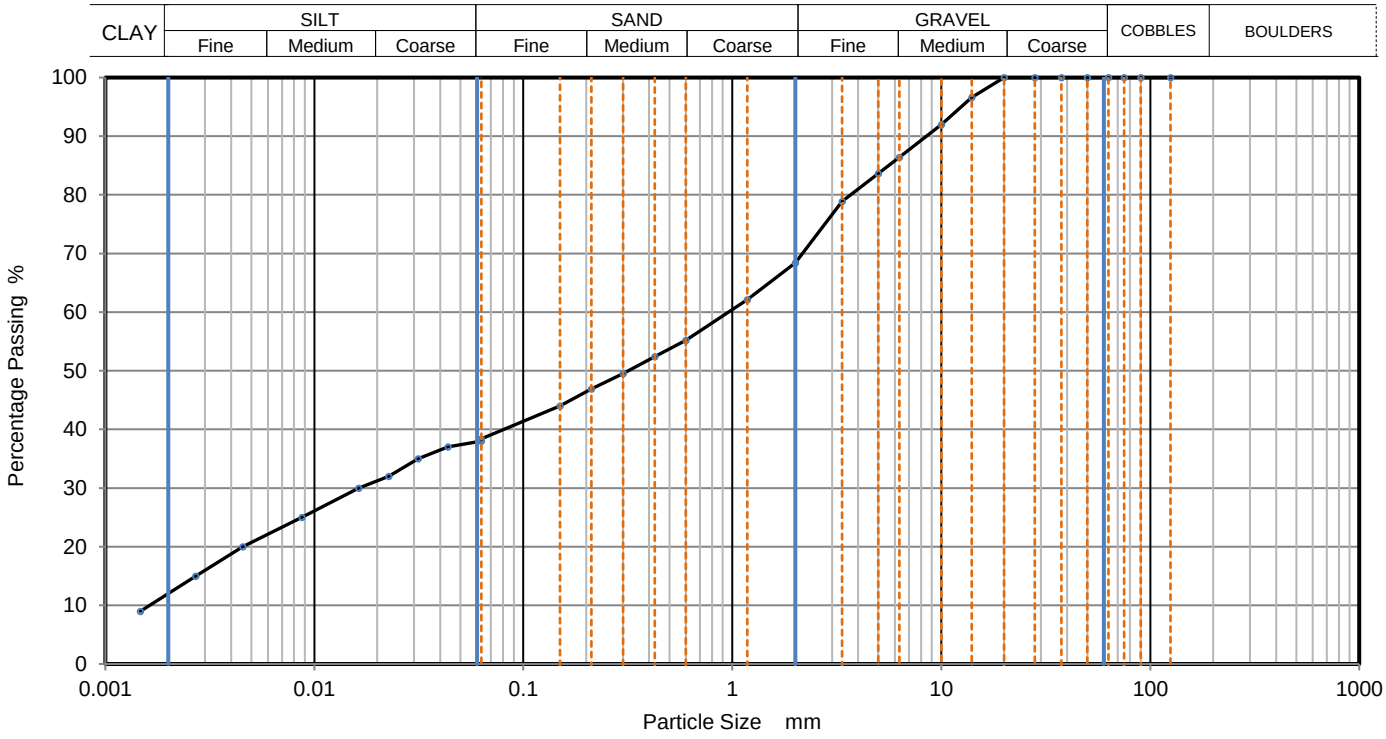
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP11
Site Name	DAA Surveys and Investigations			Sample No.	1
Soil Description	Light brown sandy gravelly silty CLAY.			Depth, m	0.50
Specimen Reference	5	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080959



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	38
90	100	0.0436	37
75	100	0.0314	35
63	100	0.0227	32
50	100	0.0163	30
37.5	100	0.0087	25
28	100	0.0045	20
20	100	0.0027	15
14	97	0.0015	9
10	92		
6.3	86		
5	84		
3.35	79		
2	68		
1.18	62		
0.6	55	Particle density	(assumed)
0.425	52	2.65	Mg/m3
0.3	50		
0.212	47		
0.15	44		
0.063	38		

Dry Mass of sample, g	771

Sample Proportions	% dry mass
Cobbles	0
Gravel	32
Sand	30
Silt	26
Clay	12

Grading Analysis		
D100	mm	
D60	mm	0.964
D30	mm	0.0164
D10	mm	0.00158
Uniformity Coefficient		610
Curvature Coefficient		0.18

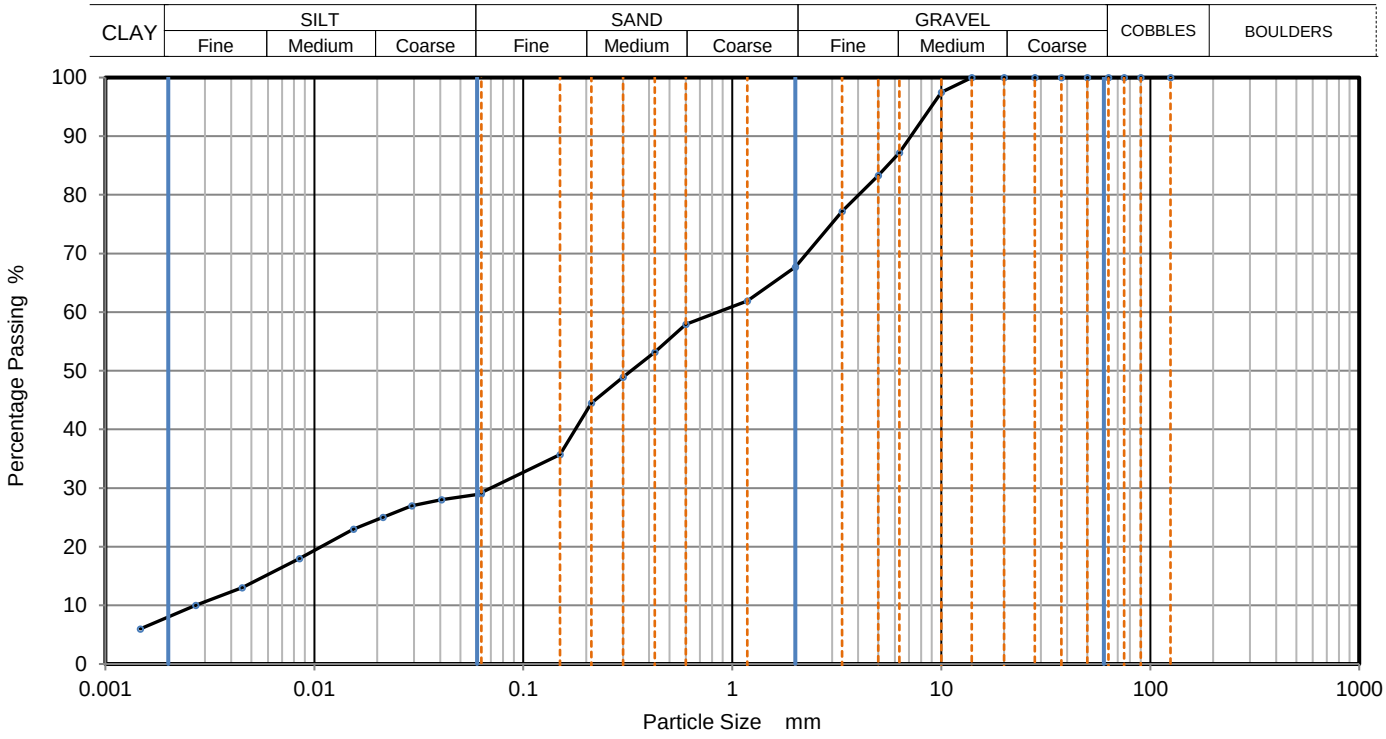
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP12
Site Name	DAA Surveys and Investigations			Sample No.	1
Soil Description	Brown sandy gravelly silty CLAY.			Depth, m	0.50
Specimen Reference	8	Specimen Depth	0.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080965



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	29
90	100	0.0406	28
75	100	0.0293	27
63	100	0.0213	25
50	100	0.0154	23
37.5	100	0.0085	18
28	100	0.0045	13
20	100	0.0027	10
14	100	0.0015	6
10	98		
6.3	87		
5	83		
3.35	77		
2	68		
1.18	62		
0.6	58	Particle density	(assumed)
0.425	53	2.65	Mg/m3
0.3	49		
0.212	45		
0.15	36		
0.063	29		

Dry Mass of sample, g: 781

Sample Proportions	% dry mass
Cobbles	0
Gravel	32
Sand	38
Silt	22
Clay	8

Grading Analysis		
D100	mm	
D60	mm	0.854
D30	mm	0.0697
D10	mm	0.00289
Uniformity Coefficient		300
Curvature Coefficient		2

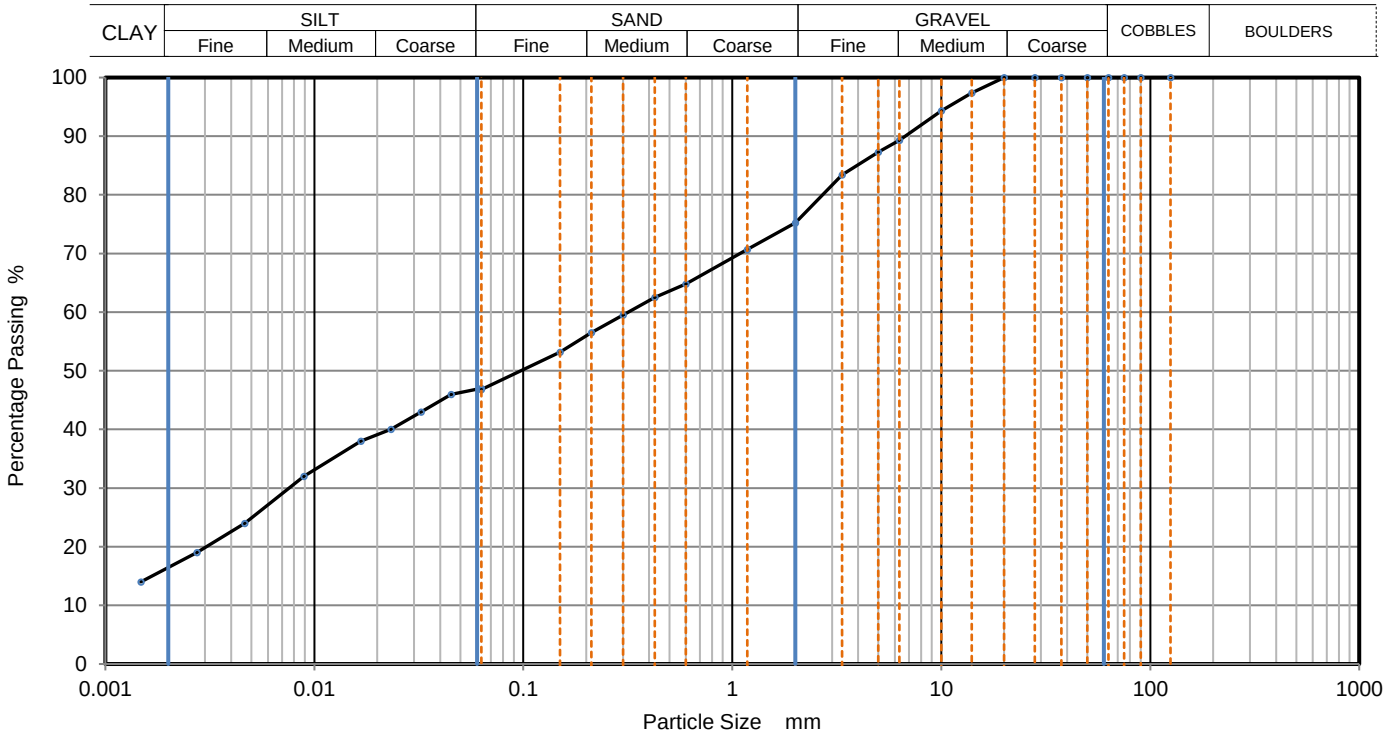
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP13
Site Name	DAA Surveys and Investigations			Sample No.	1
Soil Description	Possible MADE GROUND: Brownish grey sandy gravelly silty CLAY.			Depth, m	0.60
Specimen Reference	3	Specimen Depth	0.6 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080970



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	47
90	100	0.0451	46
75	100	0.0324	43
63	100	0.0232	40
50	100	0.0167	38
37.5	100	0.0089	32
28	100	0.0046	24
20	100	0.0027	19
14	97	0.0015	14
10	94		
6.3	89		
5	87		
3.35	83		
2	75		
1.18	71		
0.6	65	Particle density	(assumed)
0.425	63	2.65	Mg/m3
0.3	60		
0.212	57		
0.15	53		
0.063	47		

Dry Mass of sample, g	1043

Sample Proportions	% dry mass
Cobbles	0
Gravel	25
Sand	28
Silt	30
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.319
D30	mm	0.00776
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

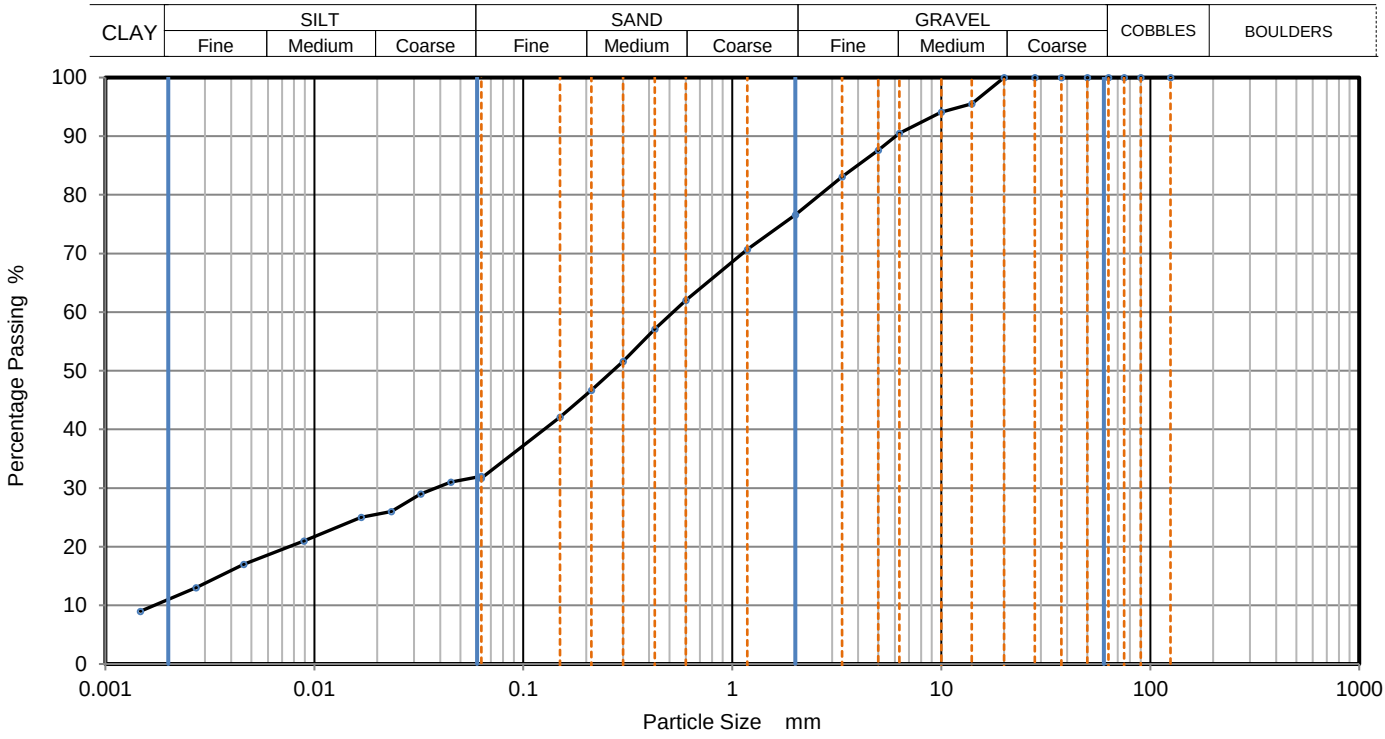
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP14
Site Name	DAA Surveys and Investigations			Sample No.	1
Soil Description	Brown sandy gravelly silty CLAY.			Depth, m	0.50
Specimen Reference	12	Specimen Depth	0.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080974



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	32
90	100	0.0450	31
75	100	0.0323	29
63	100	0.0234	26
50	100	0.0168	25
37.5	100	0.0089	21
28	100	0.0046	17
20	100	0.0027	13
14	96	0.0015	9
10	94		
6.3	91		
5	88		
3.35	83		
2	77		
1.18	71		
0.6	62	Particle density	(assumed)
0.425	57	2.65	Mg/m3
0.3	52		
0.212	47		
0.15	42		
0.063	32		

Dry Mass of sample, g	1054

Sample Proportions	% dry mass
Cobbles	0
Gravel	23
Sand	45
Silt	21
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.521
D30	mm	0.0386
D10	mm	0.00174
Uniformity Coefficient		300
Curvature Coefficient		1.6

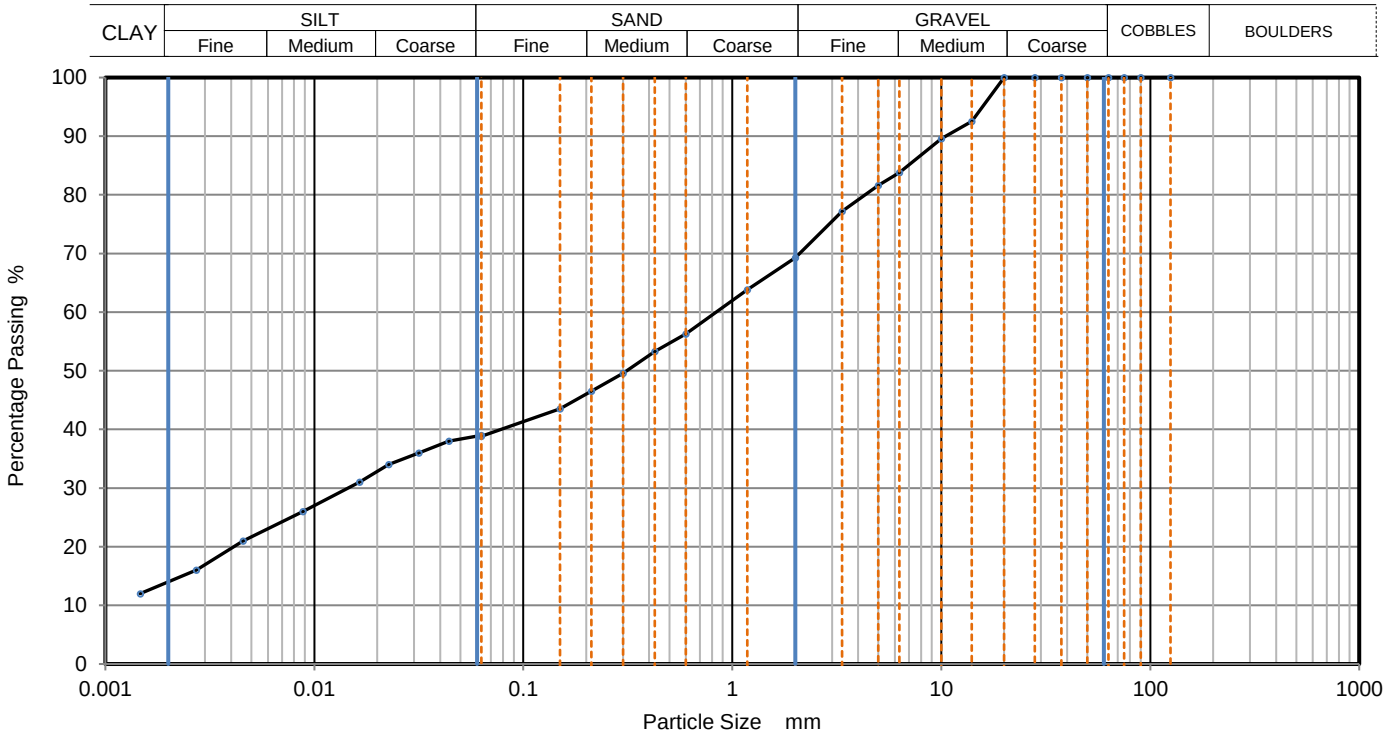
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP14
Site Name	DAA Surveys and Investigations			Sample No.	4
Soil Description	Greyish brown sandy slightly gravelly CLAY.			Depth, m	1.30
Specimen Reference	8	Specimen Depth	1.3 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080976



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	39
90	100	0.0440	38
75	100	0.0316	36
63	100	0.0227	34
50	100	0.0165	31
37.5	100	0.0088	26
28	100	0.0046	21
20	100	0.0027	16
14	93	0.0015	12
10	90		
6.3	84		
5	82		
3.35	77		
2	69		
1.18	64		
0.6	56	Particle density	(assumed)
0.425	53	2.65	Mg/m3
0.3	50		
0.212	47		
0.15	44		
0.063	39		

Dry Mass of sample, g	698

Sample Proportions	% dry mass
Cobbles	0
Gravel	31
Sand	31
Silt	25
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.836
D30	mm	0.0148
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

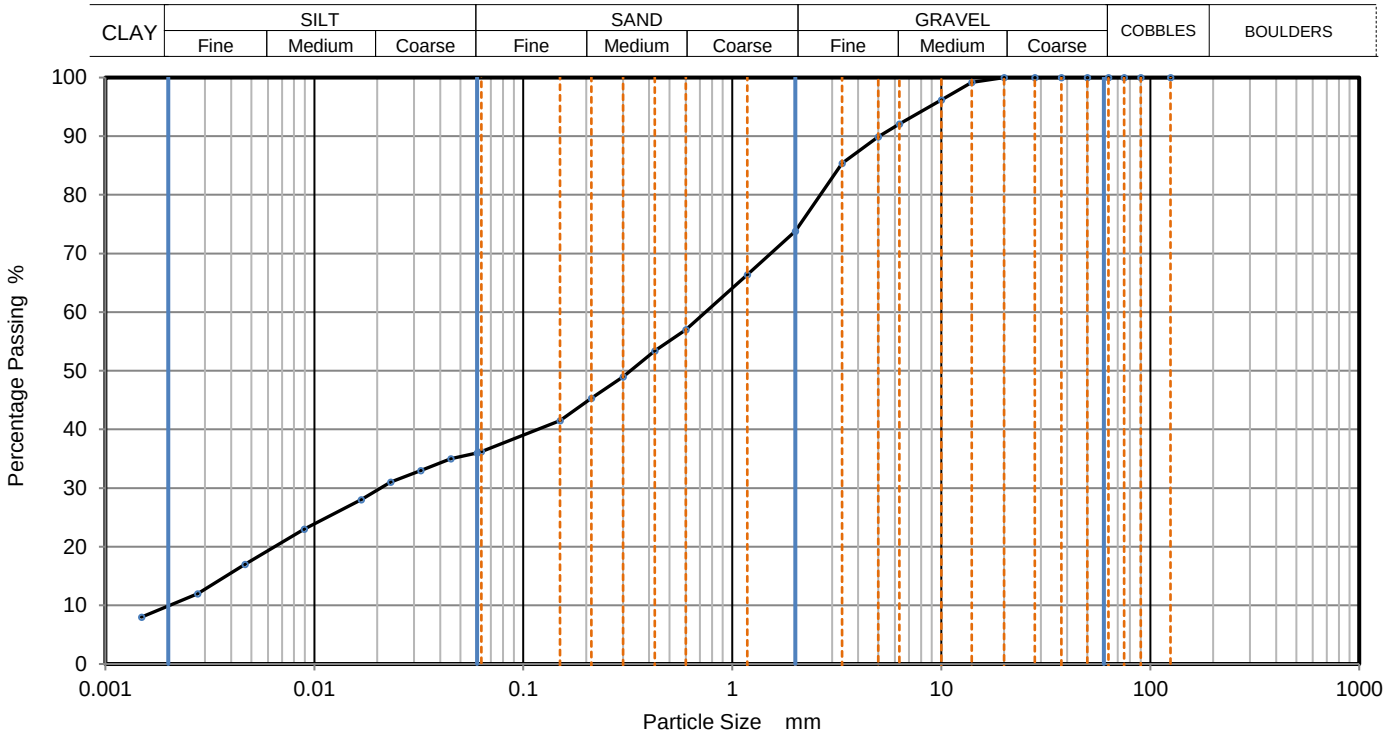
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP15
Site Name	DAA Surveys and Investigations			Sample No.	1
Soil Description	Yellowish brown sandy gravelly silty CLAY.			Depth, m	0.50
Specimen Reference	5	Specimen Depth	0.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080978



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0601	36
90	100	0.0450	35
75	100	0.0323	33
63	100	0.0232	31
50	100	0.0168	28
37.5	100	0.0090	23
28	100	0.0047	17
20	100	0.0028	12
14	99	0.0015	8
10	96		
6.3	92		
5	90		
3.35	85		
2	74		
1.18	66		
0.6	57	Particle density	(assumed)
0.425	53	2.65	Mg/m3
0.3	49		
0.212	45		
0.15	42		
0.063	36		

Dry Mass of sample, g	1020

Sample Proportions	% dry mass
Cobbles	0
Gravel	26
Sand	38
Silt	26
Clay	10

Grading Analysis		
D100	mm	
D60	mm	0.744
D30	mm	0.0205
D10	mm	0.00201
Uniformity Coefficient		370
Curvature Coefficient		0.28

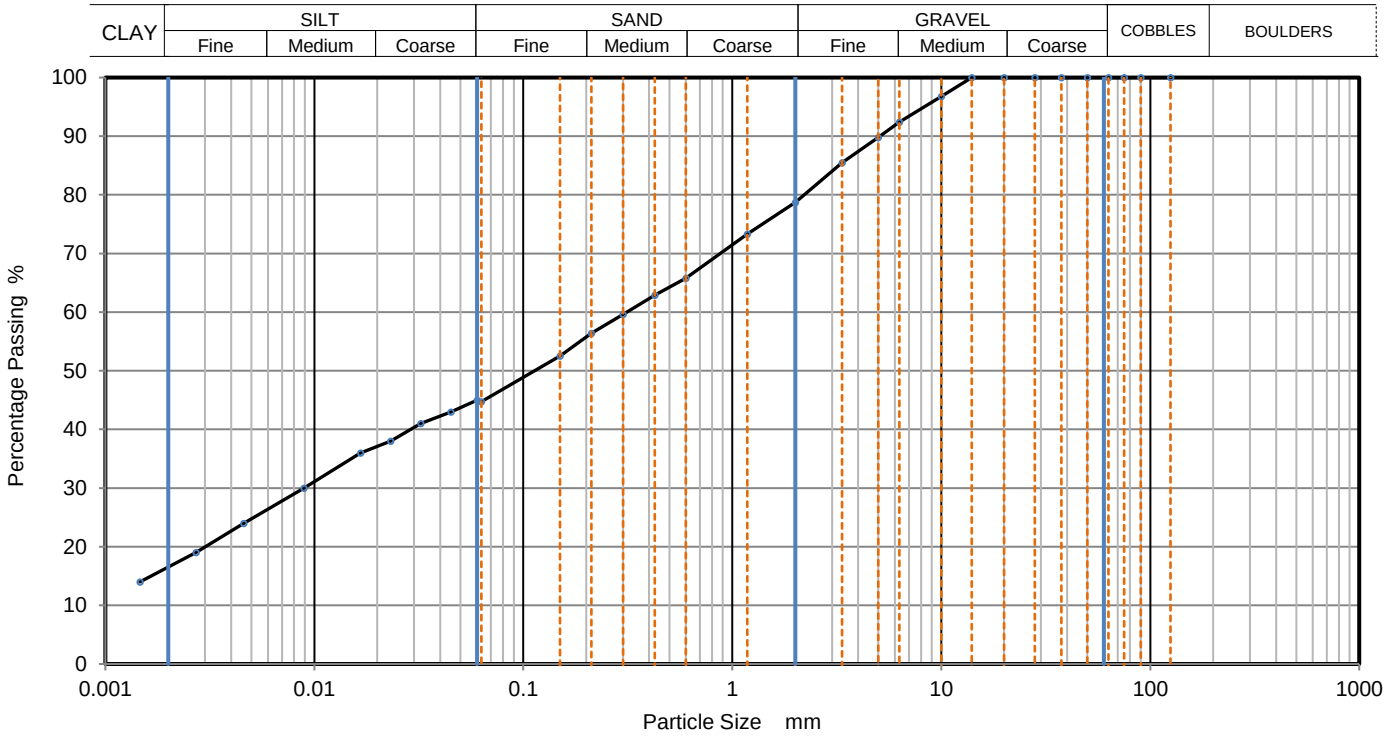
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CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref	18-0577
					Borehole/Pit No.	TP15
Site Name	DAA Surveys and Investigations				Sample No.	3
Soil Description	Greyish brown sandy gravelly clayey SILT.				Depth, m	1.30
Specimen Reference	10	Specimen Depth	1.3	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5				KeyLAB ID	Caus2018080980



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0601	45
90	100	0.0450	43
75	100	0.0323	41
63	100	0.0232	38
50	100	0.0166	36
37.5	100	0.0089	30
28	100	0.0046	24
20	100	0.0027	19
14	100	0.0015	14
10	97		
6.3	92		
5	90		
3.35	86		
2	79		
1.18	73		
0.6	66	Particle density	(assumed)
0.425	63	2.65	Mg/m3
0.3	60		
0.212	56		
0.15	53		
0.063	45		

Dry Mass of sample, g	730

Sample Proportions	% dry mass
Cobbles	0
Gravel	21
Sand	34
Silt	29
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.313
D30	mm	0.00908
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

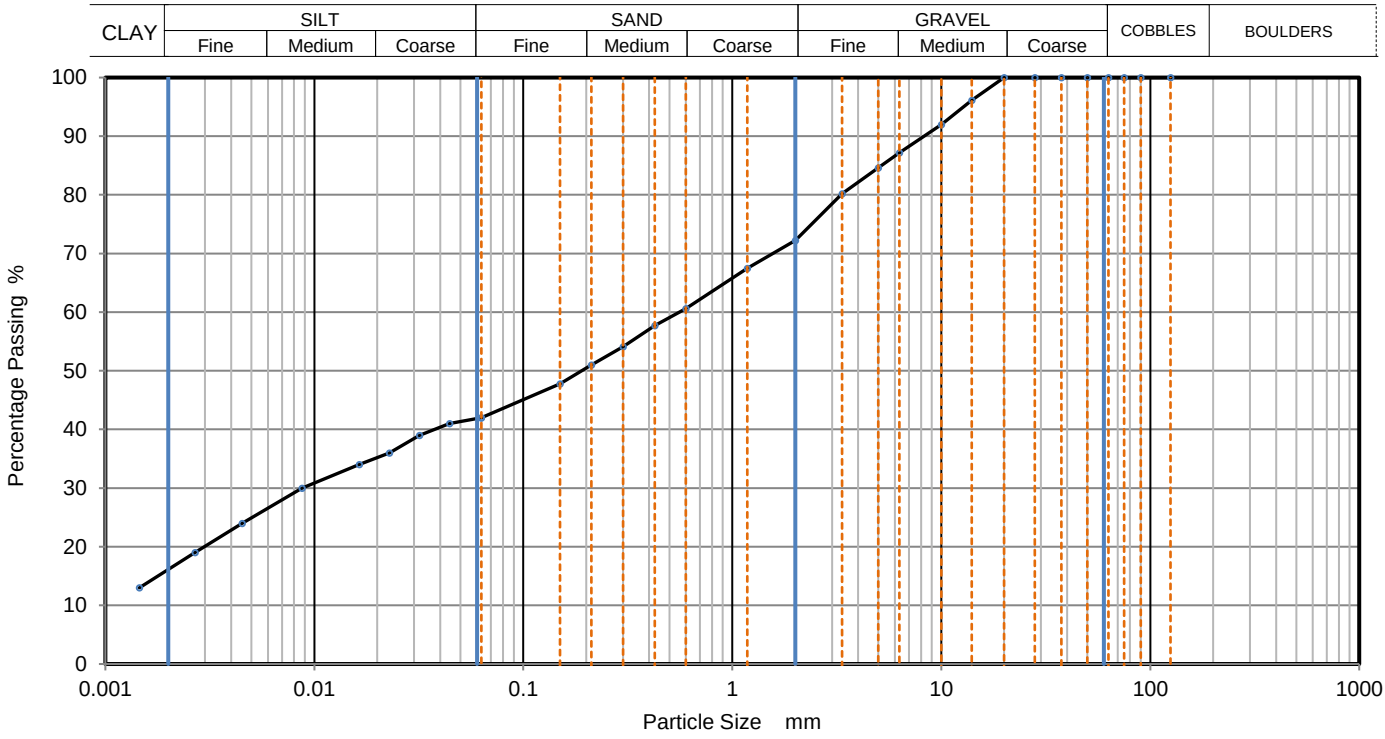
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP16
Site Name	DAA Surveys and Investigations			Sample No.	1
Soil Description	Brownish grey sandy gravelly clayey SILT.			Depth, m	0.50
Specimen Reference	12	Specimen Depth	0.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080981



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	42
90	100	0.0443	41
75	100	0.0318	39
63	100	0.0229	36
50	100	0.0164	34
37.5	100	0.0087	30
28	100	0.0045	24
20	100	0.0027	19
14	96	0.0015	13
10	92		
6.3	87		
5	85		
3.35	80		
2	72		
1.18	68		
0.6	61	Particle density	(assumed)
0.425	58	2.65	Mg/m3
0.3	54		
0.212	51		
0.15	48		
0.063	42		

Dry Mass of sample, g	899

Sample Proportions	% dry mass
Cobbles	0
Gravel	28
Sand	30
Silt	26
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.557
D30	mm	0.00892
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

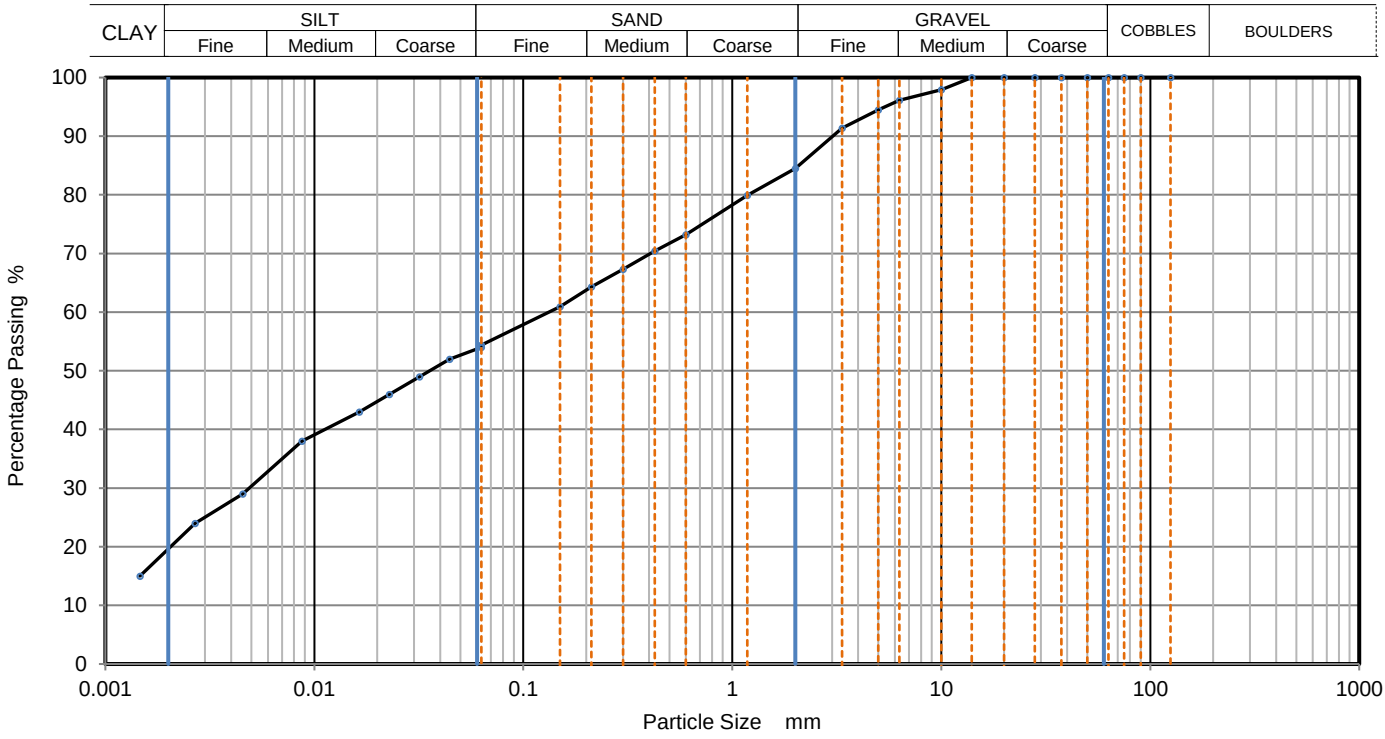
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP16
Site Name	DAA Surveys and Investigations			Sample No.	3
Soil Description	Grey brown sandy slightly gravelly CLAY.			Depth, m	1.70
Specimen Reference	7	Specimen Depth	1.7 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080984



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	54
90	100	0.0443	52
75	100	0.0318	49
63	100	0.0229	46
50	100	0.0164	43
37.5	100	0.0087	38
28	100	0.0045	29
20	100	0.0027	24
14	100	0.0015	15
10	98		
6.3	96		
5	95		
3.35	91		
2	85		
1.18	80		
0.6	73	Particle density	(assumed)
0.425	70	2.65	Mg/m3
0.3	67		
0.212	64		
0.15	61		
0.063	54		

Dry Mass of sample, g	1141

Sample Proportions	% dry mass
Cobbles	0
Gravel	16
Sand	30
Silt	35
Clay	20

Grading Analysis		
D100	mm	
D60	mm	0.133
D30	mm	0.00479
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

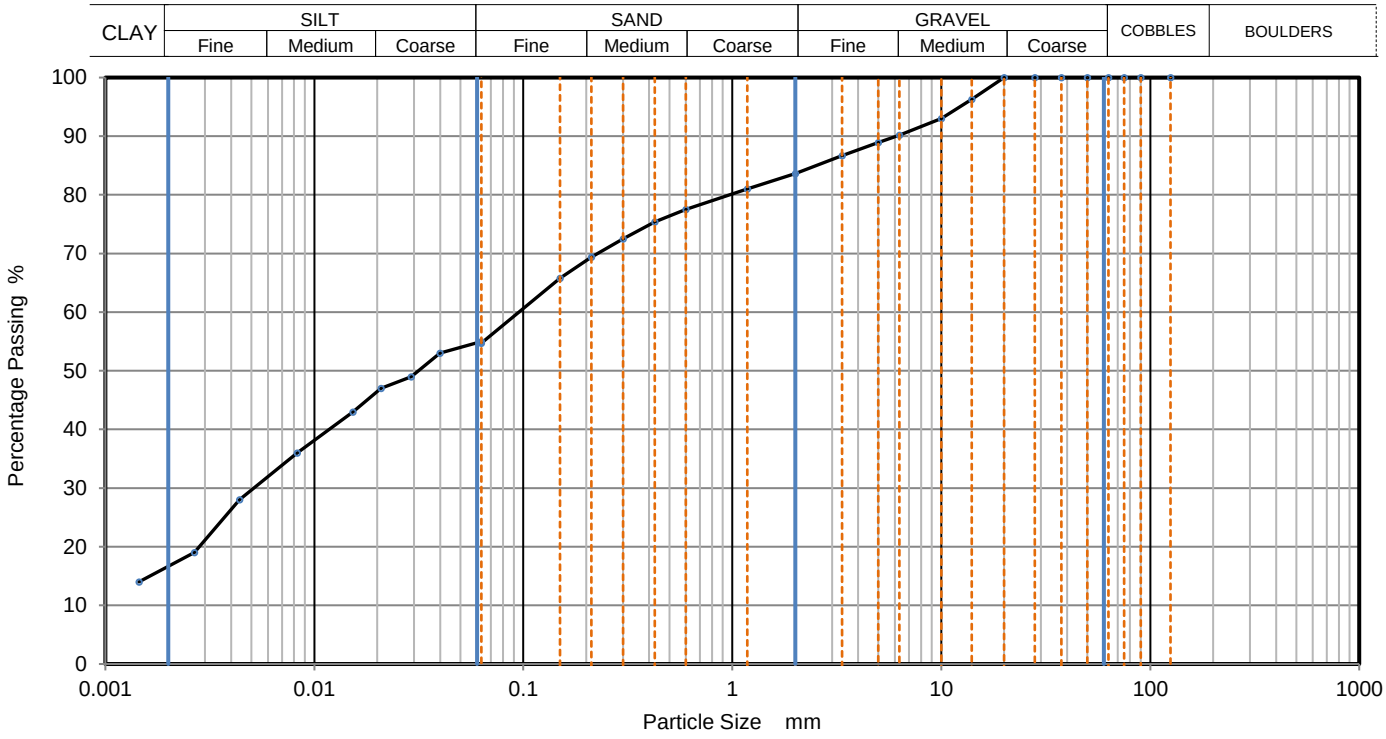
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP17
Site Name	DAA Surveys and Investigations			Sample No.	1
Soil Description	Brown sandy slightly gravelly SILT.			Depth, m	0.50
Specimen Reference	3	Specimen Depth	0.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080985



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	55
90	100	0.0398	53
75	100	0.0290	49
63	100	0.0209	47
50	100	0.0153	43
37.5	100	0.0083	36
28	100	0.0044	28
20	100	0.0027	19
14	96	0.0014	14
10	93		
6.3	90		
5	89		
3.35	87		
2	84		
1.18	81		
0.6	78	Particle density	(assumed)
0.425	75	2.65	Mg/m3
0.3	73		
0.212	69		
0.15	66		
0.063	55		

Dry Mass of sample, g	891

Sample Proportions	% dry mass
Cobbles	0
Gravel	16
Sand	29
Silt	38
Clay	17

Grading Analysis		
D100	mm	
D60	mm	0.0955
D30	mm	0.00513
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

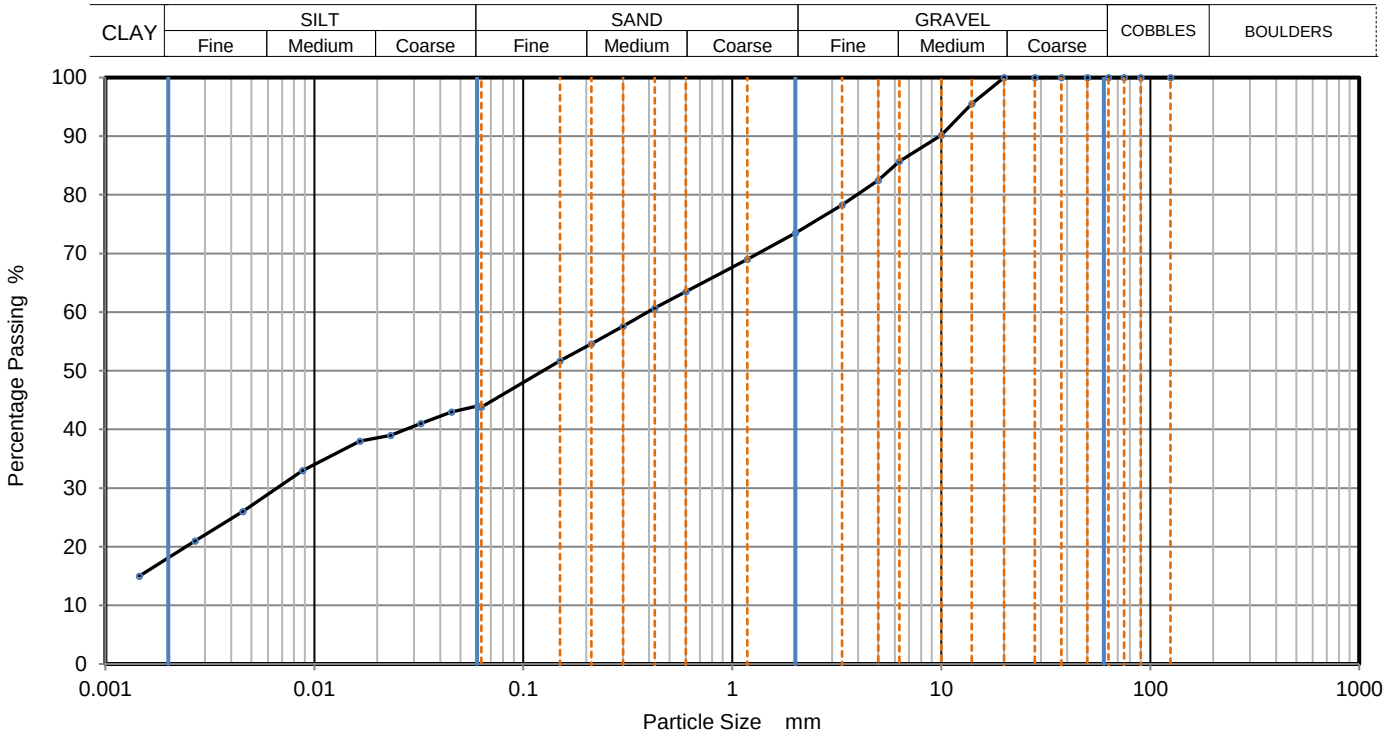
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PARTICLE SIZE DISTRIBUTION

				Job Ref	**18-0577**
				Borehole/Pit No.	TP17
Site Name	DAA Surveys and Investigations			Sample No.	4
Soil Description	Greyish brown sandy gravelly clayey SILT.			Depth, m	1.50
Specimen Reference	10	Specimen Depth	1.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080987



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0606	44
90	100	0.0454	43
75	100	0.0323	41
63	100	0.0232	39
50	100	0.0165	38
37.5	100	0.0088	33
28	100	0.0045	26
20	100	0.0027	21
14	96	0.0015	15
10	90		
6.3	86		
5	83		
3.35	78		
2	74		
1.18	69		
0.6	64	Particle density	(assumed)
0.425	61	2.65	Mg/m3
0.3	58		
0.212	55		
0.15	52		
0.063	44		

Dry Mass of sample, g	917

Sample Proportions	% dry mass
Cobbles	0
Gravel	27
Sand	30
Silt	26
Clay	18

Grading Analysis		
D100	mm	
D60	mm	0.393
D30	mm	0.00672
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

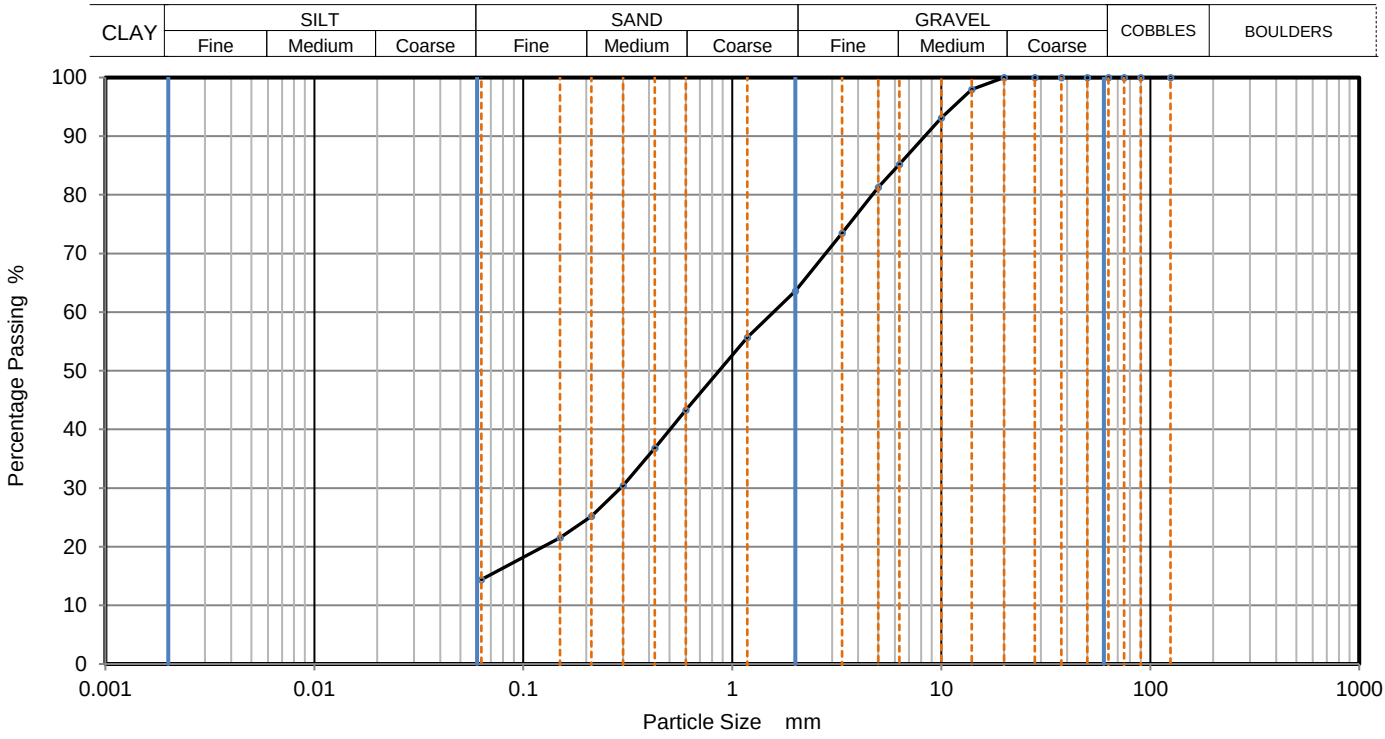
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CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION			Job Ref	18-0577
				Borehole/Pit No.	TP18
Site Name	DAA Surveys and Investigations			Sample No.	3
Soil Description	Grey slightly silty gravelly fine to coarse SAND.			Depth, m	1.50
Specimen Reference	5	Specimen Depth	1.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	Caus2018080990



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	98		
10	93		
6.3	85		
5	81		
3.35	74		
2	64		
1.18	56		
0.6	43		
0.425	37		
0.3	30		
0.212	25		
0.15	22		
0.063	14		

Dry Mass of sample, g	1191

Sample Proportions	% dry mass
Cobbles	0
Gravel	36
Sand	49
Fines <0.063mm	14

Grading Analysis		
D100	mm	
D60	mm	1.58
D30	mm	0.293
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

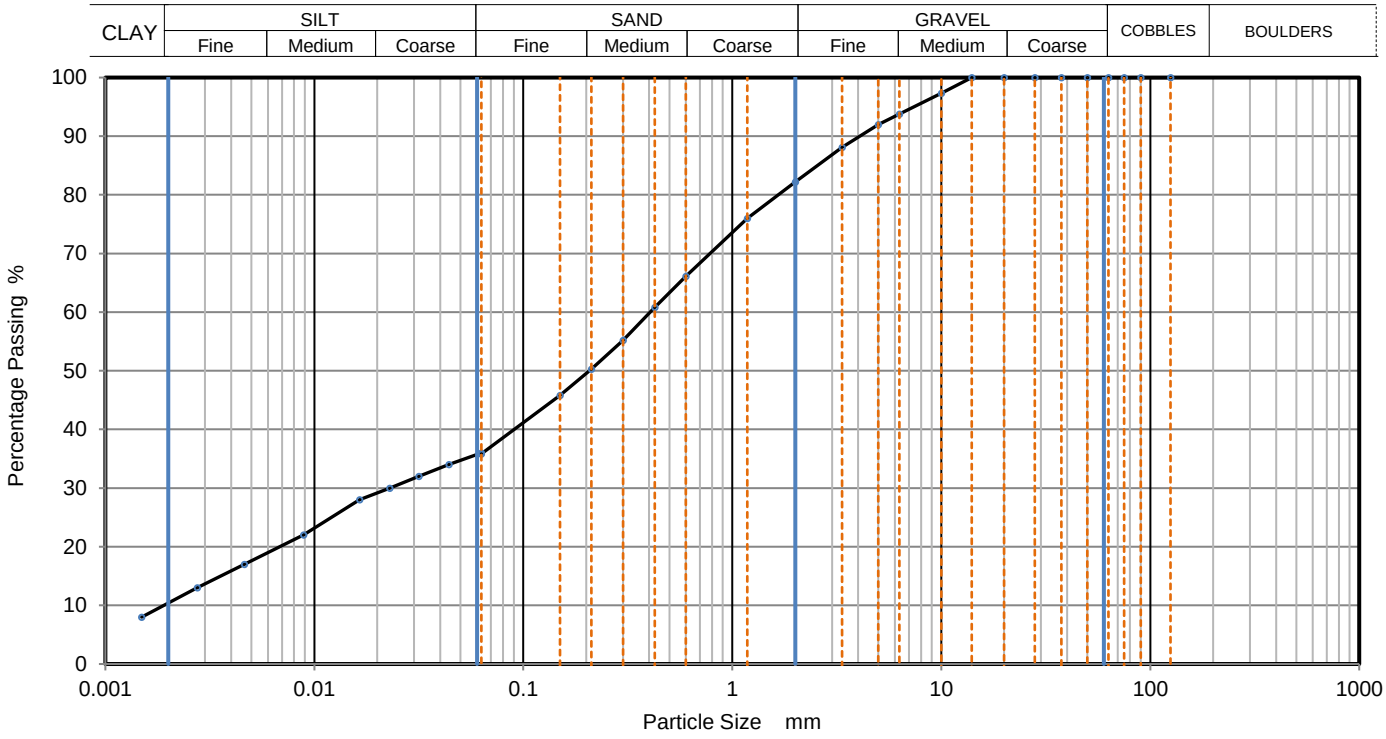
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP19
Site Name	DAA Surveys and Investigations			Sample No.	1
Soil Description	Yellowish brown sandy slightly gravelly silty CLAY.			Depth, m	0.50
Specimen Reference	12	Specimen Depth	0.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080994



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	36
90	100	0.0440	34
75	100	0.0316	32
63	100	0.0229	30
50	100	0.0165	28
37.5	100	0.0089	22
28	100	0.0046	17
20	100	0.0028	13
14	100	0.0015	8
10	97		
6.3	94		
5	92		
3.35	88		
2	82		
1.18	76		
0.6	66	Particle density	(assumed)
0.425	61	2.65	Mg/m3
0.3	55		
0.212	50		
0.15	46		
0.063	36		

Dry Mass of sample, g	863

Sample Proportions	% dry mass
Cobbles	0
Gravel	18
Sand	46
Silt	26
Clay	10

Grading Analysis		
D100	mm	
D60	mm	0.404
D30	mm	0.0242
D10	mm	0.00195
Uniformity Coefficient		210
Curvature Coefficient		0.75

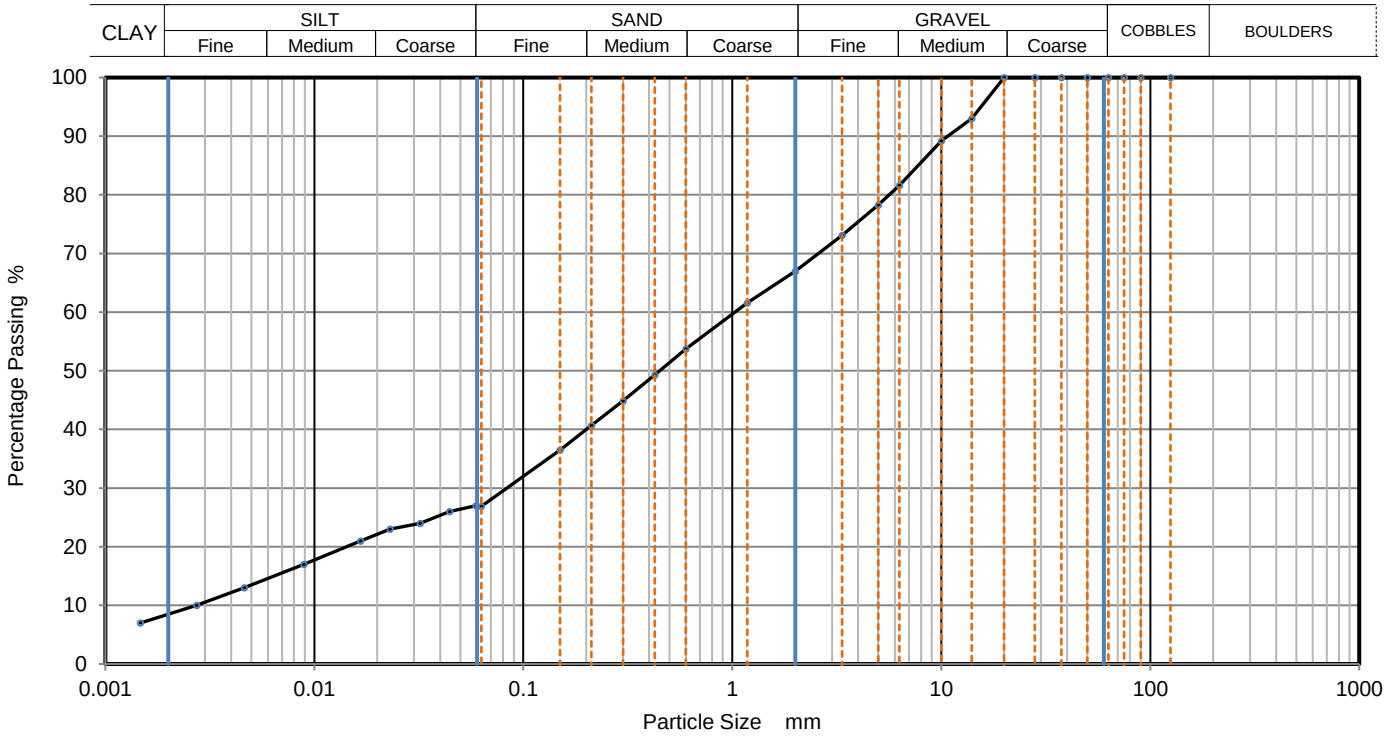
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP20
Site Name	DAA Surveys and Investigations			Sample No.	1
Soil Description	Light brown sandy gravelly silty CLAY.			Depth, m	0.50
Specimen Reference	5	Specimen Depth	0.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080997



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0591	27
90	100	0.0443	26
75	100	0.0321	24
63	100	0.0230	23
50	100	0.0166	21
37.5	100	0.0089	17
28	100	0.0046	13
20	100	0.0027	10
14	93	0.0015	7
10	89		
6.3	82		
5	78		
3.35	73		
2	67		
1.18	62		
0.6	54	Particle density	(assumed)
0.425	49	2.65	Mg/m3
0.3	45		
0.212	41		
0.15	37		
0.063	27		

Dry Mass of sample, g	720

Sample Proportions	% dry mass
Cobbles	0
Gravel	33
Sand	40
Silt	19
Clay	9

Grading Analysis		
D100	mm	
D60	mm	1.03
D30	mm	0.0832
D10	mm	0.00278
Uniformity Coefficient		370
Curvature Coefficient		2.4

Remarks

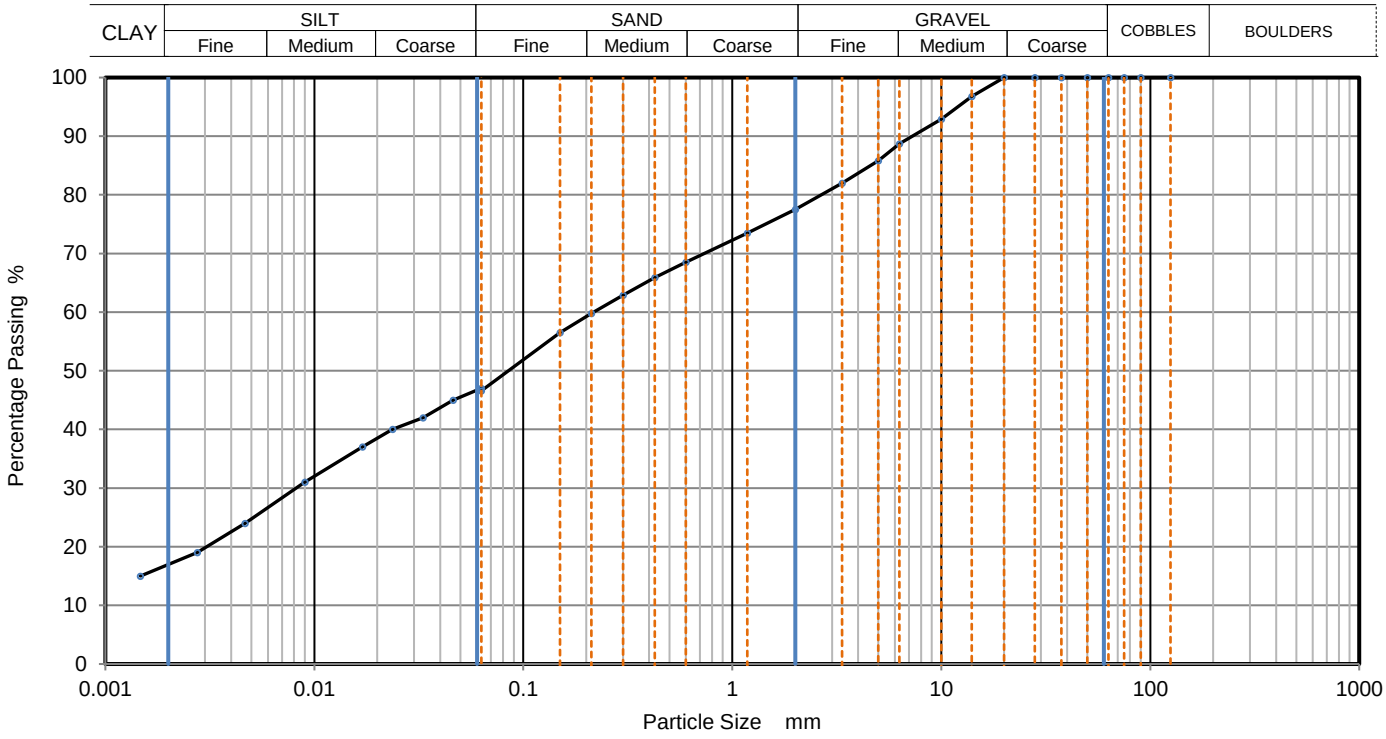
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PARTICLE SIZE DISTRIBUTION

				Job Ref	**18-0577**
				Borehole/Pit No.	TP20
Site Name	DAA Surveys and Investigations			Sample No.	4
Soil Description	Greyish brown sandy gravelly silty CLAY.			Depth, m	1.50
Specimen Reference	10	Specimen Depth	1.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018080999



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	47
90	100	0.0461	45
75	100	0.0331	42
63	100	0.0237	40
50	100	0.0170	37
37.5	100	0.0090	31
28	100	0.0047	24
20	100	0.0027	19
14	97	0.0015	15
10	93		
6.3	89		
5	86		
3.35	82		
2	78		
1.18	74		
0.6	69	Particle density	(assumed)
0.425	66	2.65	Mg/m3
0.3	63		
0.212	60		
0.15	57		
0.063	47		

Dry Mass of sample, g	799

Sample Proportions	% dry mass
Cobbles	0
Gravel	23
Sand	31
Silt	30
Clay	17

Grading Analysis		
D100	mm	
D60	mm	0.216
D30	mm	0.008
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

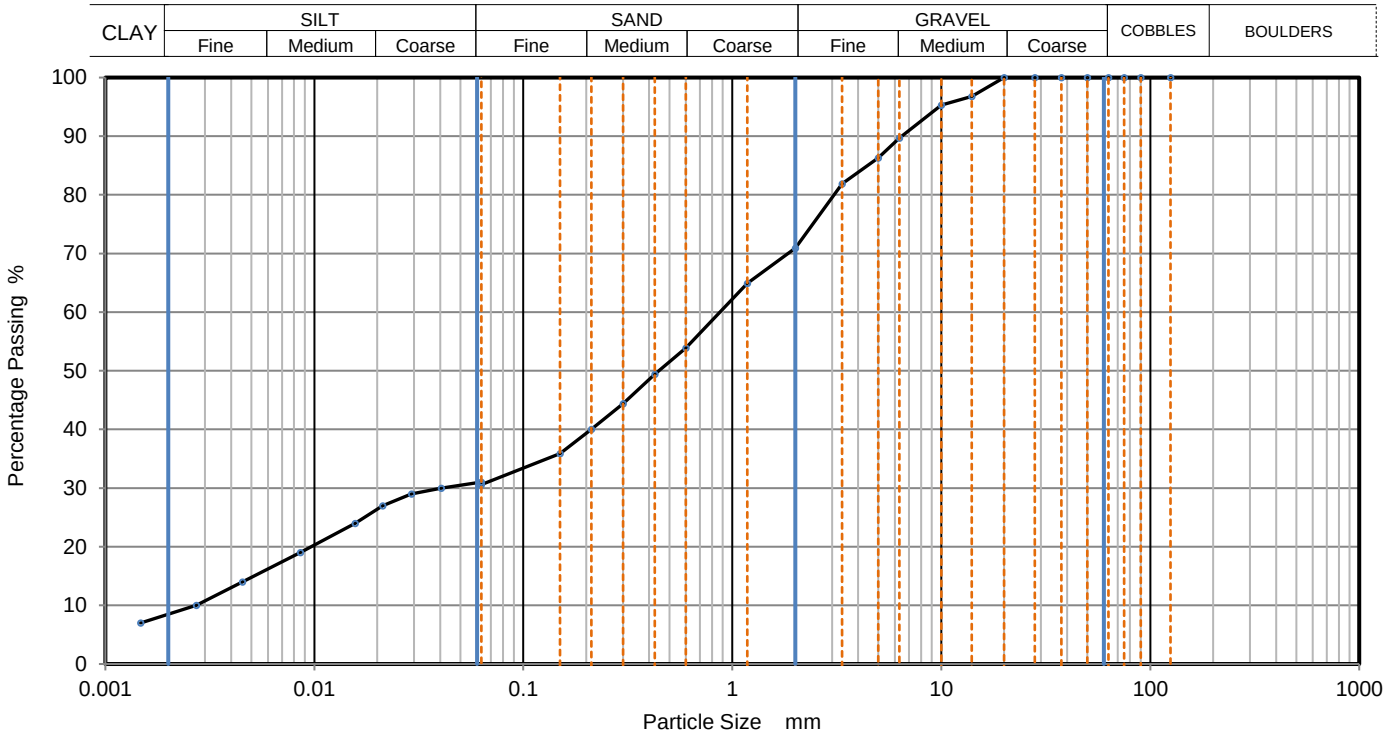
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP22
Site Name	DAA Surveys and Investigations			Sample No.	2
Soil Description	Light brown sandy gravelly silty CLAY.			Depth, m	0.50
Specimen Reference	5	Specimen Depth	0.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus20180809100



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	31
90	100	0.0405	30
75	100	0.0292	29
63	100	0.0212	27
50	100	0.0157	24
37.5	100	0.0086	19
28	100	0.0045	14
20	100	0.0027	10
14	97	0.0015	7
10	95		
6.3	90		
5	86		
3.35	82		
2	71		
1.18	65		
0.6	54	Particle density	(assumed)
0.425	49	2.65	Mg/m3
0.3	44		
0.212	40		
0.15	36		
0.063	31		

Dry Mass of sample, g	597

Sample Proportions	% dry mass
Cobbles	0
Gravel	29
Sand	40
Silt	22
Clay	9

Grading Analysis		
D100	mm	
D60	mm	0.873
D30	mm	0.0415
D10	mm	0.00262
Uniformity Coefficient		330
Curvature Coefficient		0.75

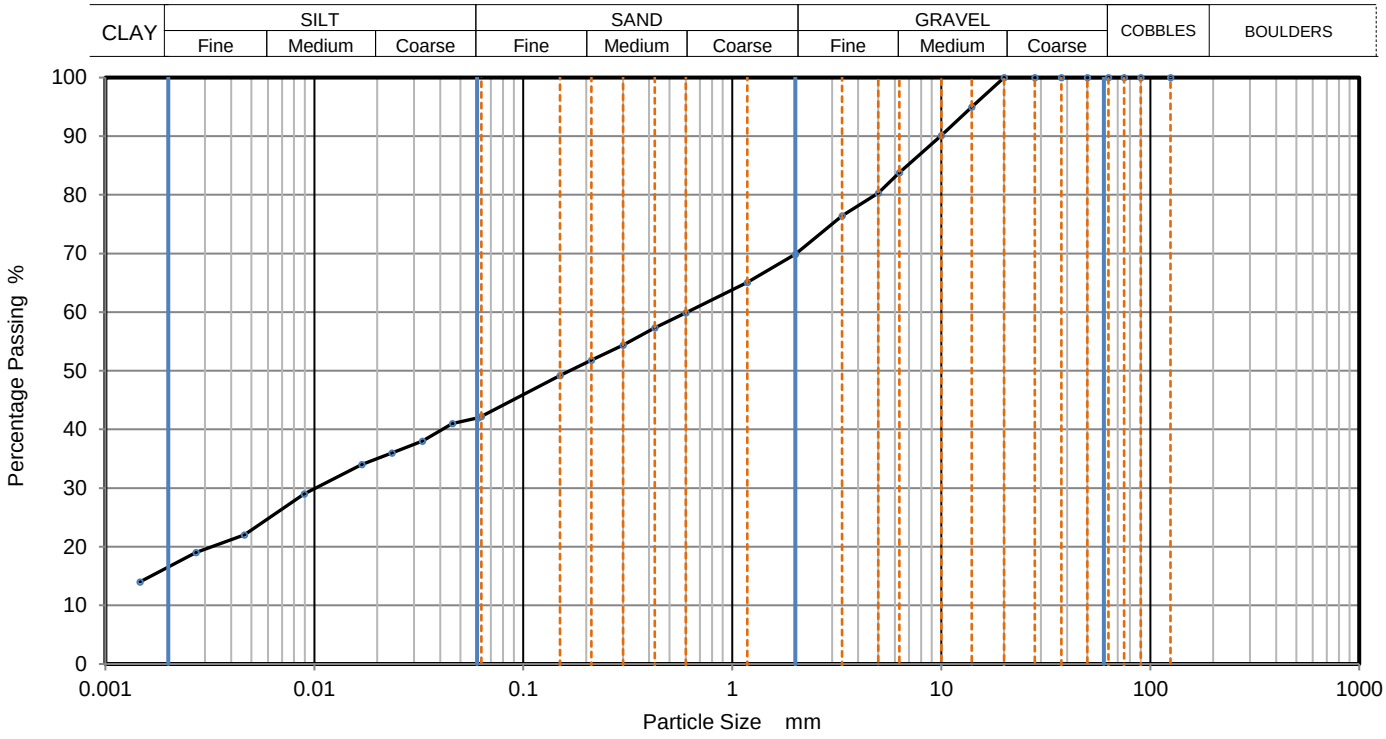
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP22
Site Name	DAA Surveys and Investigations			Sample No.	4
Soil Description	Brownish grey sandy gravelly SILT/CLAY.			Depth, m	1.50
Specimen Reference	10	Specimen Depth	1.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus20180809101



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0610	42
90	100	0.0457	41
75	100	0.0328	38
63	100	0.0235	36
50	100	0.0169	34
37.5	100	0.0090	29
28	100	0.0046	22
20	100	0.0027	19
14	95	0.0015	14
10	90		
6.3	84		
5	80		
3.35	76		
2	70		
1.18	65		
0.6	60	Particle density	(assumed)
0.425	57	2.65	Mg/m3
0.3	54		
0.212	52		
0.15	49		
0.063	42		

Dry Mass of sample, g	1105

Sample Proportions	% dry mass
Cobbles	0
Gravel	30
Sand	28
Silt	26
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.611
D30	mm	0.0108
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

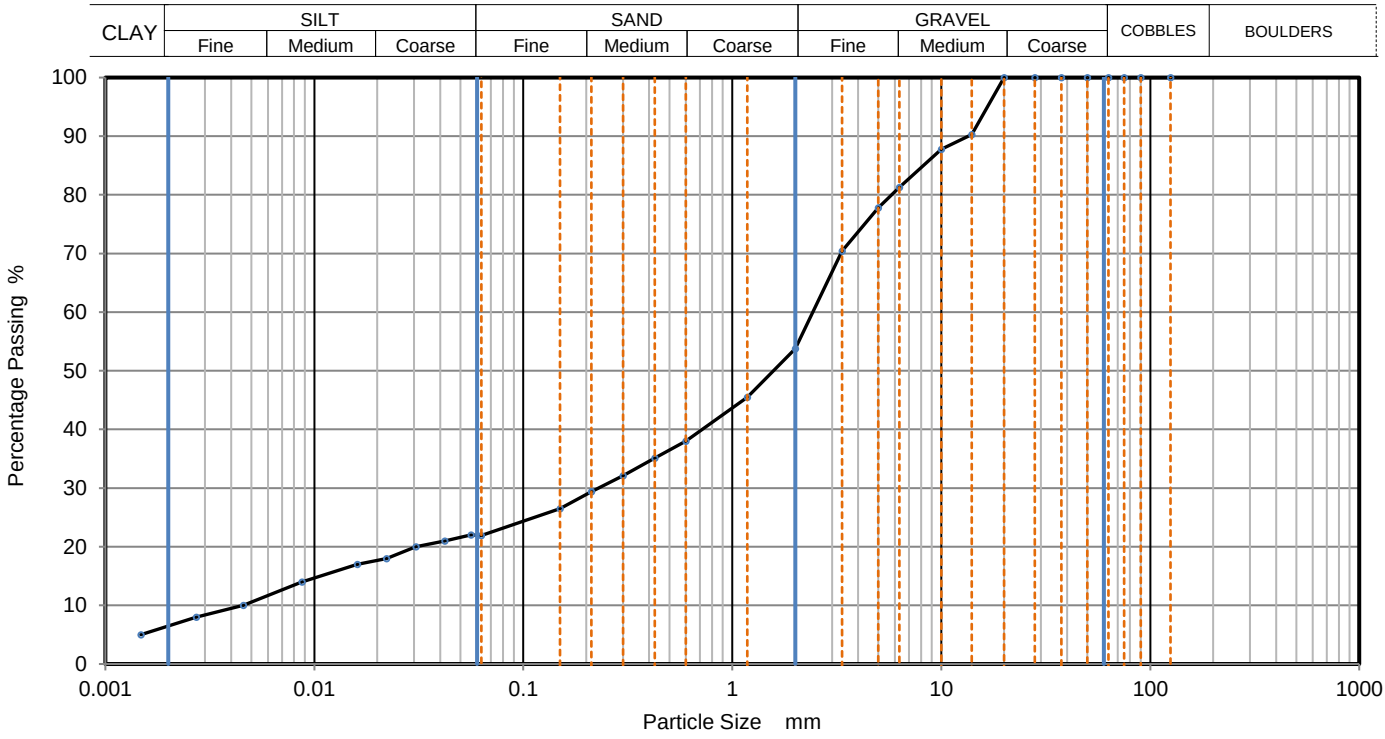
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP23
Site Name	DAA Surveys and Investigations			Sample No.	1
Soil Description	Light brown sandy gravelly silty CLAY.			Depth, m	0.50
Specimen Reference	5	Specimen Depth	0.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus20180809103



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0561	22
90	100	0.0421	21
75	100	0.0306	20
63	100	0.0222	18
50	100	0.0161	17
37.5	100	0.0087	14
28	100	0.0046	10
20	100	0.0027	8
14	90	0.0015	5
10	88		
6.3	81		
5	78		
3.35	70		
2	54		
1.18	46		
0.6	38	Particle density	(assumed)
0.425	35	2.65	Mg/m3
0.3	32		
0.212	29		
0.15	27		
0.063	22		

Dry Mass of sample, g	906

Sample Proportions	% dry mass
Cobbles	0
Gravel	46
Sand	32
Silt	15
Clay	7

Grading Analysis		
D100	mm	
D60	mm	2.43
D30	mm	0.228
D10	mm	0.00437
Uniformity Coefficient		550
Curvature Coefficient		4.9

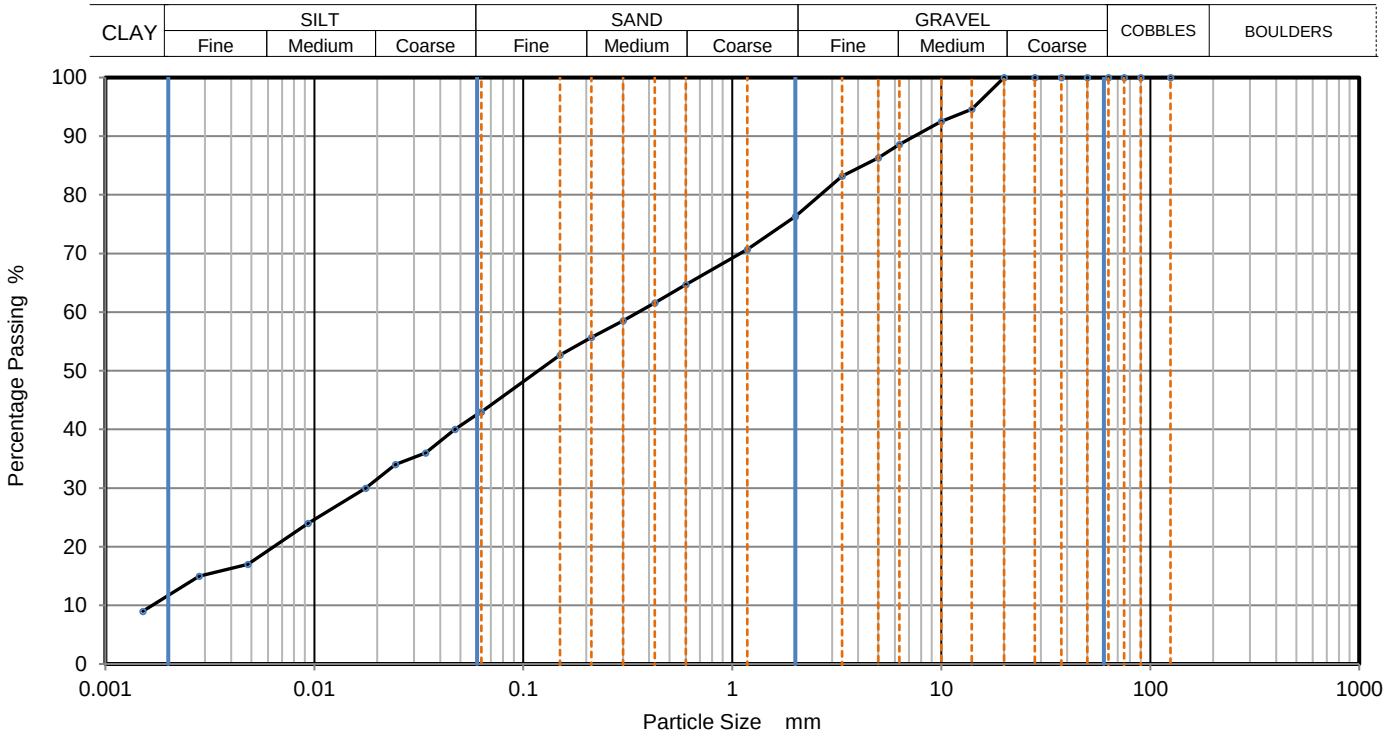
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP23
Site Name	DAA Surveys and Investigations			Sample No.	6
Soil Description	Dark grey sandy gravelly silty CLAY.			Depth, m	1.50
Specimen Reference	5	Specimen Depth	1.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus20180809106



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0625	43
90	100	0.0472	40
75	100	0.0341	36
63	100	0.0244	34
50	100	0.0176	30
37.5	100	0.0093	24
28	100	0.0048	17
20	100	0.0028	15
14	95	0.0015	9
10	93		
6.3	89		
5	86		
3.35	83		
2	76		
1.18	71		
0.6	65	Particle density	(assumed)
0.425	62	2.65	Mg/m3
0.3	59		
0.212	56		
0.15	53		
0.063	43		

Dry Mass of sample, g	1060

Sample Proportions	% dry mass
Cobbles	0
Gravel	24
Sand	33
Silt	31
Clay	12

Grading Analysis		
D100	mm	
D60	mm	0.355
D30	mm	0.0183
D10	mm	0.00162
Uniformity Coefficient		220
Curvature Coefficient		0.58

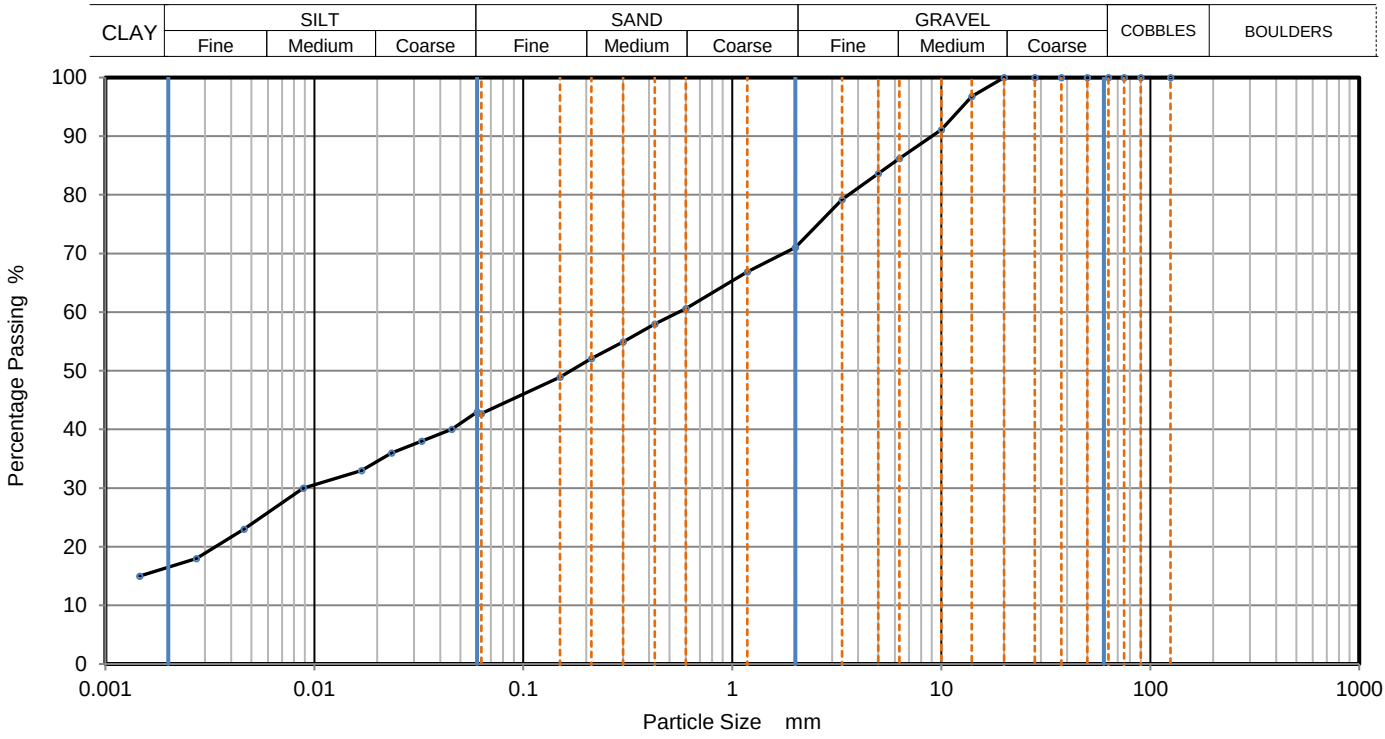
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP24
Site Name	DAA Surveys and Investigations			Sample No.	4
Soil Description	Brown sandy gravelly silty CLAY.			Depth, m	1.50
Specimen Reference	5	Specimen Depth	1.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus20180809109



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0601	43
90	100	0.0454	40
75	100	0.0326	38
63	100	0.0234	36
50	100	0.0168	33
37.5	100	0.0089	30
28	100	0.0046	23
20	100	0.0027	18
14	97	0.0015	15
10	91		
6.3	86		
5	84		
3.35	79		
2	71		
1.18	67		
0.6	61	Particle density	(assumed)
0.425	58	2.65	Mg/m3
0.3	55		
0.212	52		
0.15	49		
0.063	43		

Dry Mass of sample, g	803

Sample Proportions	% dry mass
Cobbles	0
Gravel	29
Sand	28
Silt	26
Clay	17

Grading Analysis		
D100	mm	
D60	mm	0.552
D30	mm	0.00886
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

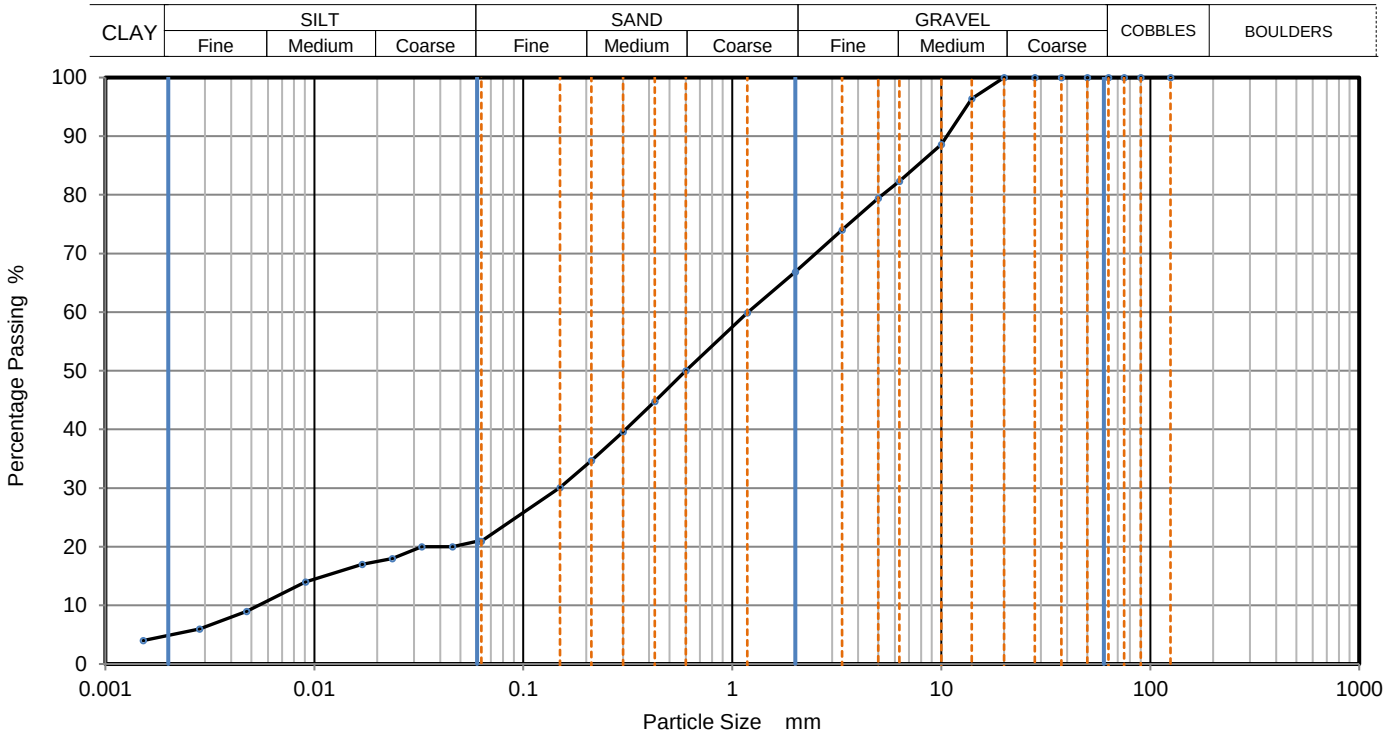
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP25
Site Name	DAA Surveys and Investigations			Sample No.	1
Soil Description	Brown sandy gravelly silty CLAY.			Depth, m	0.50
Specimen Reference	5	Specimen Depth	0.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus20180809111



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0611	21
90	100	0.0458	20
75	100	0.0327	20
63	100	0.0236	18
50	100	0.0170	17
37.5	100	0.0091	14
28	100	0.0047	9
20	100	0.0028	6
14	96	0.0015	4
10	89		
6.3	82		
5	79		
3.35	74		
2	67		
1.18	60		
0.6	50	Particle density	(assumed)
0.425	45	2.65	Mg/m3
0.3	40		
0.212	35		
0.15	30		
0.063	21		

Dry Mass of sample, g	575

Sample Proportions	% dry mass
Cobbles	0
Gravel	33
Sand	46
Silt	16
Clay	5

Grading Analysis		
D100	mm	
D60	mm	1.19
D30	mm	0.149
D10	mm	0.00533
Uniformity Coefficient		220
Curvature Coefficient		3.5

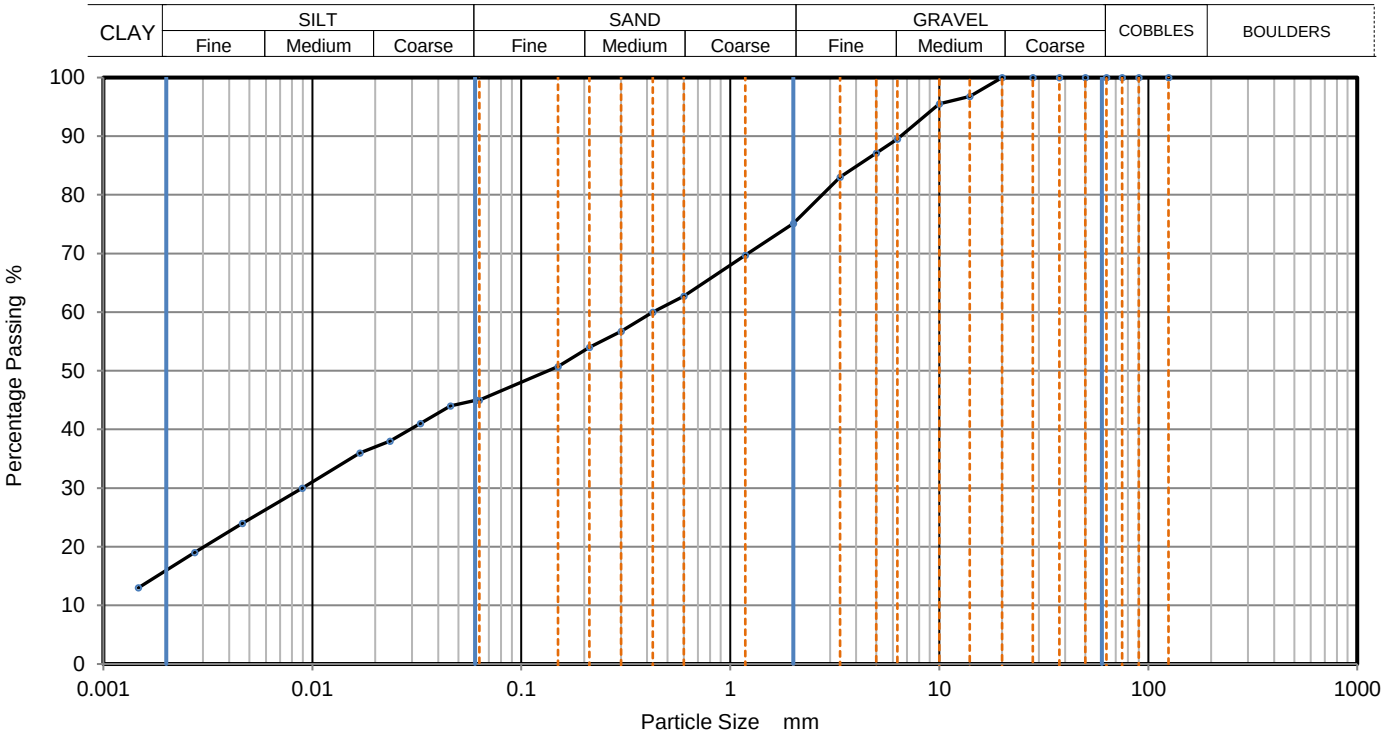
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP25
Site Name	DAA Surveys and Investigations			Sample No.	6
Soil Description	Light brown sandy gravelly silty CLAY.			Depth, m	1.50
Specimen Reference	5	Specimen Depth	1.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus20180809114



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0610	45
90	100	0.0457	44
75	100	0.0328	41
63	100	0.0235	38
50	100	0.0169	36
37.5	100	0.0090	30
28	100	0.0046	24
20	100	0.0027	19
14	97	0.0015	13
10	96		
6.3	90		
5	87		
3.35	83		
2	75		
1.18	70		
0.6	63	Particle density	(assumed)
0.425	60	2.65	Mg/m3
0.3	57		
0.212	54		
0.15	51		
0.063	45		

Dry Mass of sample, g	841

Sample Proportions	% dry mass
Cobbles	0
Gravel	25
Sand	30
Silt	29
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.427
D30	mm	0.00857
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

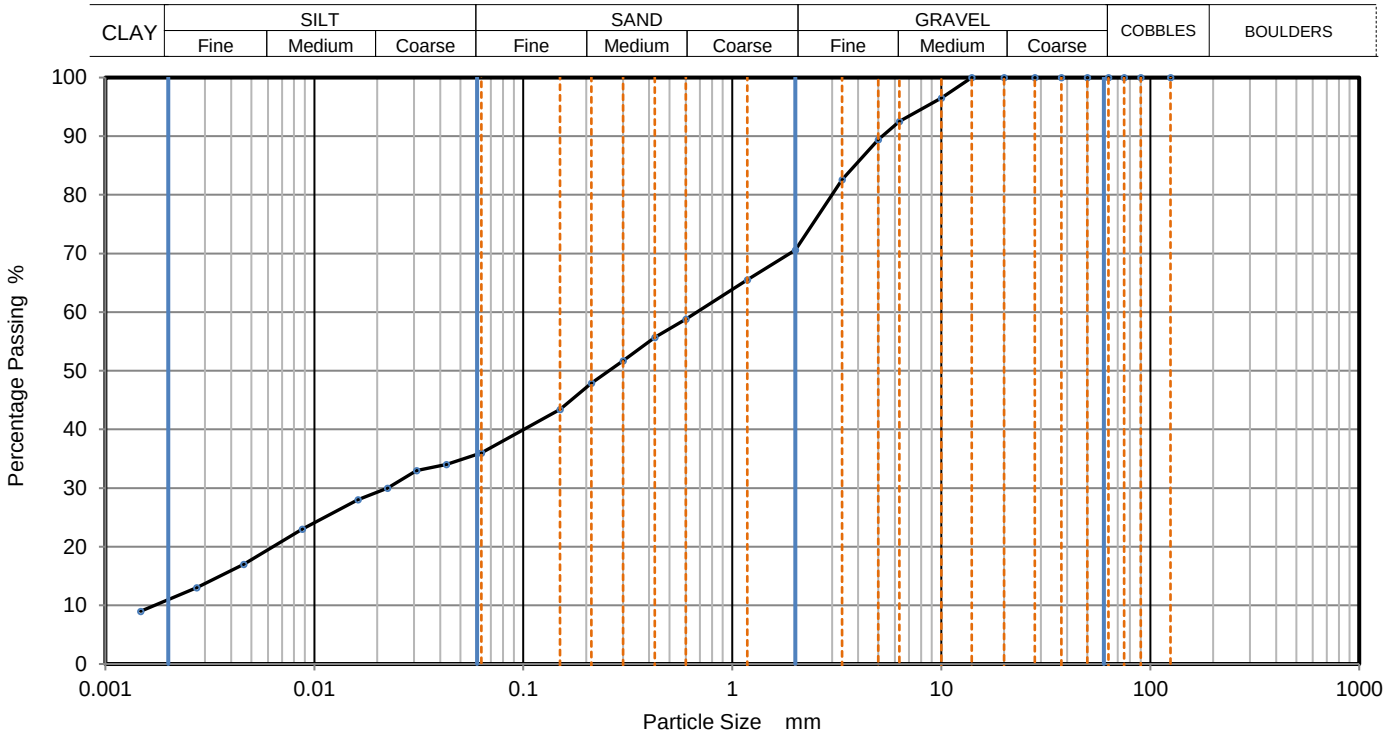
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP26
Site Name	DAA Surveys and Investigations			Sample No.	2
Soil Description	Light brown sandy gravelly silty CLAY.			Depth, m	0.50
Specimen Reference	3	Specimen Depth	0.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus20180809116



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	36
90	100	0.0428	34
75	100	0.0308	33
63	100	0.0224	30
50	100	0.0162	28
37.5	100	0.0088	23
28	100	0.0046	17
20	100	0.0027	13
14	100	0.0015	9
10	97		
6.3	93		
5	89		
3.35	83		
2	71		
1.18	66		
0.6	59	Particle density	(assumed)
0.425	56	2.65	Mg/m3
0.3	52		
0.212	48		
0.15	43		
0.063	36		

Dry Mass of sample, g	649

Sample Proportions	% dry mass
Cobbles	0
Gravel	29
Sand	35
Silt	25
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.677
D30	mm	0.022
D10	mm	0.00171
Uniformity Coefficient		400
Curvature Coefficient		0.42

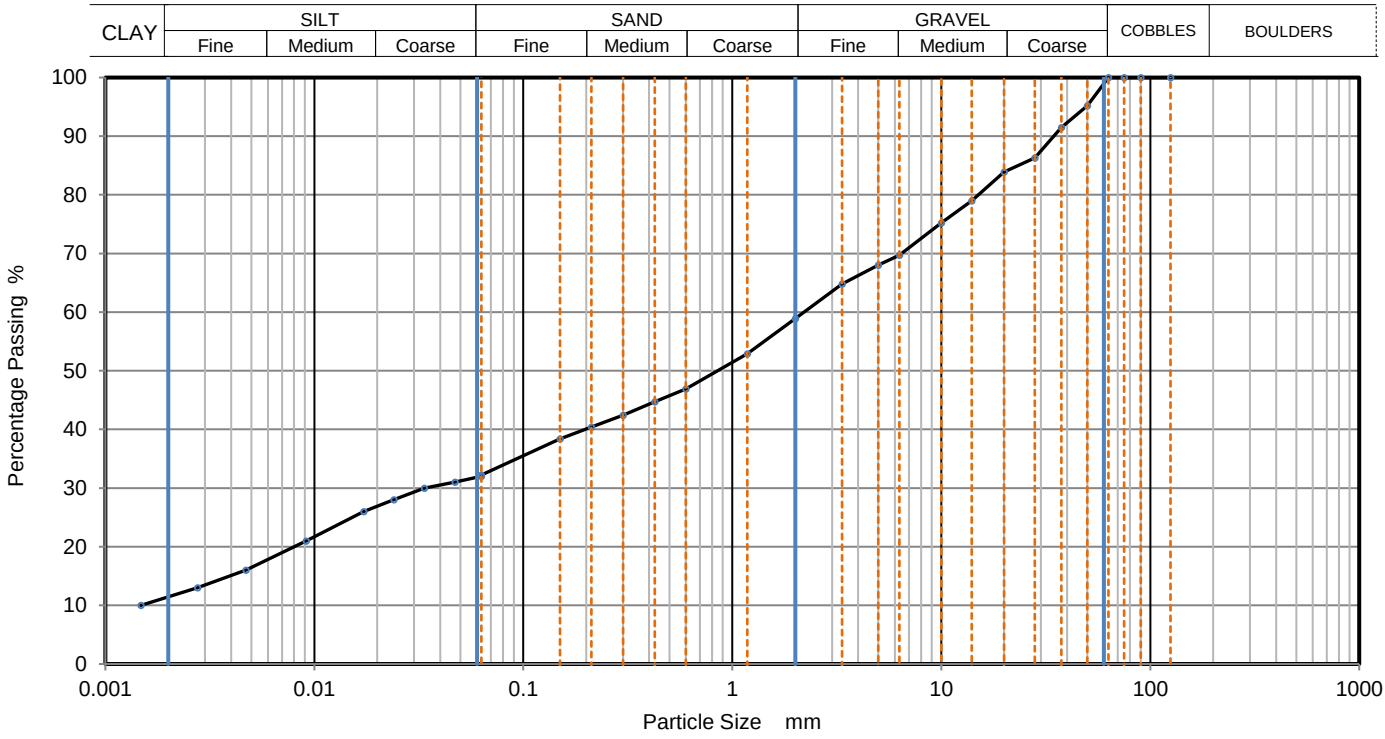
Remarks

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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP26
Site Name	DAA Surveys and Investigations			Sample No.	4
Soil Description	Grey brown sandy gravelly silty CLAY.			Depth, m	1.50
Specimen Reference	10	Specimen Depth	1.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus20180809118



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0629	32
90	100	0.0471	31
75	100	0.0335	30
63	100	0.0240	28
50	95	0.0172	26
37.5	92	0.0091	21
28	86	0.0047	16
20	84	0.0028	13
14	79	0.0015	10
10	75		
6.3	70		
5	68		
3.35	65		
2	59		
1.18	53		
0.6	47	Particle density	(assumed)
0.425	45	2.65	Mg/m3
0.3	42		
0.212	40		
0.15	38		
0.063	32		

Dry Mass of sample, g	4919

Sample Proportions	% dry mass
Cobbles	0
Gravel	41
Sand	27
Silt	21
Clay	11

Grading Analysis		
D100	mm	
D60	mm	2.21
D30	mm	0.0333
D10	mm	0.00158
Uniformity Coefficient		1400
Curvature Coefficient		0.32

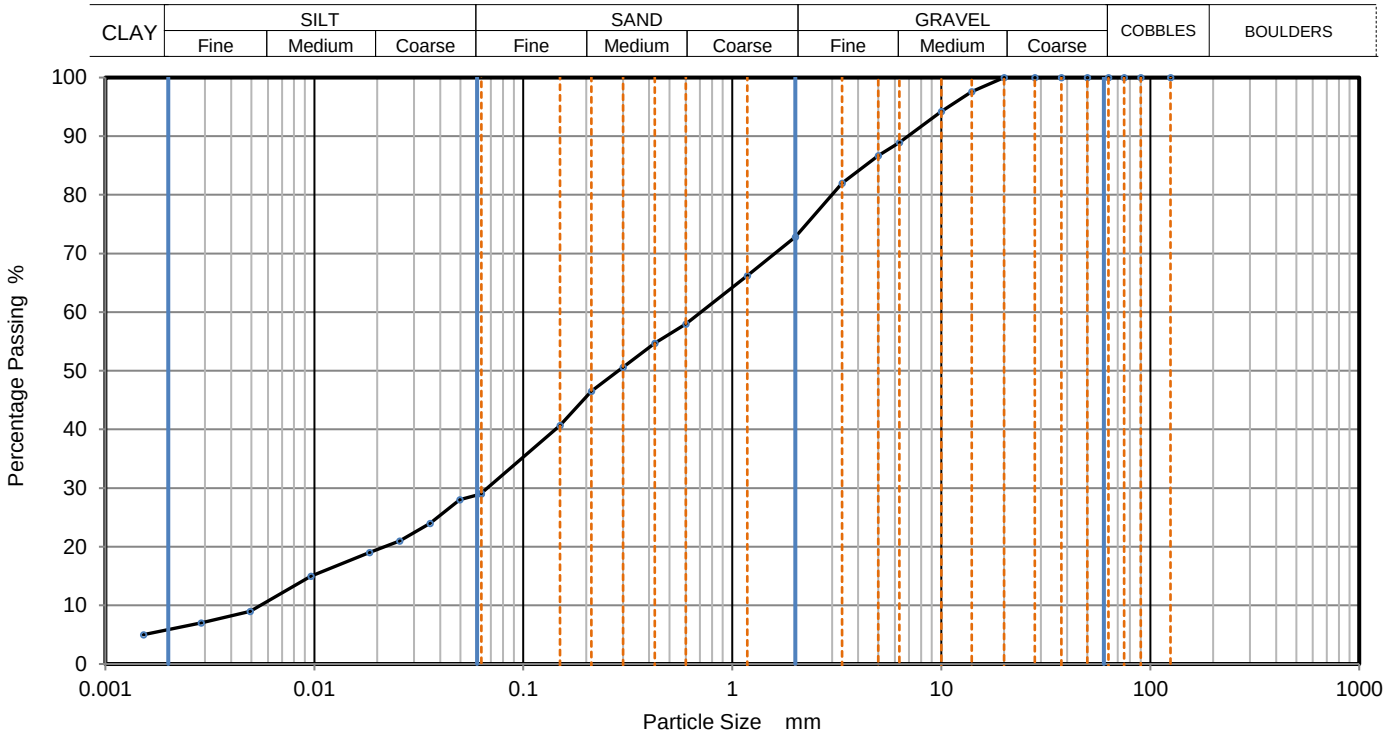
Remarks

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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP28
Site Name	DAA Surveys and Investigations			Sample No.	7
Soil Description	Grey sandy gravelly silty CLAY.			Depth, m	2.00
Specimen Reference	5	Specimen Depth	2 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus20180809126



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	29
90	100	0.0497	28
75	100	0.0358	24
63	100	0.0256	21
50	100	0.0183	19
37.5	100	0.0096	15
28	100	0.0049	9
20	100	0.0029	7
14	98	0.0015	5
10	94		
6.3	89		
5	87		
3.35	82		
2	73		
1.18	66		
0.6	58	Particle density	(assumed)
0.425	55	2.65	Mg/m3
0.3	51		
0.212	47		
0.15	41		
0.063	29		

Dry Mass of sample, g	1478

Sample Proportions	% dry mass
Cobbles	0
Gravel	27
Sand	44
Silt	23
Clay	6

Grading Analysis		
D100	mm	
D60	mm	0.707
D30	mm	0.0672
D10	mm	0.00541
Uniformity Coefficient		130
Curvature Coefficient		1.2

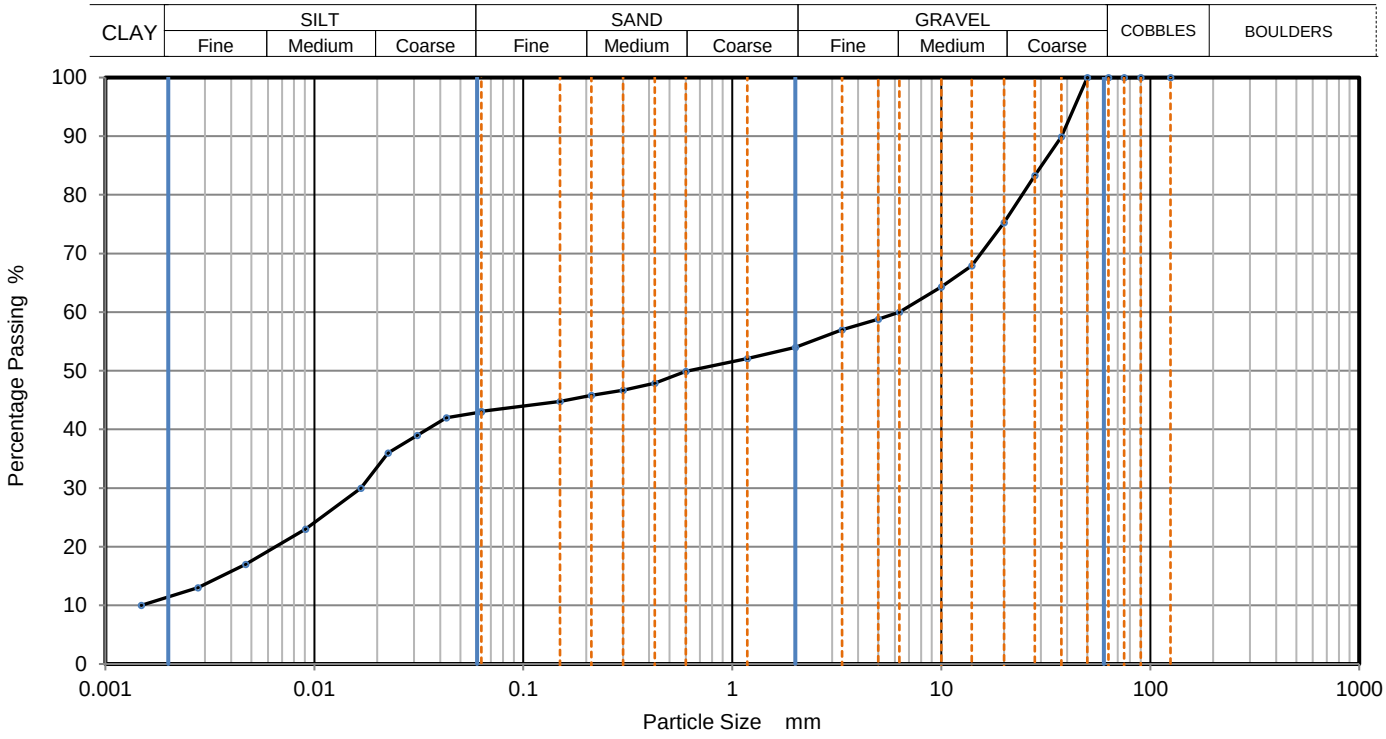
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP29
Site Name	DAA Surveys and Investigations			Sample No.	4
Soil Description	Light grey slightly sandy gravelly silty CLAY.			Depth, m	1.10
Specimen Reference	7	Specimen Depth	1.1 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus20180809130



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	43
90	100	0.0428	42
75	100	0.0311	39
63	100	0.0226	36
50	100	0.0167	30
37.5	90	0.0091	23
28	83	0.0047	17
20	75	0.0028	13
14	68	0.0015	10
10	64		
6.3	60		
5	59		
3.35	57		
2	54		
1.18	52		
0.6	50	Particle density	(assumed)
0.425	48	2.65	Mg/m3
0.3	47		
0.212	46		
0.15	45		
0.063	43		

Dry Mass of sample, g	3196

Sample Proportions	% dry mass
Cobbles	0
Gravel	46
Sand	11
Silt	31
Clay	12

Grading Analysis		
D100	mm	
D60	mm	6.3
D30	mm	0.0169
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

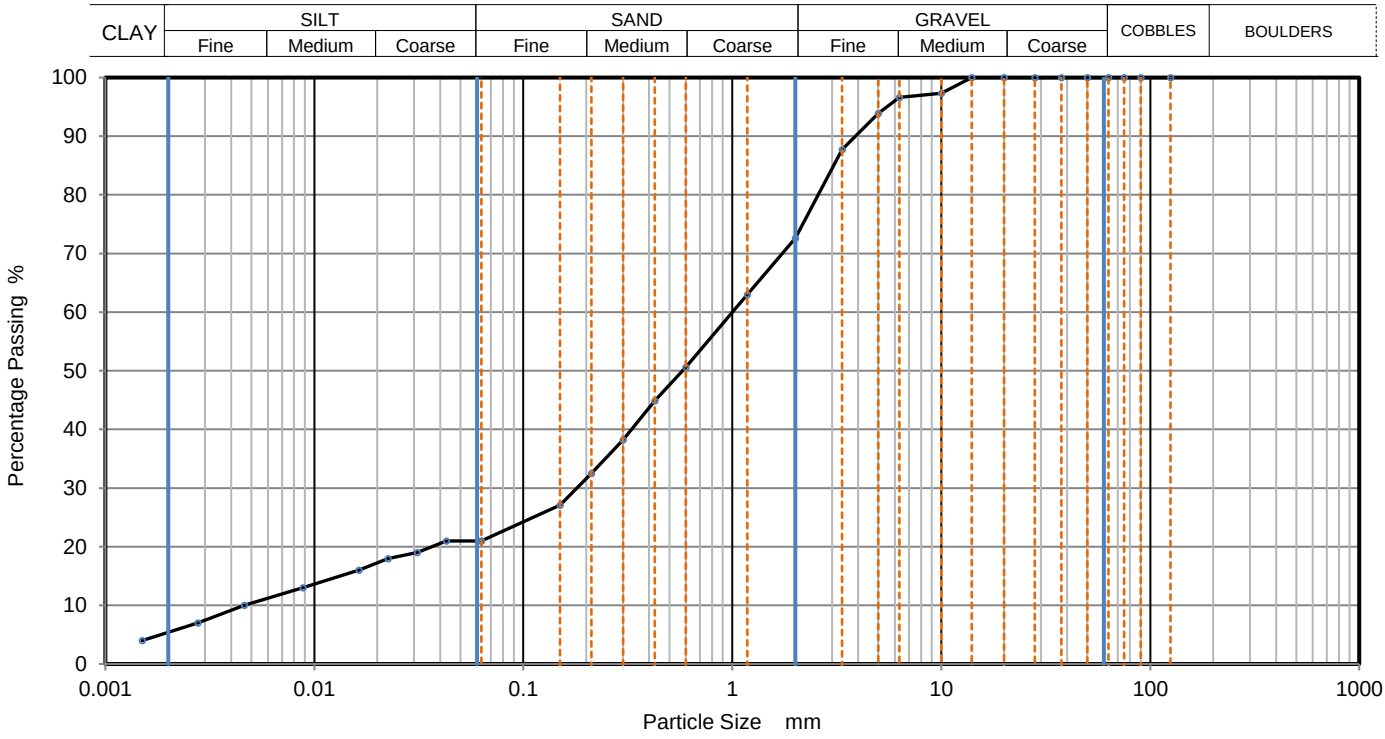
Remarks

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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	TP30
Site Name	DAA Surveys and Investigations			Sample No.	1
Soil Description	Orangish brown slightly sandy slightly gravelly CLAY.			Depth, m	0.50
Specimen Reference	5	Specimen Depth	0.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus20180809134



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	21
90	100	0.0428	21
75	100	0.0311	19
63	100	0.0226	18
50	100	0.0163	16
37.5	100	0.0088	13
28	100	0.0046	10
20	100	0.0028	7
14	100	0.0015	4
10	97		
6.3	97		
5	94		
3.35	88		
2	73		
1.18	63		
0.6	51	Particle density	(assumed)
0.425	45	2.65	Mg/m3
0.3	38		
0.212	33		
0.15	27		
0.063	21		

Dry Mass of sample, g	588

Sample Proportions	% dry mass
Cobbles	0
Gravel	27
Sand	52
Silt	16
Clay	5

Grading Analysis		
D100	mm	
D60	mm	1
D30	mm	0.181
D10	mm	0.00507
Uniformity Coefficient		200
Curvature Coefficient		6.4

Remarks

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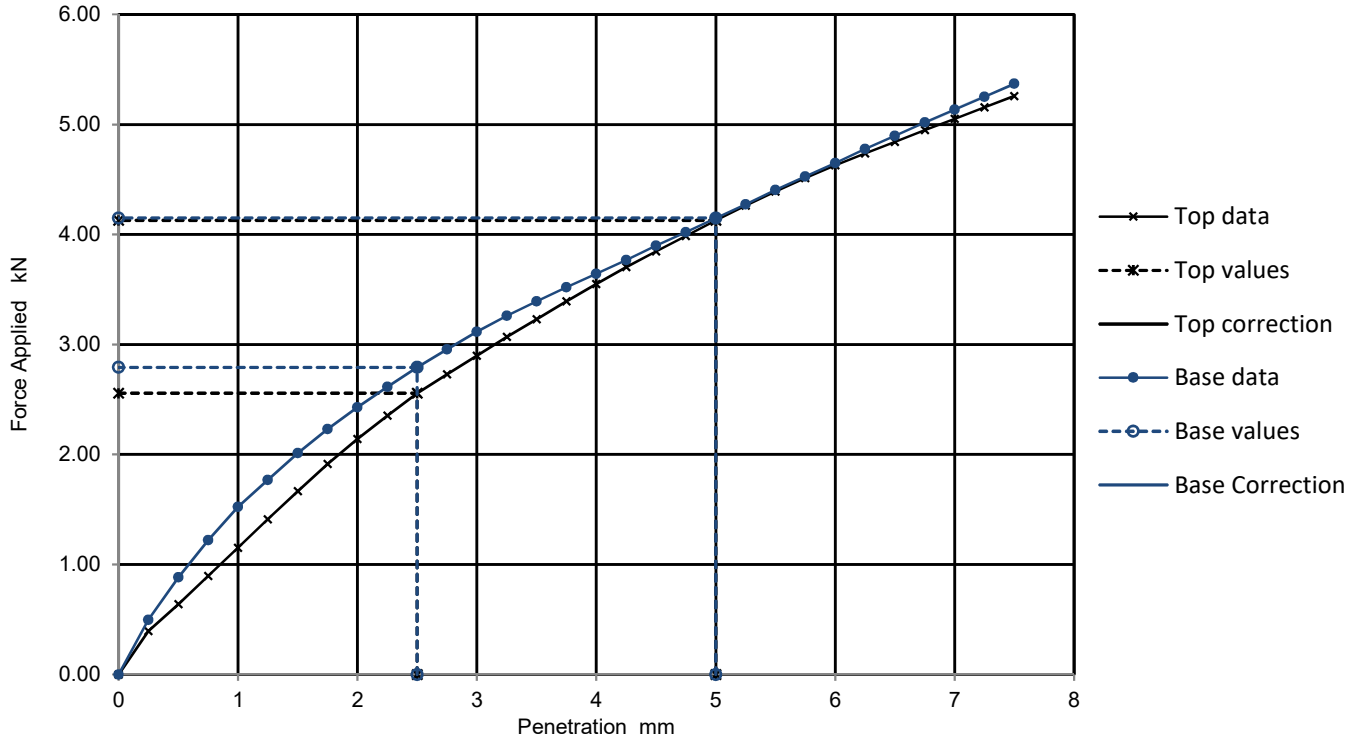
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CAUSEWAY GEOTECH	California Bearing Ratio (CBR)				Job Ref	18-0577
					Borehole/Pit No.	TP03
Site Name	DAA Surveys and Investigations				Sample No.	4
Soil Description	Brown sandy slightly gravelly silty CLAY.				Depth m	1.50
Specimen Reference	1	Specimen Depth	1.50	m	Sample Type	B
Specimen Description	Brown sandy slightly gravelly silty CLAY.				KeyLAB ID	Caus2018080931
Test Method	BS1377 : Part 4 : 1990, clause 7				CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking	days
				Time to surface	days
				Amount of swell recorded	mm
Material retained on 20mm sieve removed		14	%	Dry density after soaking	Mg/m^3
Initial Specimen details	Bulk density	2.17	Mg/m^3	Surcharge applied	13.5 kg
	Dry density	1.96	Mg/m^3		8 kPa
	Moisture content	10.9	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	19	21	21	21	10.9
BASE	No	21	21	21		10.9

General remarks	Test specific remarks	Approved
Tested at natural moisture content	Average result may be reported if within 10% of the mean CBR value of top and base	Stephen.Watson

Lab Sheet Reference : **10122**

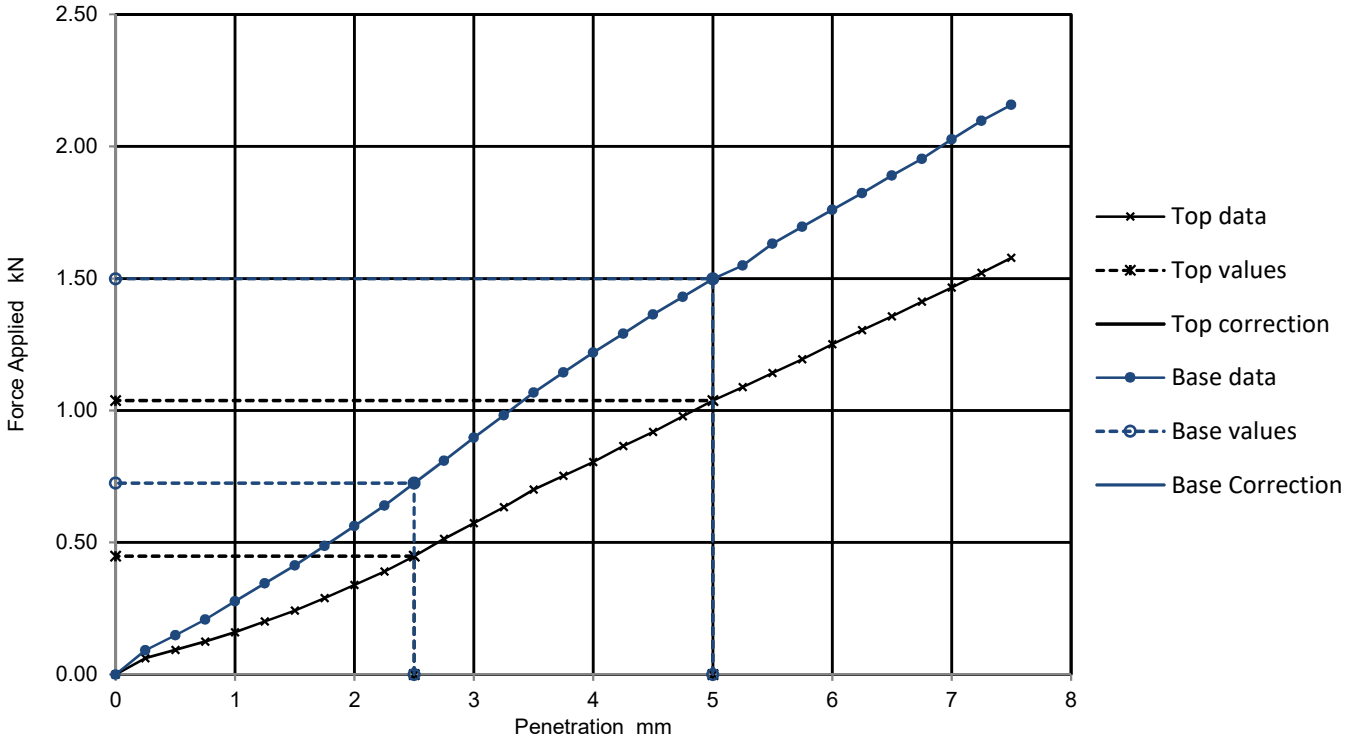
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CAUSEWAY GEOTECH	California Bearing Ratio (CBR)				Job Ref	18-0577
					Borehole/Pit No.	TP11
Site Name	DAA Surveys and Investigations				Sample No.	7
Soil Description	Dark grey sandy slightly gravelly SILT/CLAY.				Depth m	1.90
Specimen Reference	2	Specimen Depth	1.90	m	Sample Type	B
Specimen Description	Dark grey sandy slightly gravelly SILT/CLAY.				KeyLAB ID	Caus2018080963
Test Method	BS1377 : Part 4 : 1990, clause 7				CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking	days
				Time to surface	days
				Amount of swell recorded	mm
Material retained on 20mm sieve removed		18	%	Dry density after soaking	Mg/m^3
Initial Specimen details	Bulk density	2.23	Mg/m^3	Surcharge applied	13.5 kg
	Dry density	1.99	Mg/m^3		8 kPa
	Moisture content	11.8	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	3.4	5.2	5.2		11.8
BASE	No	5.5	7.5	7.5		11.9

General remarks	Test specific remarks	Approved
Tested at natural moisture content	Average result may be reported if within 10% of the mean CBR value of top and base	Stephen.Watson

Lab Sheet Reference : **10122**

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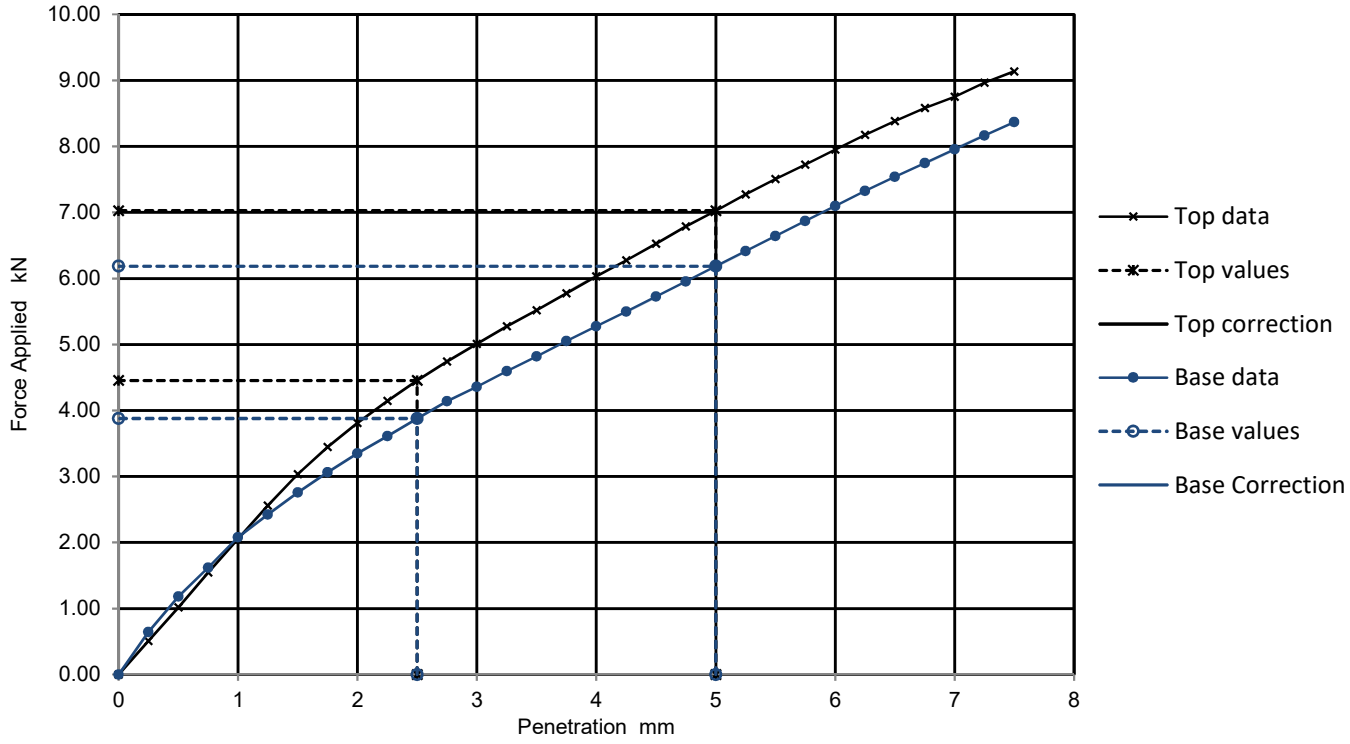
California Bearing Ratio (CBR)

					Job Ref	18-0577
					Borehole/Pit No.	TP15
Site Name	DAA Surveys and Investigations				Sample No.	3
Soil Description	Greyish brown sandy gravelly clayey SILT.				Depth m	1.30
Specimen Reference	3	Specimen Depth	1.30	m	Sample Type	B
Specimen Description	Greyish brown sandy gravelly clayey SILT.				KeyLAB ID	Caus2018080980
Test Method	BS1377 : Part 4 : 1990, clause 7				CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking	days
				Time to surface	days
				Amount of swell recorded	mm
Material retained on 20mm sieve removed		6	%	Dry density after soaking	Mg/m^3
Initial Specimen details	Bulk density	2.04	Mg/m^3	Surcharge applied	13.5 kg
	Dry density	1.88	Mg/m^3		8 kPa
	Moisture content	8.6	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	34	35	35	33	8.6
BASE	No	29	31	31		9.1

General remarks	Test specific remarks	Approved
Tested at natural moisture content	Average result may be reported if within 10% of the mean CBR value of top and base	Stephen.Watson

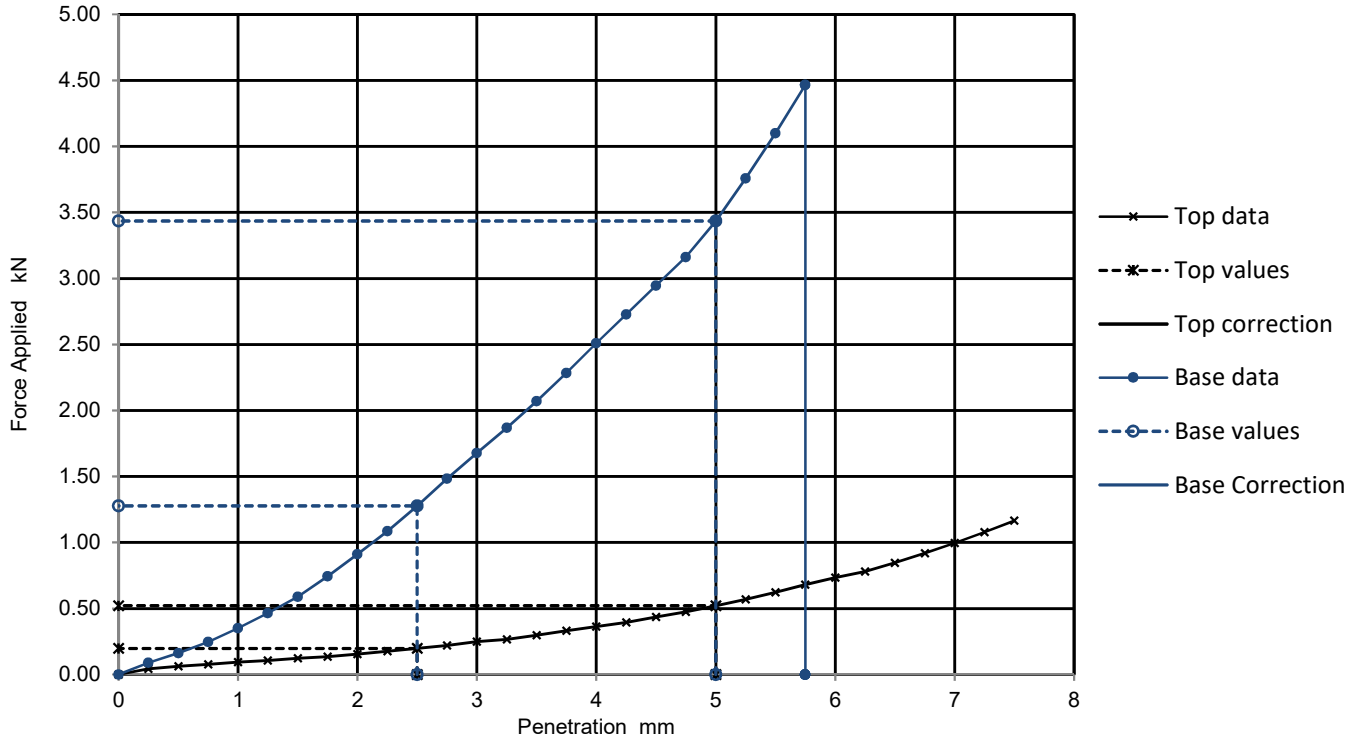
Lab Sheet Reference : **10122**

CAUSEWAY GEOTECH	California Bearing Ratio (CBR)			Job Ref	18-0577
				Borehole/Pit No.	TP18
Site Name	DAA Surveys and Investigations			Sample No.	6
Soil Description	Brownish grey sandy gravelly clayey SILT.			Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brownish grey sandy gravelly clayey SILT.			KeyLAB ID	Caus2018080992
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		24	%	Dry density after soaking		Mg/m^3
Initial Specimen details	Bulk density	2.36	Mg/m^3	Surcharge applied	13.5	kg
	Dry density	2.13	Mg/m^3		8	kPa
	Moisture content	10.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	1.5	2.6	2.6		10.6
BASE	No	9.7	17	17		10.2

General remarks	Test specific remarks	Approved
Tested at natural moisture content	Average result may be reported if within 10% of the mean CBR value of top and base	Stephen.Watson

Lab Sheet Reference :

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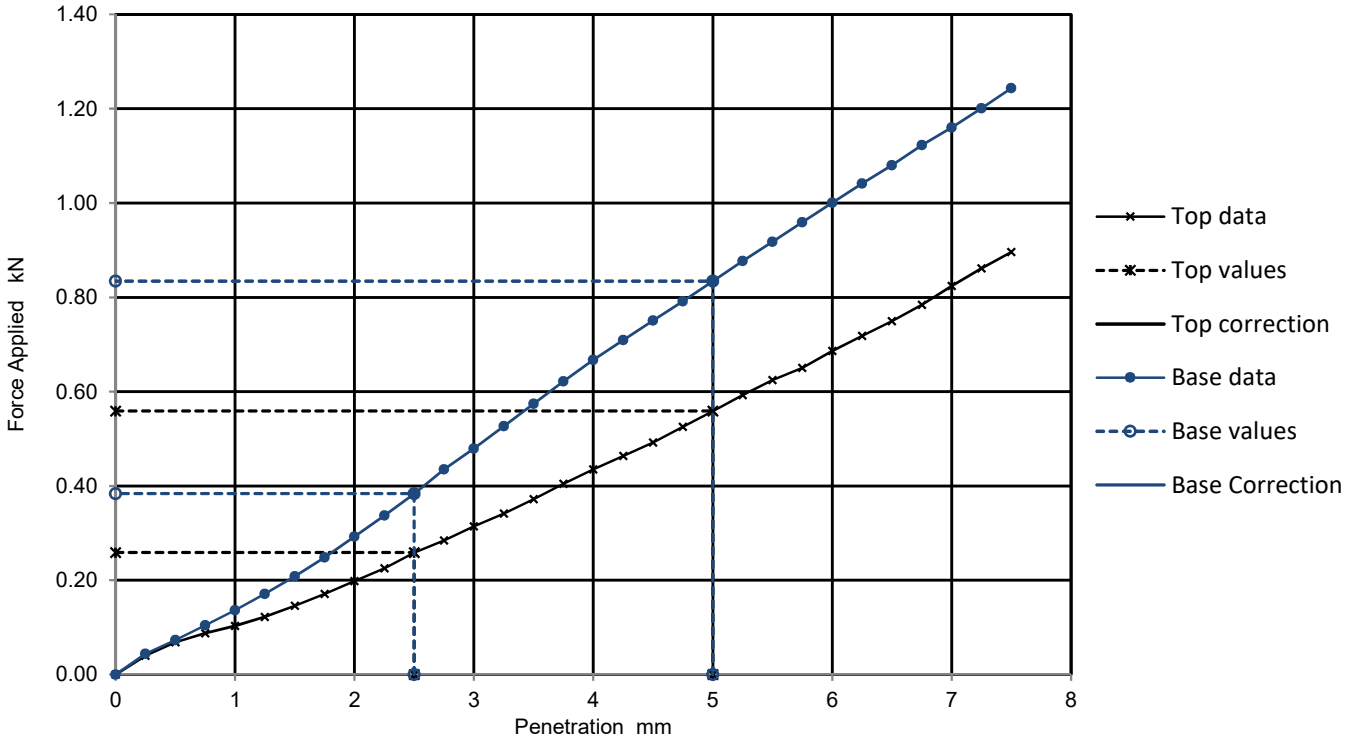
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CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	18-0577
				Borehole/Pit No.	TP23
Site Name	DAA Surveys and Investigations			Sample No.	6
Soil Description	Dark grey sandy gravelly silty CLAY.			Depth m	1.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Dark grey sandy gravelly silty CLAY.			KeyLAB ID	Caus20180809106
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		9	%	Dry density after soaking		Mg/m^3
Initial Specimen details	Bulk density	2.29	Mg/m^3	Surcharge applied	13.5	kg
	Dry density	2.06	Mg/m^3		8	kPa
	Moisture content	11.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	2.0	2.8	2.8		11.0
BASE	No	2.9	4.2	4.2		10.1

General remarks	Test specific remarks	Approved
Tested at natural moisture content	Average result may be reported if within 10% of the mean CBR value of top and base	Stephen.Watson

Lab Sheet Reference : **10122**

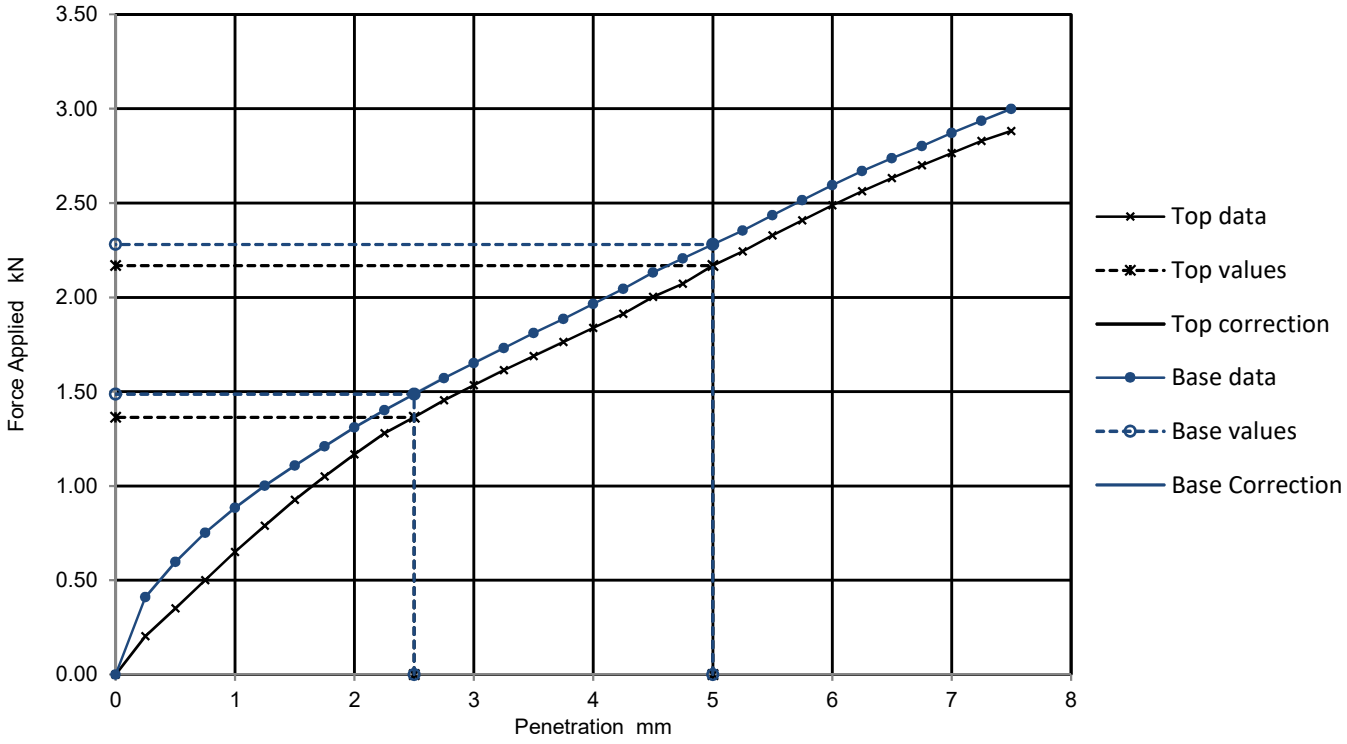
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CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	18-0577
				Borehole/Pit No.	TP29
Site Name	DAA Surveys and Investigations			Sample No.	1
Soil Description	Brown sandy slightly gravelly silty CLAY.			Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus20180809128
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		13	%	Dry density after soaking		Mg/m^3
Initial Specimen details	Bulk density	1.85	Mg/m^3	Surcharge applied	13.5	kg
	Dry density	1.53	Mg/m^3		8	kPa
	Moisture content	21.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	10	11	11	11	21.0
BASE	No	11	11	11		22.1

General remarks	Test specific remarks	Approved
Tested at natural moisture content	Average result may be reported if within 10% of the mean CBR value of top and base	Stephen.Watson

Lab Sheet Reference : **10122**

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CAUSEWAY GEOTECH

Moisture Condition Value at Natural Moisture Content
Summary of Results

Project No.	Project Name
18-0577	DAA Surveys and Investigations

Hole No.	Sample				Soil Description	Retained on 20mm sieve %	Moisture Content <20mm %	Moisture Condition Value	Method of Interpretation	Remarks
	Ref	Top	Base	Type						
TP02	7	1.70		B	Dark grey slightly silty sandy angular and tabular fine to coarse GRAVEL.	29	10.9	14.8	Best fit line	
TP06	1	0.50		B	Yellowish brown sandy gravelly SILT/CLAY.	1	14.9	16.7	Best fit line	
TP11	7	1.90		B	Dark grey sandy slightly gravelly SILT/CLAY.	18	11.9	8.6	Best fit line	
TP13	3	1.60		B	Brown sandy gravelly clayey SILT.	4	11.9	12.8	Best fit line	
TP16	1	0.50		B	Brownish grey sandy gravelly clayey SILT.	4	12.0	16.0	Best fit line	
TP23	4	1.00		B	Grey sandy gravelly silty CLAY.	0	29.4	9.4	Best fit line	
TP29	4	1.10		B	Light grey slightly sandy gravelly silty CLAY.	24	15.6	6.8	Best fit line	

Key

Test performed in accordance with BS1377:Part4:1990, clause 5.4 unless annotated otherwise

Date Printed

20/09/2018

Approved By

Stephen.Watson

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CAUSEWAY GEOTECH	**Moisture Condition Value / Moisture Content Relationship**				Job Ref	18-0577
					Borehole/Pit No.	TP01
Site Name	DAA Surveys and Investigations				Sample No.	1
Soil Description	Grey sandy gravelly silty CLAY.				Depth	0.5
Specimen Reference	13	Specimen Depth	0.5	m	Sample Type	B
Specimen Description	Grey sandy gravelly silty CLAY.				KeyLAB ID	Caus2018080919
Test Method	BS1377:Part4:1990:clause 5.5				Date started	17/09/2018

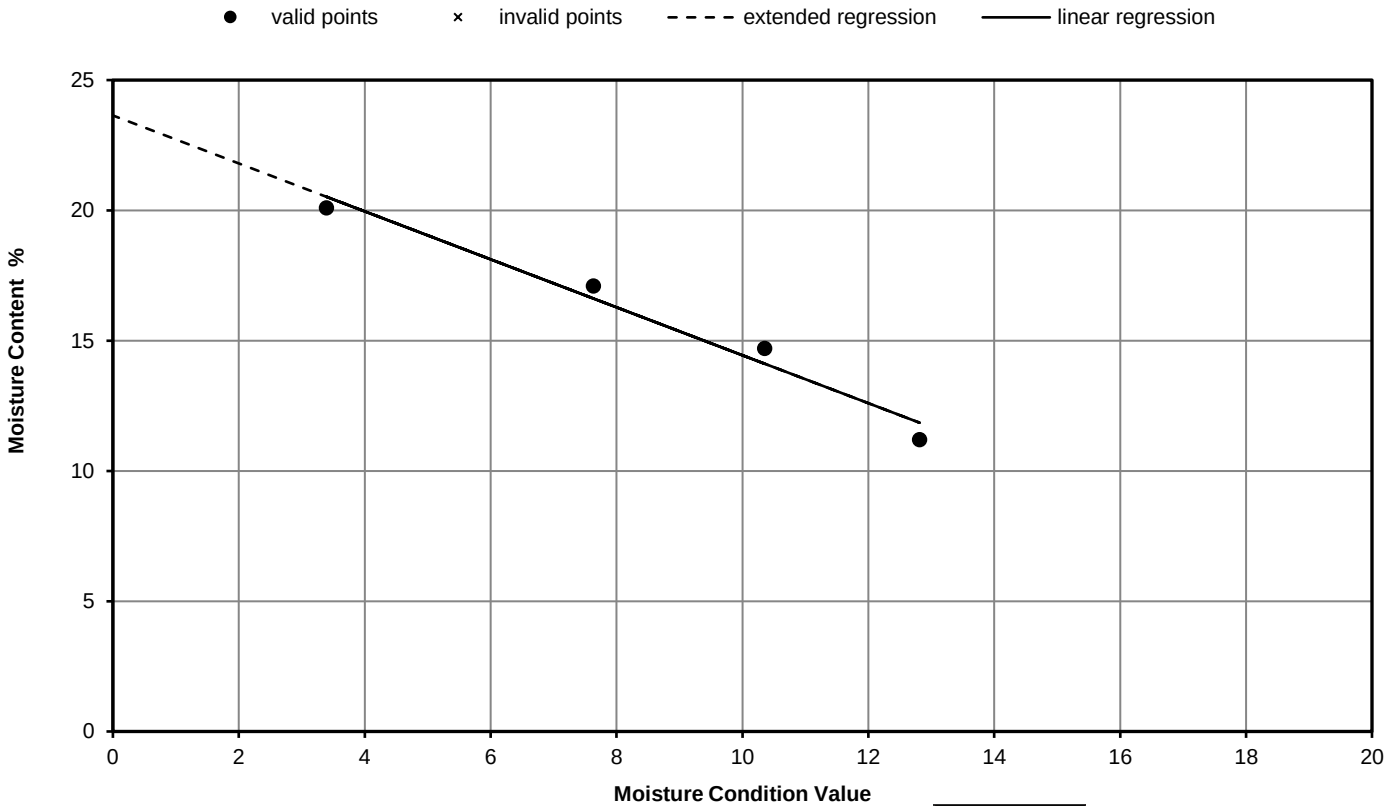
Sample preparation

Amount of material larger than 20mm sieve removed	9	%
Natural Moisture Content of sample	13.3	%
Initial Moisture Content of test sample below 20mm	14.7	%
Separate specimens tested		

General remarks

Table of results

MCV Test Number	1	2	3	4	
Moisture Content, %	14.7	20.1	17.1	11.2	
Moisture Condition Value	10.4	3.4	7.6	12.8	
MCV report	10.4	3.4	7.6	12.8	
Effective / Valid data point	YES	YES	YES	YES	
Specimen remarks					



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CAUSEWAY GEOTECH	Moisture Condition Value / Moisture Content Relationship				Job Ref	18-0577
					Borehole/Pit No.	TP07
Site Name	DAA Surveys and Investigations				Sample No.	6
Soil Description	Dark brownish grey sandy gravelly silty CLAY.				Depth	2
Specimen Reference	9	Specimen Depth	2	m	Sample Type	B
Specimen Description	Dark brownish grey sandy gravelly silty CLAY.				KeyLAB ID	Caus2018080947
Test Method	BS1377:Part4:1990:clause 5.5				Date started	17/09/2018

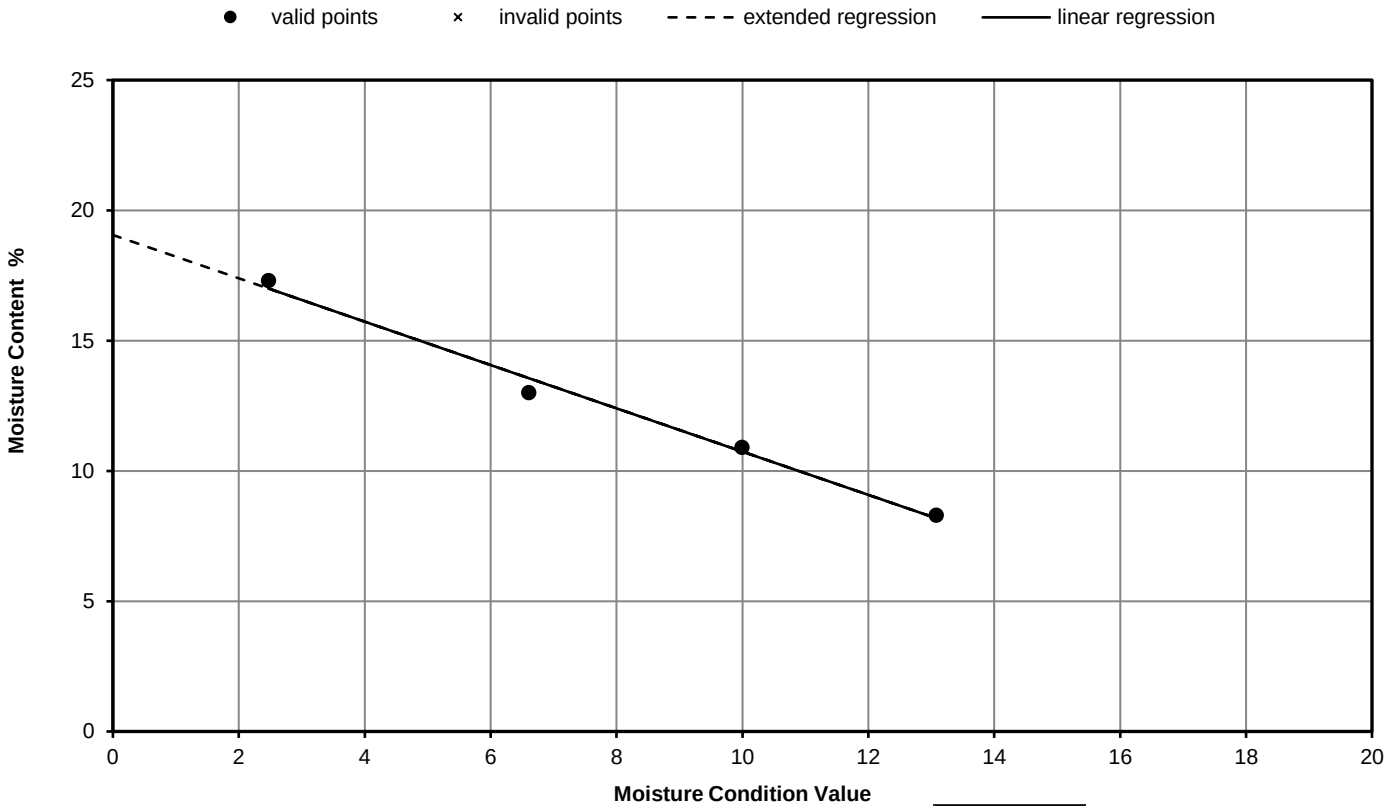
Sample preparation

Amount of material larger than 20mm sieve removed	16	%
Natural Moisture Content of sample	14.2	%
Initial Moisture Content of test sample below 20mm	18.2	%
Separate specimens tested		

General remarks

Table of results

MCV Test Number	1	2	3	4	
Moisture Content, %	17.3	13.0	10.9	8.3	
Moisture Condition Value	2.5	6.6	10.0	13.1	
MCV report	2.5	6.6	10	13.1	
Effective / Valid data point	YES	YES	YES	YES	
Specimen remarks					



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CAUSEWAY GEOTECH	**Moisture Condition Value / Moisture Content Relationship**				Job Ref	18-0577
					Borehole/Pit No.	TP11
Site Name	DAA Surveys and Investigations				Sample No.	1
Soil Description	Light brown sandy gravelly silty CLAY.				Depth	0.5
Specimen Reference	5	Specimen Depth	0.5	m	Sample Type	B
Specimen Description	Light brown sandy gravelly silty CLAY.				KeyLAB ID	Caus2018080959
Test Method	BS1377:Part4:1990:clause 5.5				Date started	17/09/2018

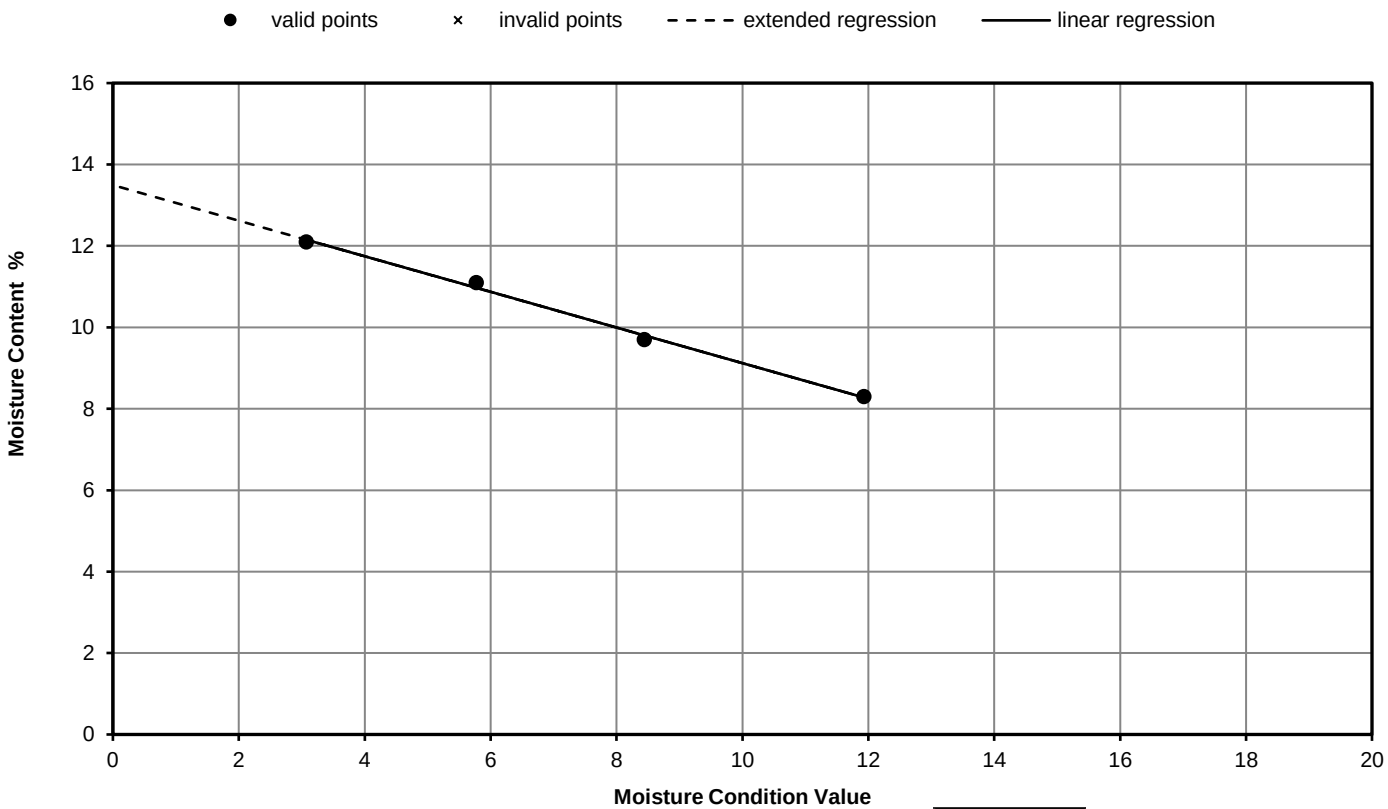
Sample preparation

Amount of material larger than 20mm sieve removed	8	%
Natural Moisture Content of sample	11	%
Initial Moisture Content of test sample below 20mm	12.1	%
Separate specimens tested		

General remarks

Table of results

MCV Test Number	1	2	3	4	
Moisture Content, %	12.1	11.1	9.7	8.3	
Moisture Condition Value	3.1	5.8	8.4	11.9	
MCV report	3.1	5.8	8.4	11.9	
Effective / Valid data point	YES	YES	YES	YES	
Specimen remarks					



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CAUSEWAY GEOTECH	Moisture Condition Value / Moisture Content Relationship				Job Ref	18-0577
					Borehole/Pit No.	TP12
Site Name	DAA Surveys and Investigations				Sample No.	3
Soil Description	Grey brown sandy slightly gravelly CLAY.				Depth	1.3
Specimen Reference	5	Specimen Depth	1.3	m	Sample Type	B
Specimen Description	Grey brown sandy slightly gravelly CLAY.				KeyLAB ID	Caus2018080966
Test Method	BS1377:Part4:1990:clause 5.5				Date started	17/09/2018

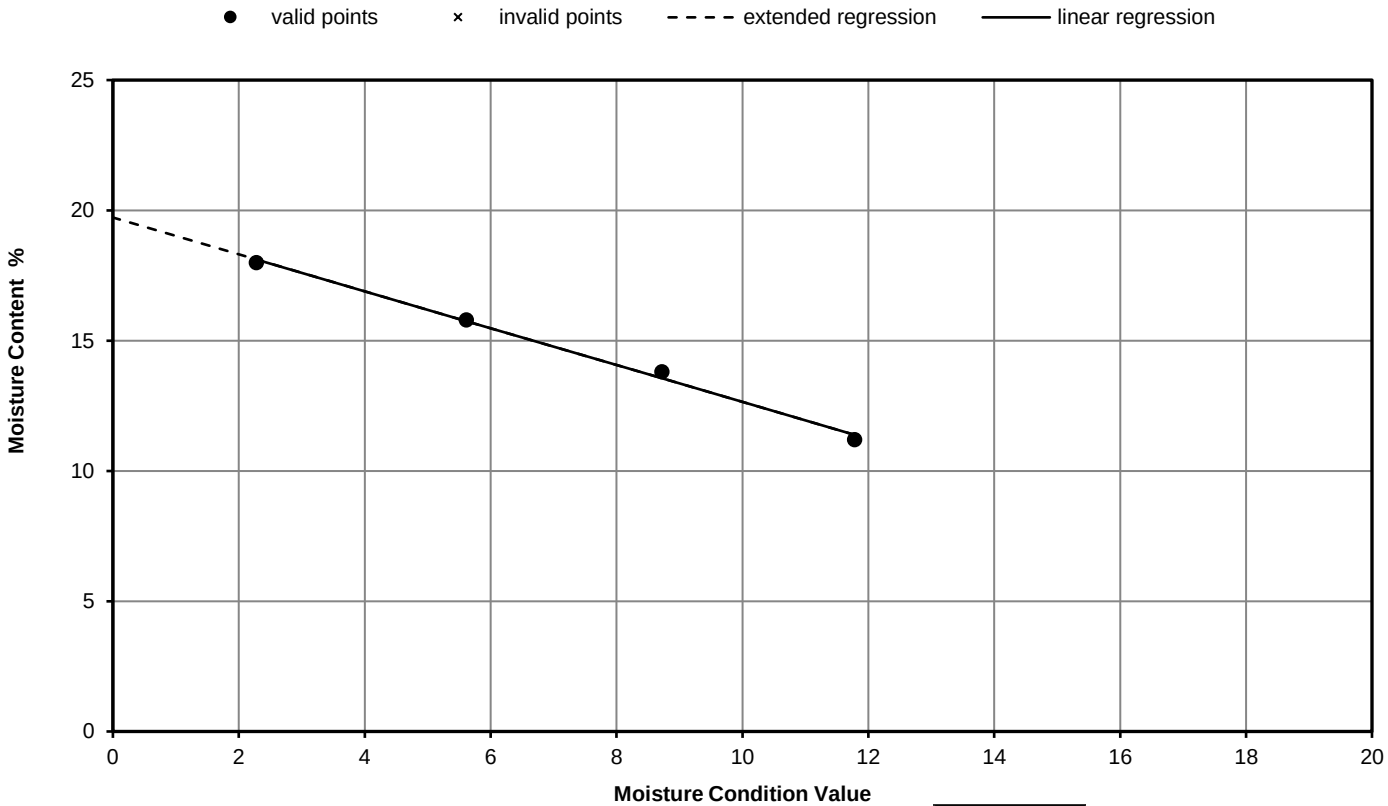
Sample preparation

Amount of material larger than 20mm sieve removed	3	%
Natural Moisture Content of sample	10.2	%
Initial Moisture Content of test sample below 20mm	11.2	%
Separate specimens tested		

General remarks

Table of results

MCV Test Number	1	2	3	4	
Moisture Content, %	11.2	13.8	15.8	18.0	
Moisture Condition Value	11.8	8.7	5.6	2.3	
MCV report	11.8	8.7	5.6	2.3	
Effective / Valid data point	YES	YES	YES	YES	
Specimen remarks					



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CAUSEWAY GEOTECH	Moisture Condition Value / Moisture Content Relationship				Job Ref	18-0577
					Borehole/Pit No.	TP16
Site Name	DAA Surveys and Investigations				Sample No.	3
Soil Description	Grey brown sandy slightly gravelly CLAY.				Depth	1.7
Specimen Reference	7	Specimen Depth	1.7	m	Sample Type	B
Specimen Description	Grey brown sandy slightly gravelly CLAY.				KeyLAB ID	Caus2018080984
Test Method	BS1377:Part4:1990:clause 5.5				Date started	17/09/2018

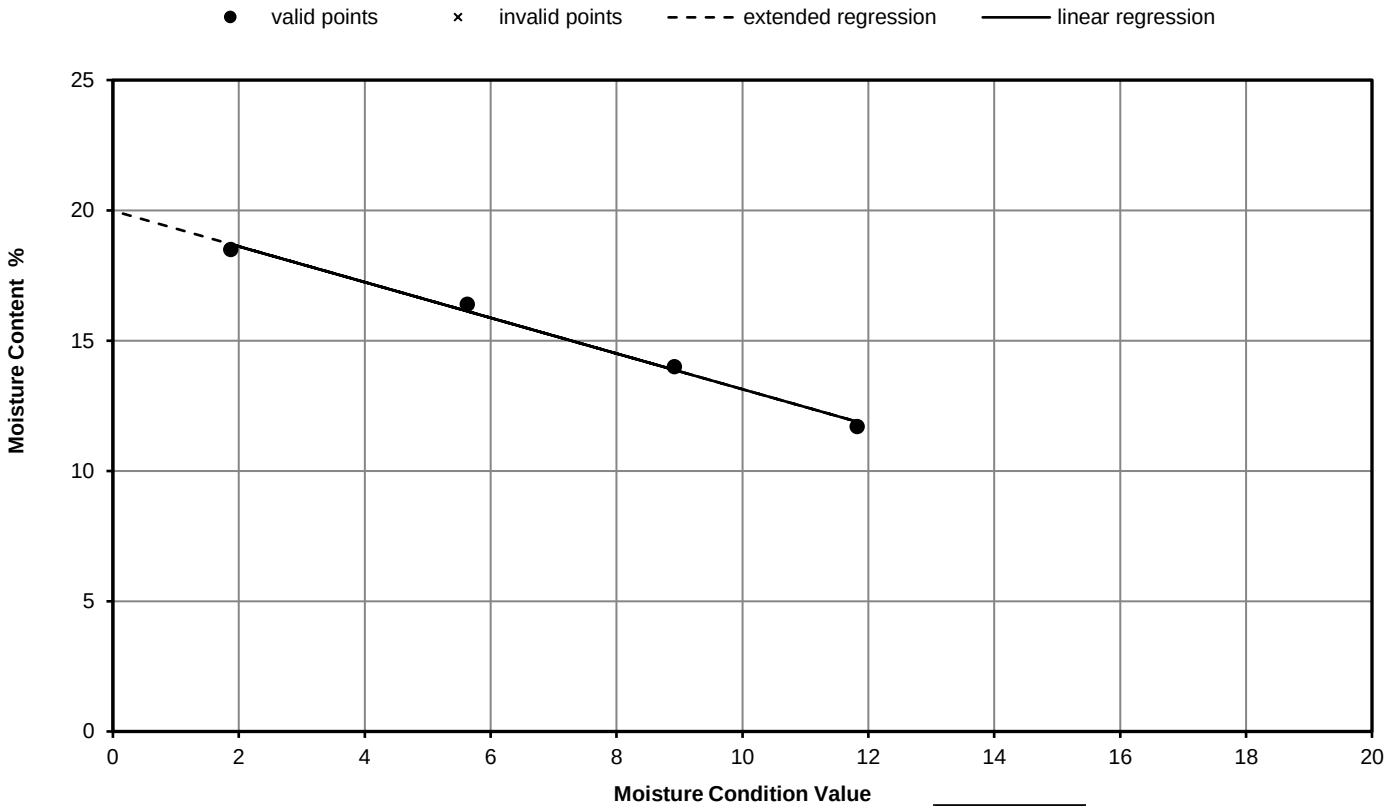
Sample preparation

Amount of material larger than 20mm sieve removed	1	%
Natural Moisture Content of sample	13.9	%
Initial Moisture Content of test sample below 20mm	14	%
Separate specimens tested		

General remarks

Table of results

MCV Test Number	1	2	3	4	
Moisture Content, %	14.0	18.5	16.4	11.7	
Moisture Condition Value	8.9	1.9	5.6	11.8	
MCV report	8.9	1.9	5.6	11.8	
Effective / Valid data point	YES	YES	YES	YES	
Specimen remarks					



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CAUSEWAY GEOTECH	**Moisture Condition Value / Moisture Content Relationship**				Job Ref	18-0577
					Borehole/Pit No.	TP20
Site Name	DAA Surveys and Investigations				Sample No.	1
Soil Description	Light brown sandy gravelly silty CLAY.				Depth	0.5
Specimen Reference	5	Specimen Depth	0.5	m	Sample Type	B
Specimen Description	Light brown sandy gravelly silty CLAY.				KeyLAB ID	Caus2018080997
Test Method	BS1377:Part4:1990:clause 5.5				Date started	17/09/2018

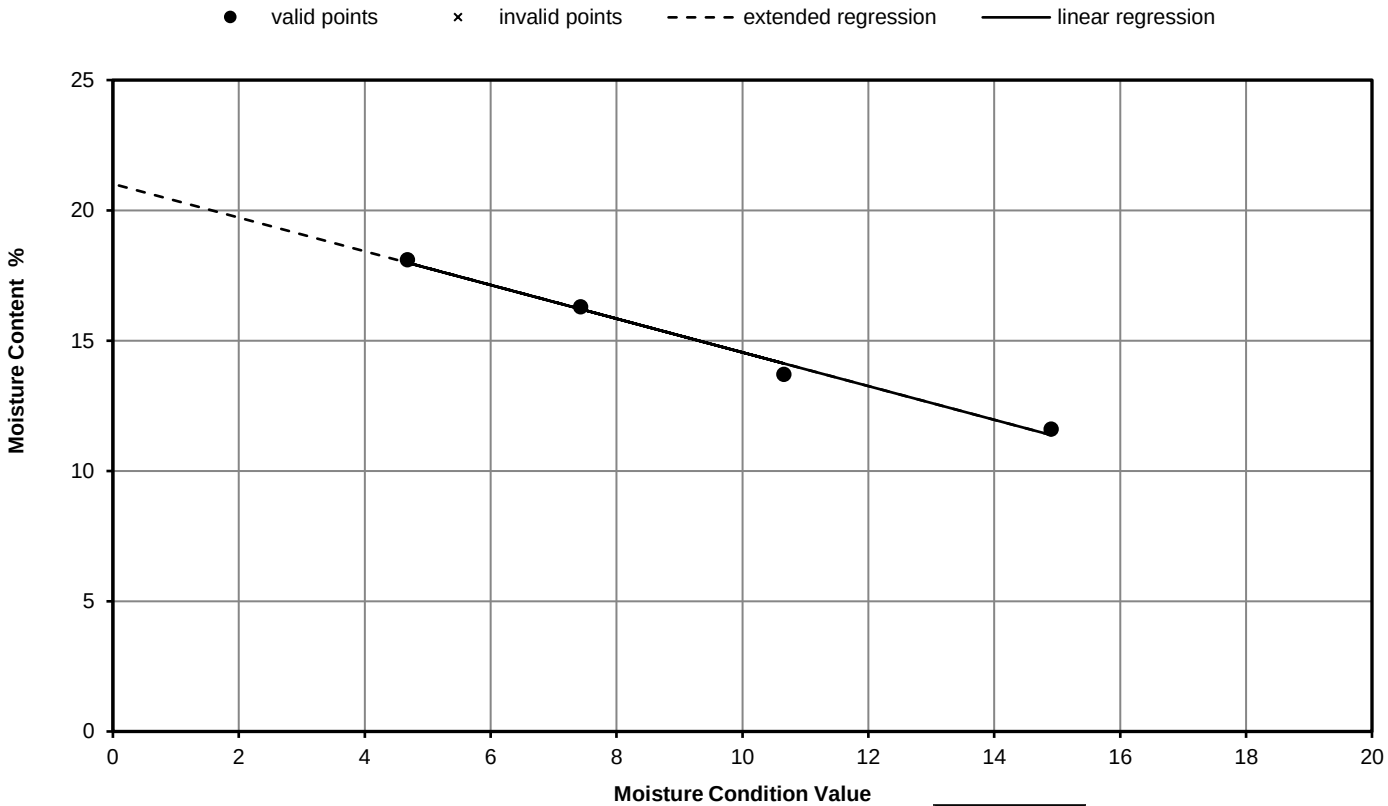
Sample preparation

Amount of material larger than 20mm sieve removed	25	%
Natural Moisture Content of sample	8.5	%
Initial Moisture Content of test sample below 20mm	11.6	%
Separate specimens tested		

General remarks

Table of results

MCV Test Number	1	2	3	4	
Moisture Content, %	11.6	18.1	13.7	16.3	
Moisture Condition Value	14.9	4.7	10.7	7.4	
MCV report	14.9	4.7	10.7	7.4	
Effective / Valid data point	YES	YES	YES	YES	
Specimen remarks					



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CAUSEWAY GEOTECH	Moisture Condition Value / Moisture Content Relationship				Job Ref	18-0577
					Borehole/Pit No.	TP25
Site Name	DAA Surveys and Investigations				Sample No.	6
Soil Description	Light brown sandy gravelly silty CLAY.				Depth	1.5
Specimen Reference	5	Specimen Depth	1.5	m	Sample Type	B
Specimen Description	Light brown sandy gravelly silty CLAY.				KeyLAB ID	Caus20180809114
Test Method	BS1377:Part4:1990:clause 5.5				Date started	17/09/2018

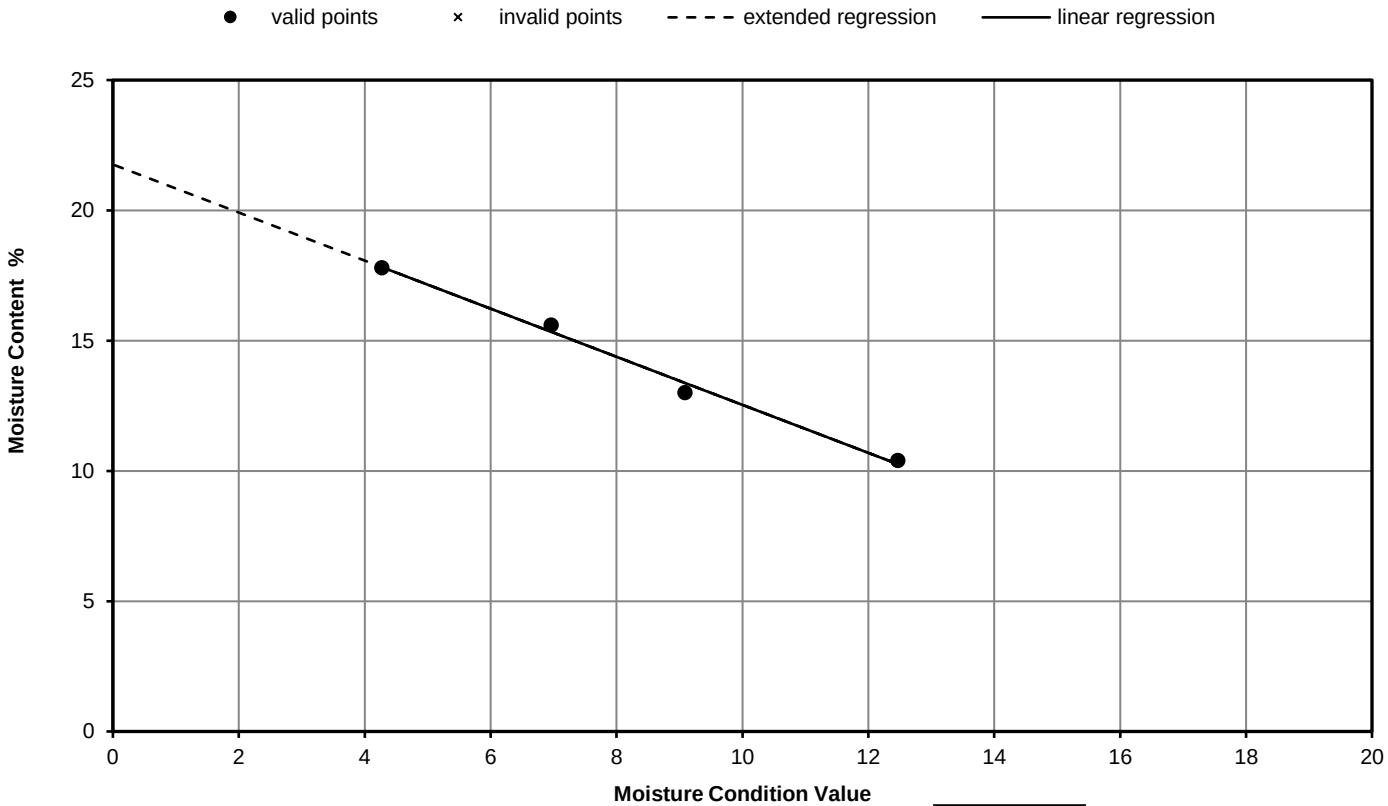
Sample preparation

Amount of material larger than 20mm sieve removed	12	%
Natural Moisture Content of sample	15.3	%
Initial Moisture Content of test sample below 20mm	17.8	%
Separate specimens tested		

General remarks

Table of results

MCV Test Number	1	2	3	4	
Moisture Content, %	17.8	15.6	13.0	10.4	
Moisture Condition Value	4.3	7.0	9.1	12.5	
MCV report	4.3	7	9.1	12.5	
Effective / Valid data point	YES	YES	YES	YES	
Specimen remarks					



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CAUSEWAY GEOTECH	Moisture Condition Value / Moisture Content Relationship				Job Ref	18-0577
					Borehole/Pit No.	TP30
Site Name	DAA Surveys and Investigations				Sample No.	4
Soil Description	Grey sandy gravelly silty CLAY.				Depth	1.5
Specimen Reference	9	Specimen Depth	1.5	m	Sample Type	B
Specimen Description	Grey sandy gravelly silty CLAY.				KeyLAB ID	Caus20180809135
Test Method	BS1377:Part4:1990:clause 5.5				Date started	17/09/2018

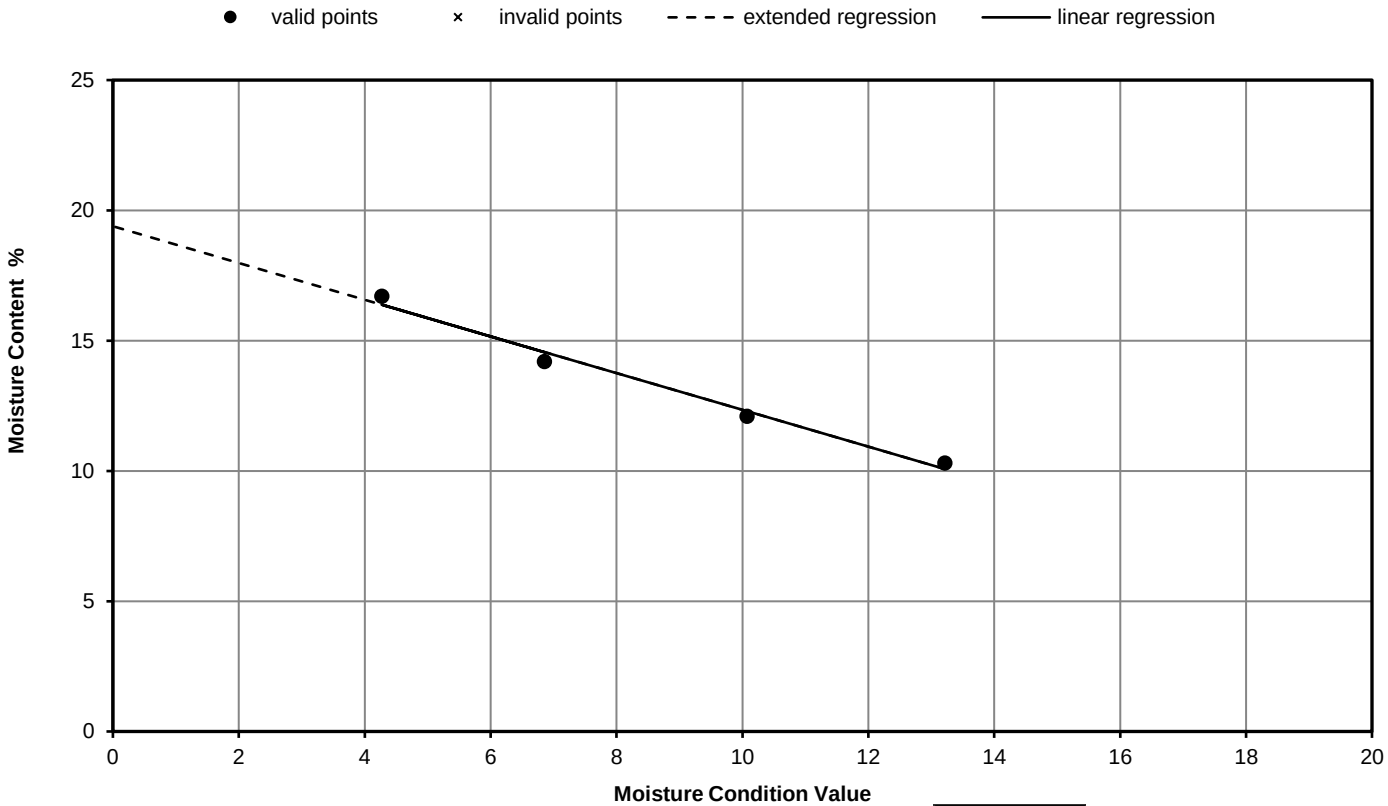
Sample preparation

Amount of material larger than 20mm sieve removed	18	%
Natural Moisture Content of sample	8.3	%
Initial Moisture Content of test sample below 20mm	10.3	%
Separate specimens tested		

General remarks

Table of results

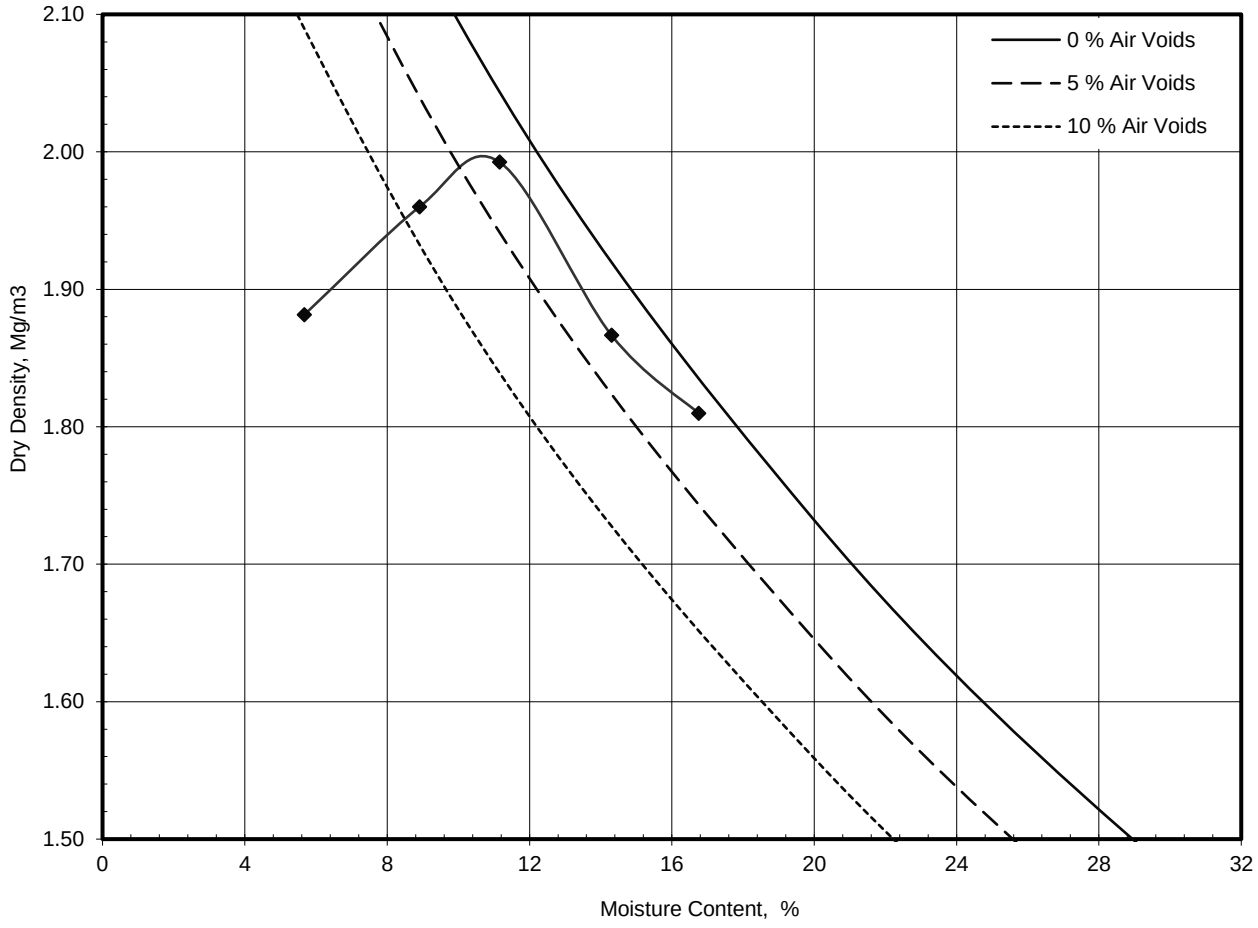
MCV Test Number	1	2	3	4	
Moisture Content, %	10.3	12.1	16.7	14.2	
Moisture Condition Value	13.2	10.1	4.3	6.9	
MCV report	13.2	10.1	4.3	6.9	
Effective / Valid data point	YES	YES	YES	YES	
Specimen remarks					



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CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship Light Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP01
Site Name	**DAA Surveys and Investigations**			Sample No	6
Soil Description	Grey sandy gravelly silty CLAY.			Depth	1.50 m
Specimen Ref.	7	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	Caus2018080922
				Compaction Test Reference/No.	

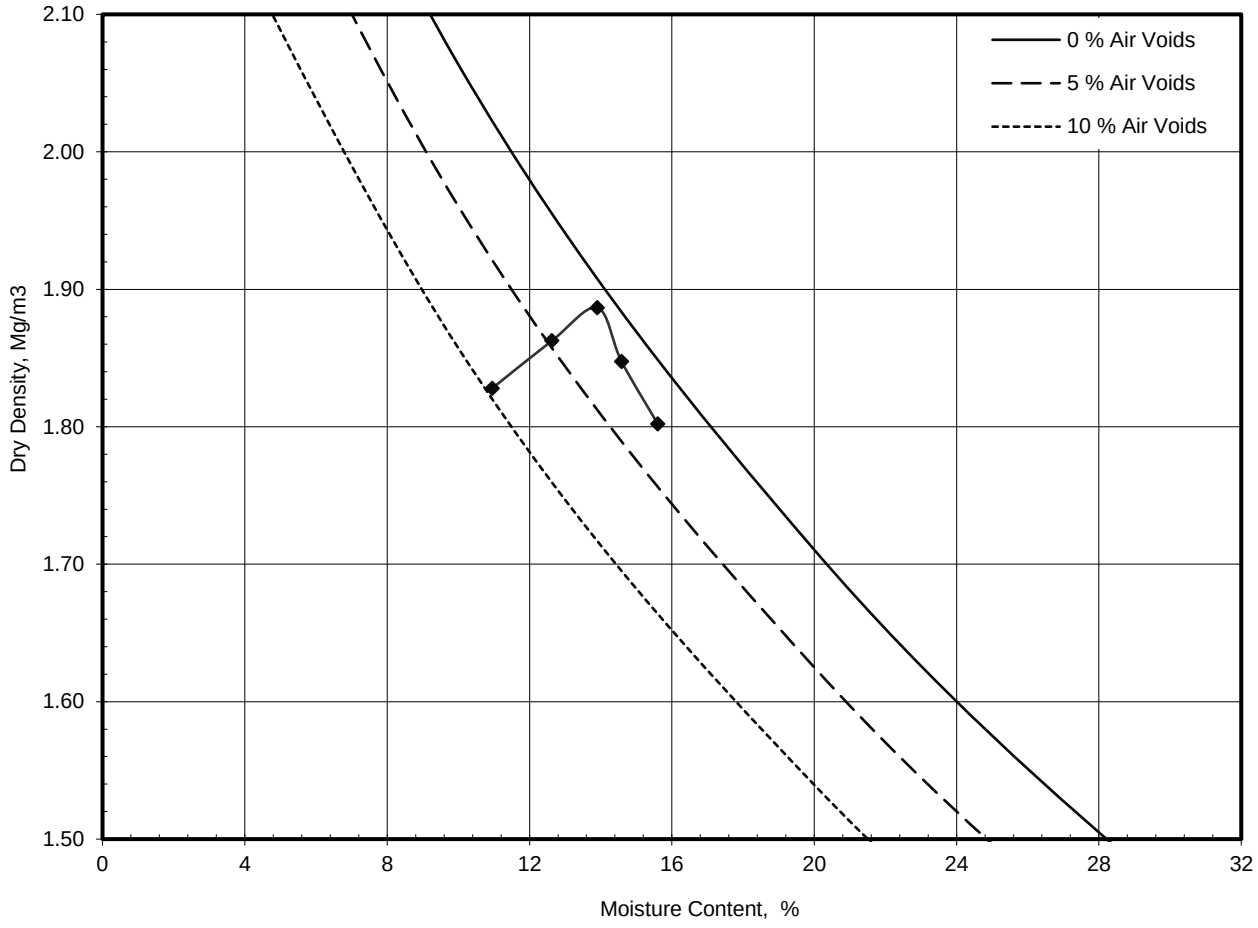


Preparation		Material used was air dried
Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	5
Material Retained on 20.0 mm Sieve	%	17
Particle Density - Assumed	Mg/m³	2.65
GRADING ZONE		4
Maximum Dry Density	Mg/m³	**1.99**

Optimum Moisture Content	%	**11**

Approved	Remarks	UKAS TESTING 10122
Stephen.Watson		

CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship Light Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP03
Site Name	**DAA Surveys and Investigations**			Sample No	2
Soil Description	Brown sandy slightly gravelly clayey SILT.			Depth	0.50 m
Specimen Ref.	12	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	Caus2018080930
				Compaction Test Reference/No.	

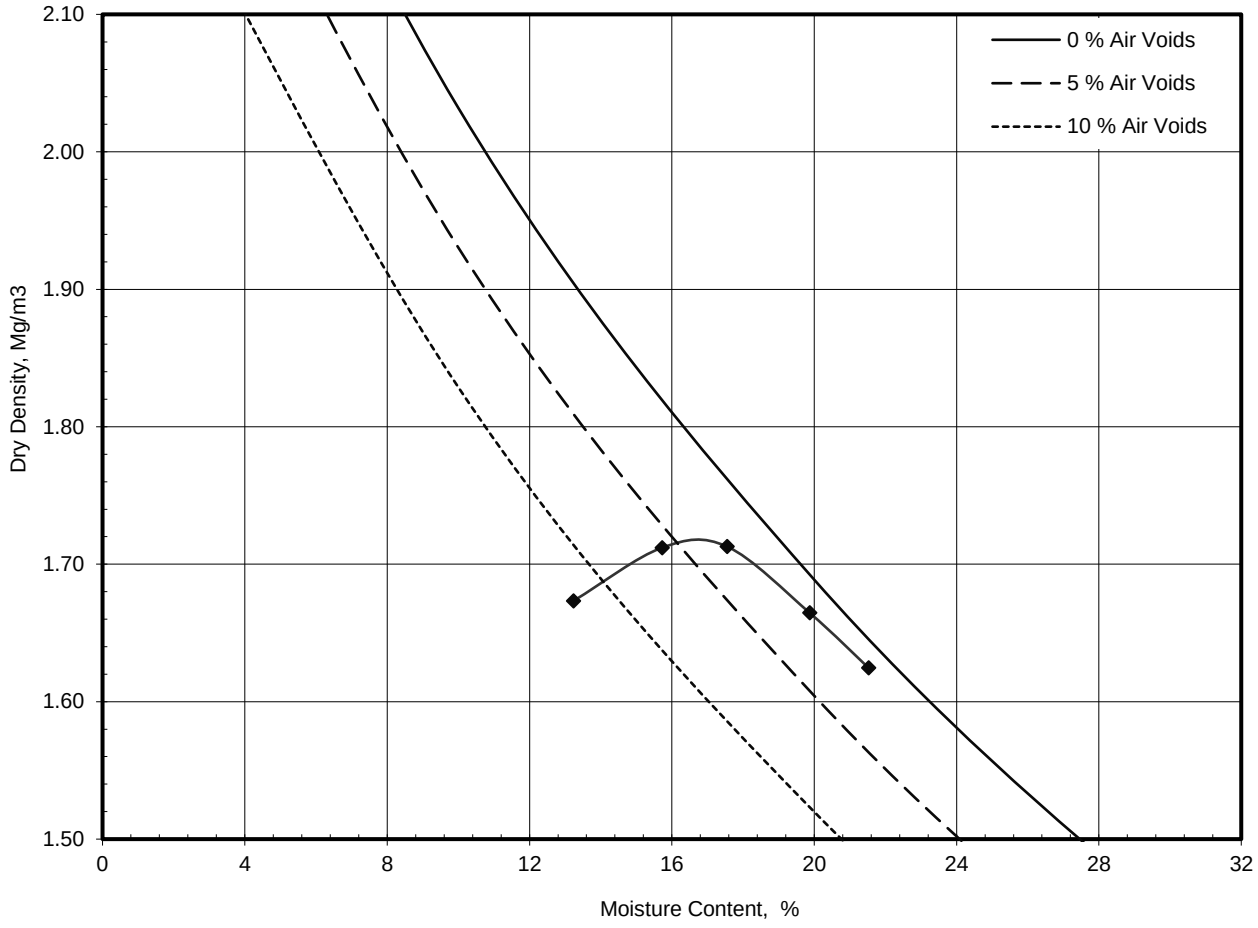


Preparation		Material used was air dried
Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	9
Material Retained on 20.0 mm Sieve	%	14
Particle Density - Assumed	Mg/m³	2.60
GRADING ZONE		5
Maximum Dry Density	Mg/m³	**1.89**

Optimum Moisture Content	%	**14**

Approved	Remarks	UKAS TESTING 10122
Stephen.Watson		

CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship Light Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP07
Site Name	**DAA Surveys and Investigations**			Sample No	1
Soil Description	Light yellowish brown sandy gravelly silty CLAY.			Depth	0.50 m
Specimen Ref.	9	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	Caus2018080943
				Compaction Test Reference/No.	

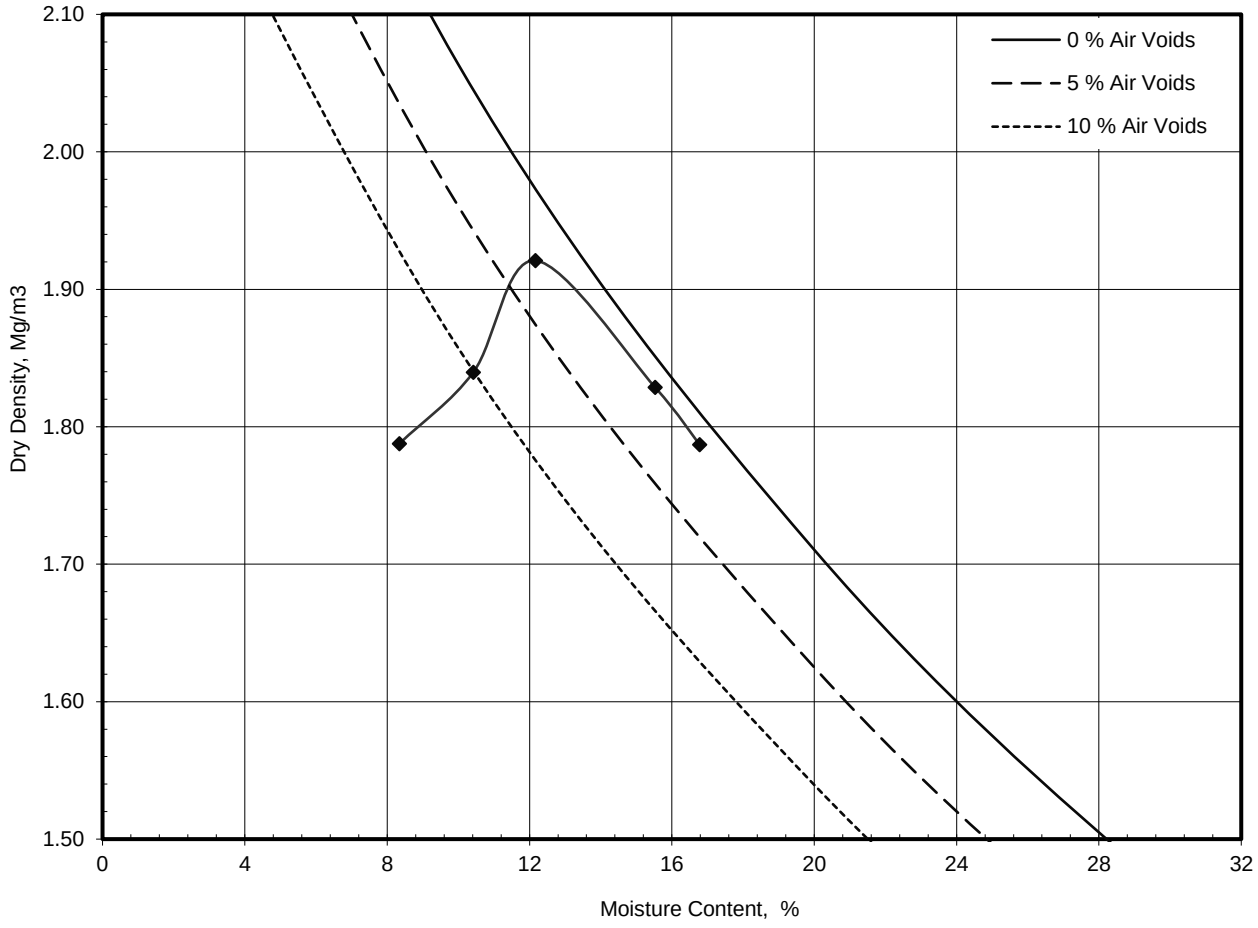


Preparation		Material used was air dried
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	5
Particle Density - Assumed	Mg/m³	2.55
GRADING ZONE		2
Maximum Dry Density	Mg/m³	**1.71**

Optimum Moisture Content	%	**18**

Approved	Remarks	UKAS TESTING 10122
Stephen.Watson		

CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship Light Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP10
Site Name	**DAA Surveys and Investigations**			Sample No	1
Soil Description	Light grey sandy gravelly silty CLAY.			Depth	0.70 m
Specimen Ref.	5	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	Caus2018080955
				Compaction Test Reference/No.	

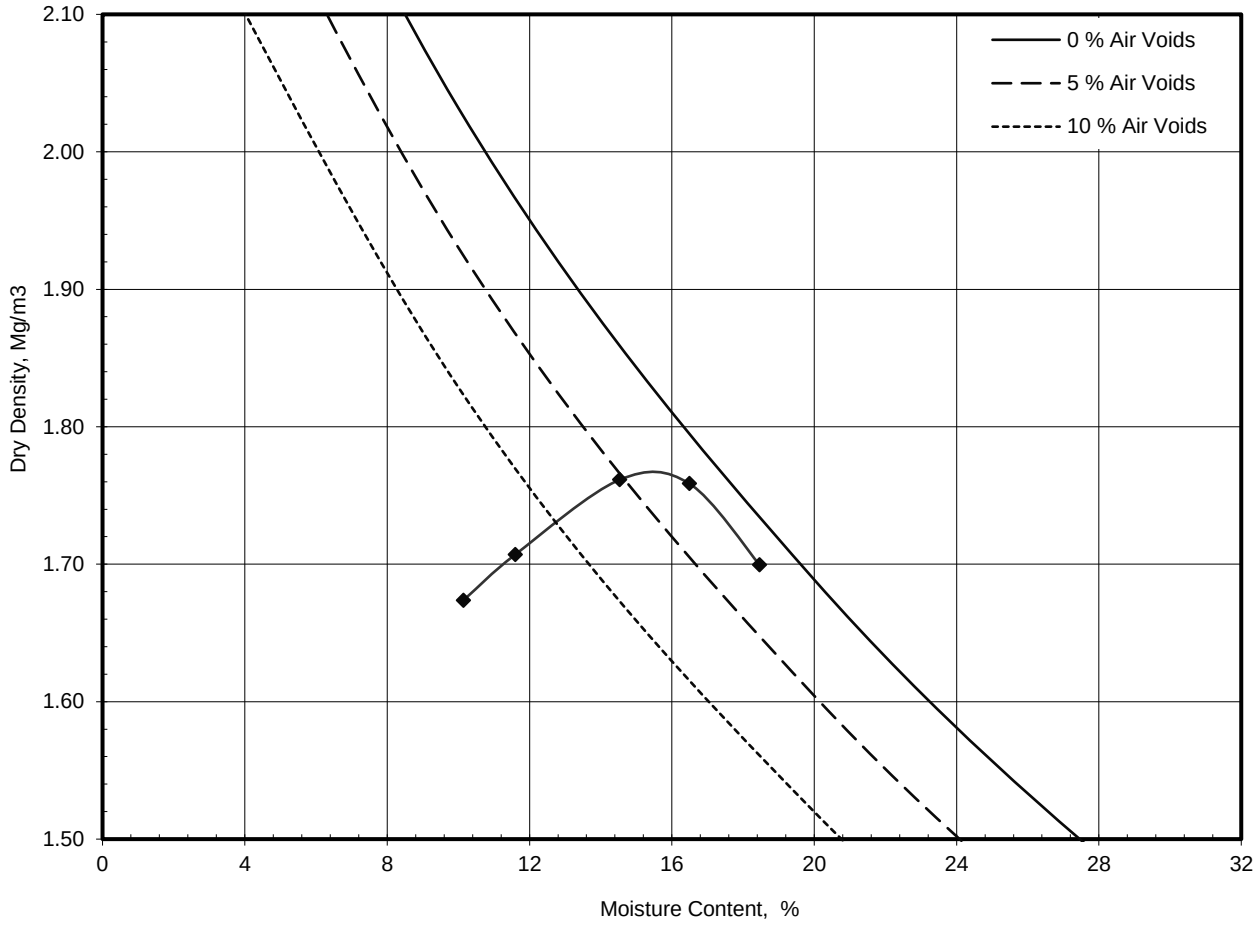


Preparation		Material used was air dried
Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	4
Material Retained on 20.0 mm Sieve	%	9
Particle Density - Assumed	Mg/m³	2.60
GRADING ZONE		4
Maximum Dry Density	Mg/m³	**1.92**

Optimum Moisture Content	%	**12**

Approved	Remarks	UKAS TESTING 10122
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CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship Light Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP14
Site Name	**DAA Surveys and Investigations**			Sample No	1
Soil Description	Brown sandy gravelly silty CLAY.			Depth	0.50 m
Specimen Ref.	11	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	Caus2018080974
				Compaction Test Reference/No.	

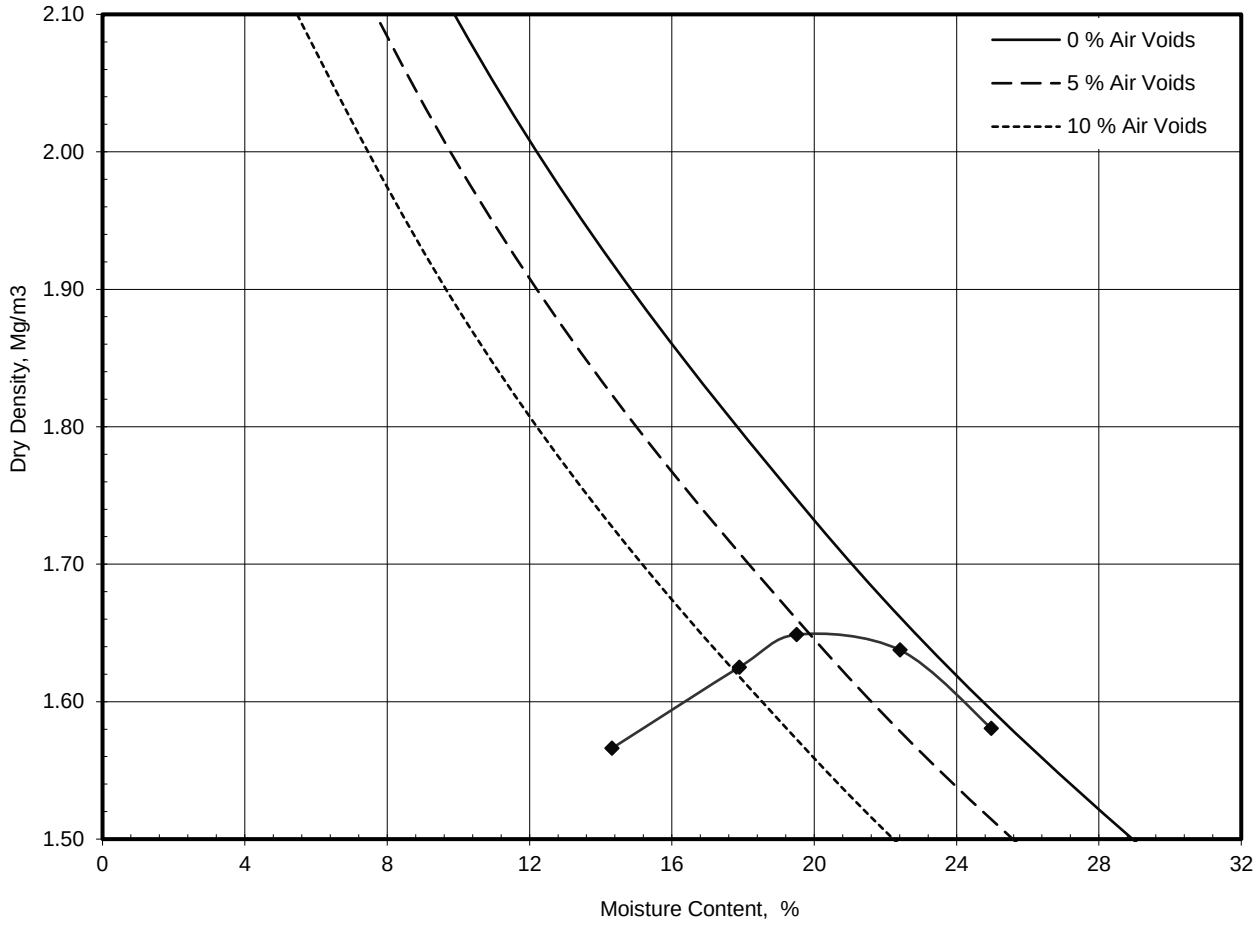


Preparation		Material used was air dried
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	2
Particle Density - Assumed	Mg/m³	2.55
GRADING ZONE		2
Maximum Dry Density	Mg/m³	**1.76**

Optimum Moisture Content	%	**15**

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CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship Light Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP15
Site Name	**DAA Surveys and Investigations**			Sample No	1
Soil Description	Yellowish brown sandy gravelly silty CLAY.			Depth	0.50 m
Specimen Ref.	5	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	Caus2018080978
				Compaction Test Reference/No.	

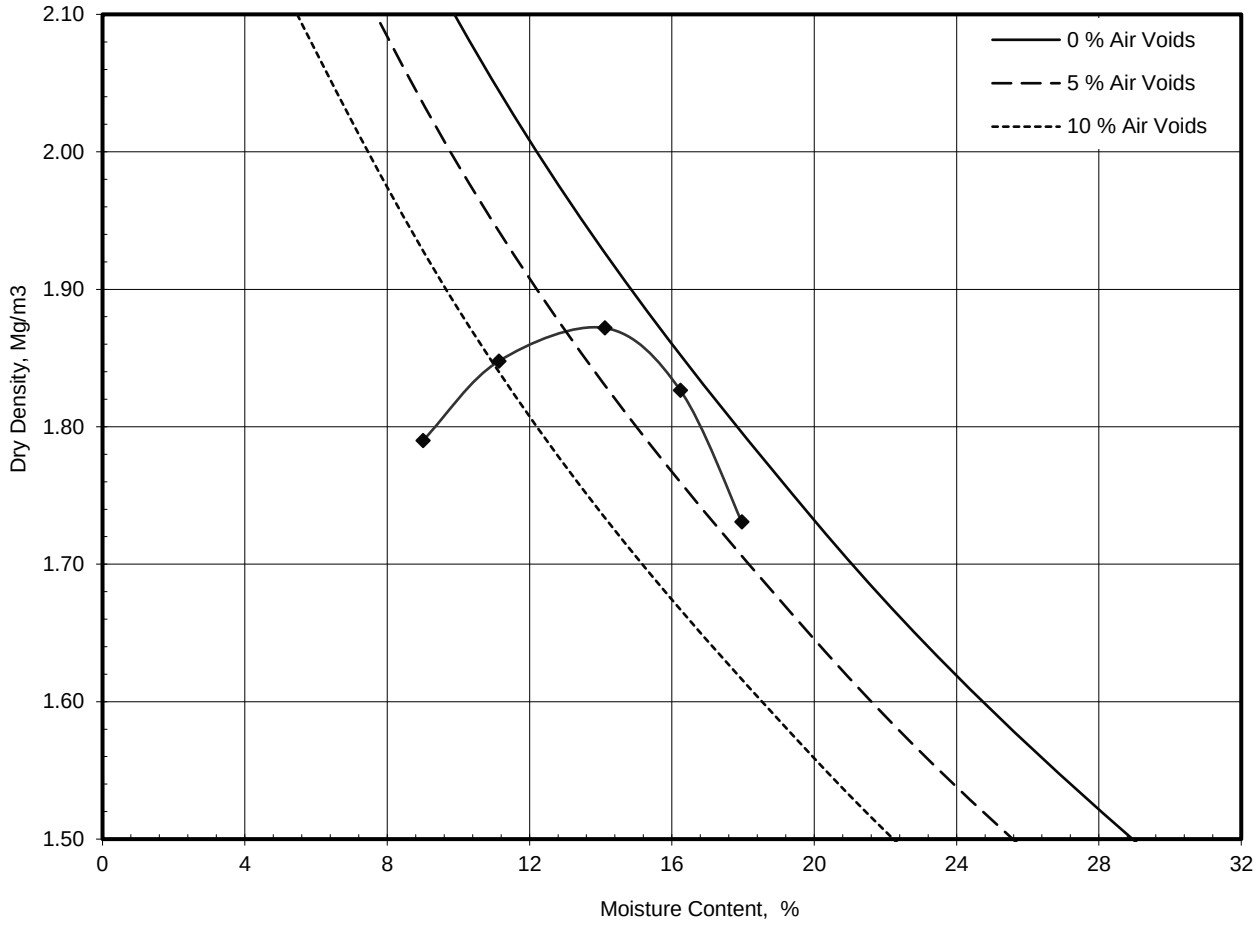


Preparation		Material used was air dried
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.65
GRADING ZONE		1
Maximum Dry Density	Mg/m³	**1.65**

Optimum Moisture Content	%	**20**

Approved	Remarks	UKAS TESTING 10122
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CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship Light Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP16
Site Name	**DAA Surveys and Investigations**			Sample No	3
Soil Description	Grey brown sandy slightly gravelly CLAY.			Depth	1.70 m
Specimen Ref.	7	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	Caus2018080984
				Compaction Test Reference/No.	

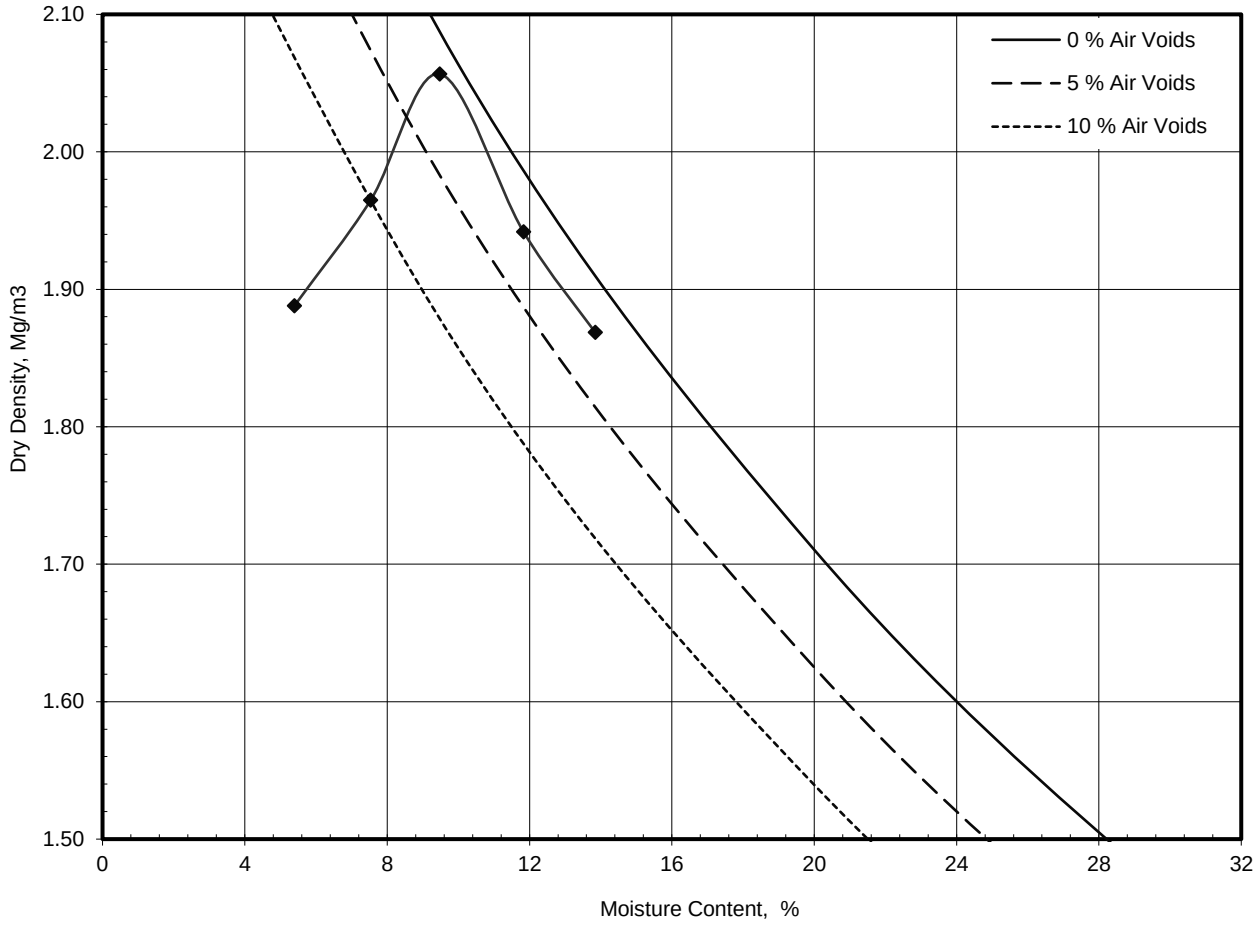


Preparation		Material used was air dried
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	1
Particle Density - Assumed	Mg/m³	2.65
GRADING ZONE		2
Maximum Dry Density	Mg/m³	**1.87**

Optimum Moisture Content	%	**14**

Approved	Remarks	UKAS TESTING 10122
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CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship Light Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP18
Site Name	**DAA Surveys and Investigations**			Sample No	3
Soil Description	Grey slightly silty gravelly fine to coarse SAND.			Depth	1.50 m
Specimen Ref.	5	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	Caus2018080990
				Compaction Test Reference/No.	

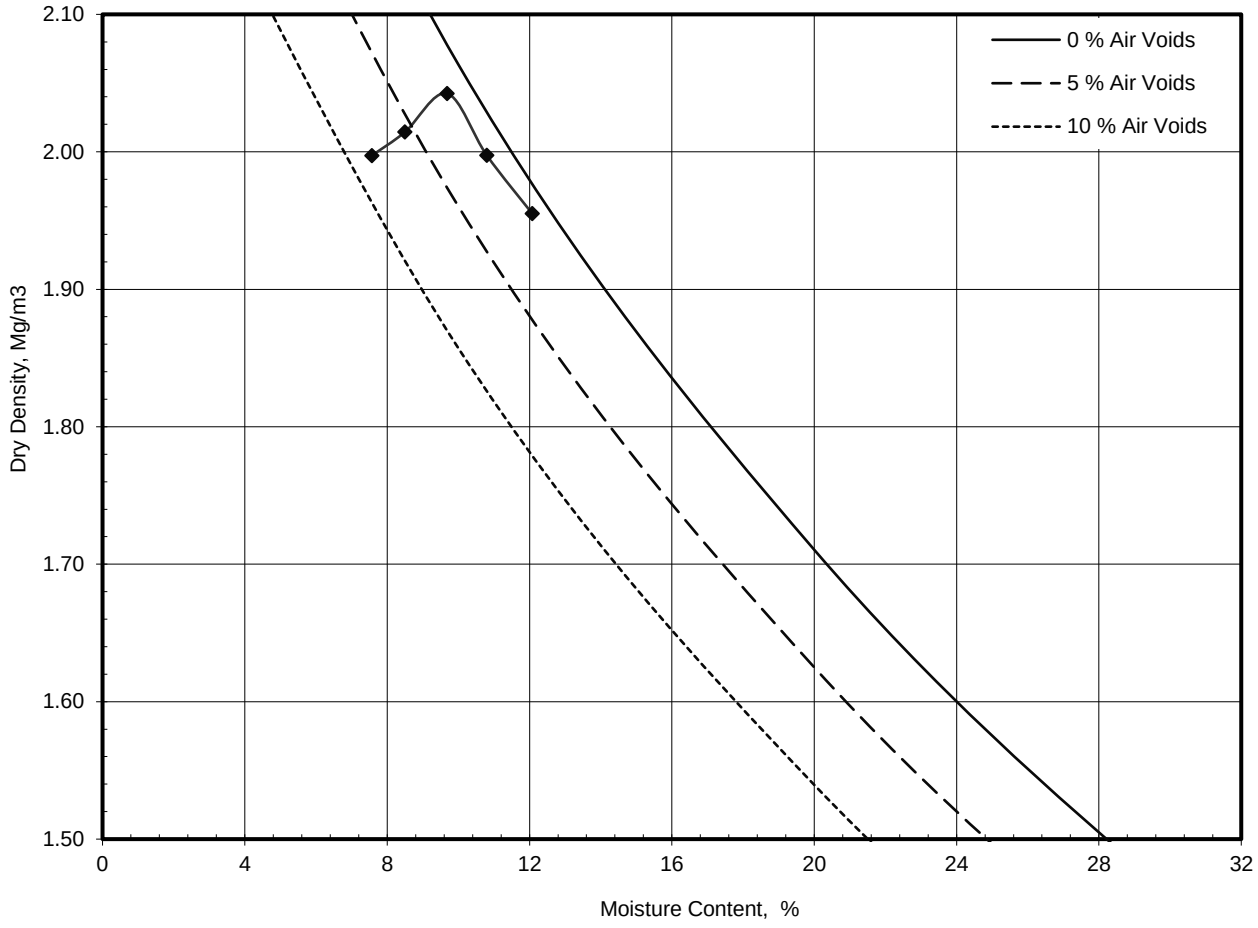


Preparation		Material used was air dried
Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	8
Material Retained on 20.0 mm Sieve	%	20
Particle Density - Assumed	Mg/m³	2.60
GRADING ZONE		5
Maximum Dry Density	Mg/m³	**2.06**

Optimum Moisture Content	%	**9.5**

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CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship Light Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP18
Site Name	**DAA Surveys and Investigations**			Sample No	6
Soil Description	Brownish grey sandy gravelly clayey SILT.			Depth	2.00 m
Specimen Ref.	5	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	Caus2018080992
				Compaction Test Reference/No.	

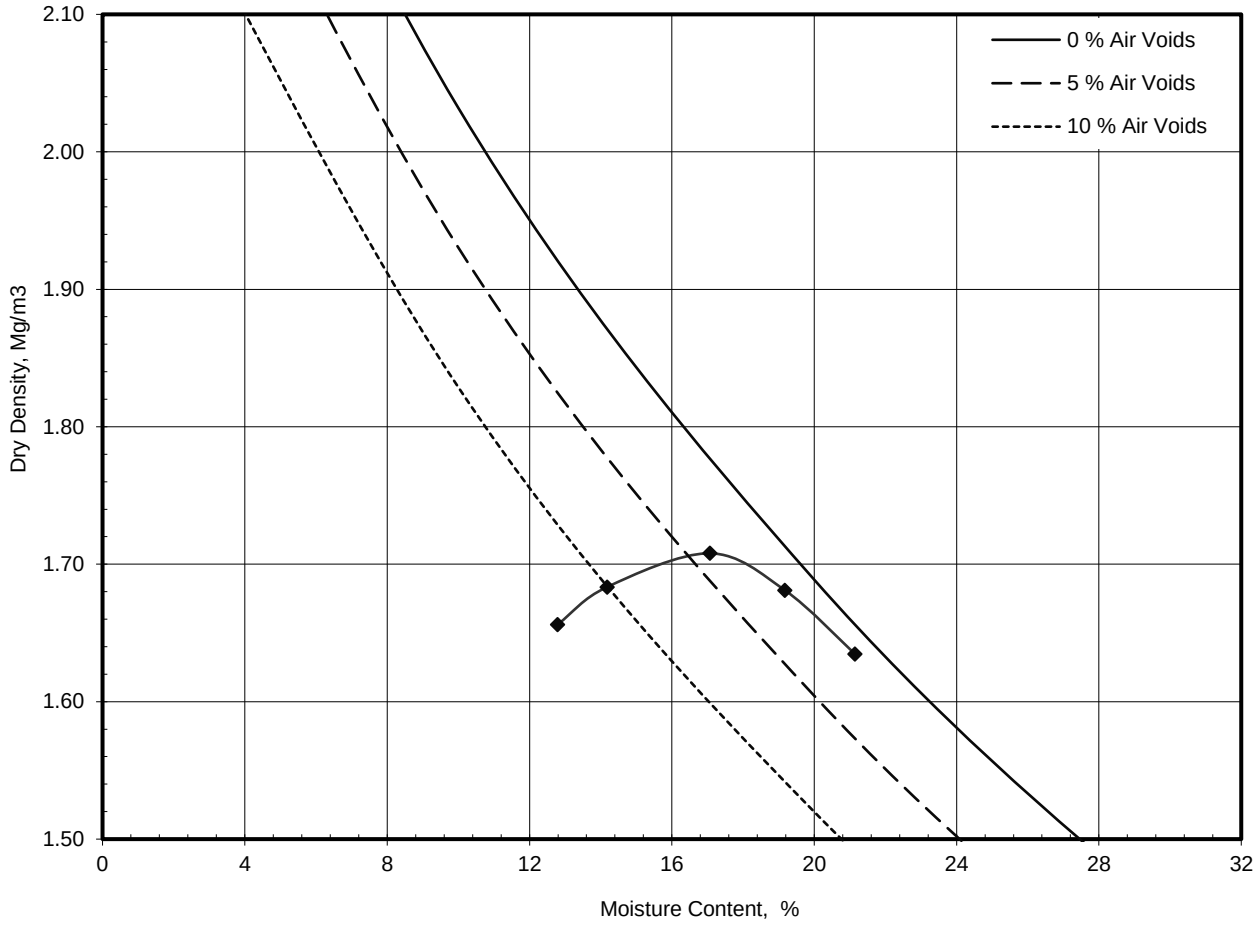


Preparation		Material used was air dried
Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	7
Material Retained on 20.0 mm Sieve	%	17
Particle Density - Assumed	Mg/m³	2.60
GRADING ZONE		5
Maximum Dry Density	Mg/m³	**2.04**

Optimum Moisture Content	%	**9.7**

Approved	Remarks	UKAS TESTING 10122
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CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship Light Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP19
Site Name	**DAA Surveys and Investigations**			Sample No	1
Soil Description	Yellowish brown sandy slightly gravelly silty CLAY.			Depth	0.50 m
Specimen Ref.	11	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	Caus2018080994
				Compaction Test Reference/No.	

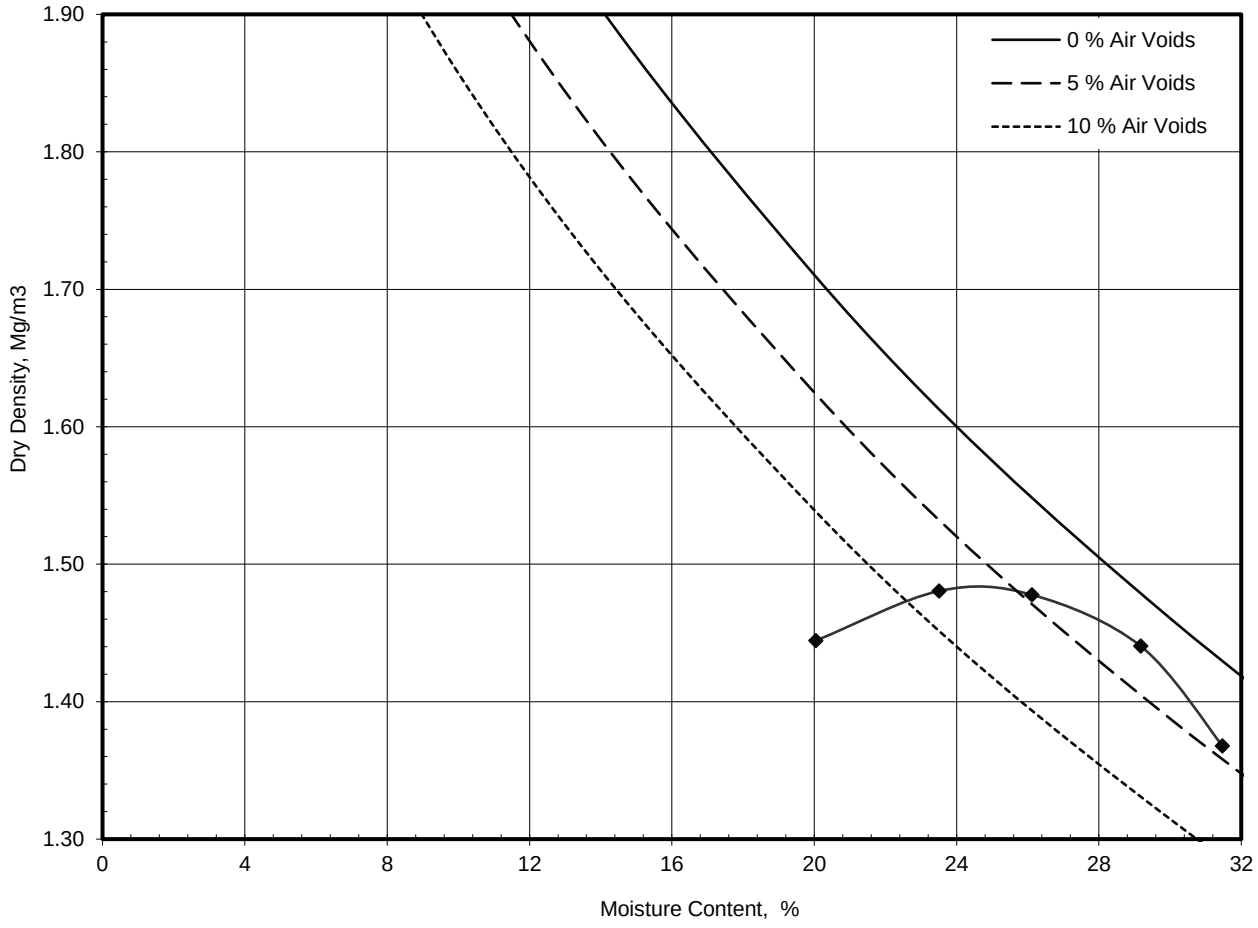


Preparation		Material used was air dried
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	2
Particle Density - Assumed	Mg/m³	2.55
GRADING ZONE		2
Maximum Dry Density	Mg/m³	**1.71**

Optimum Moisture Content	%	**17**

Approved	Remarks	UKAS TESTING 10122
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CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship Light Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP22
Site Name	**DAA Surveys and Investigations**			Sample No	2
Soil Description	Light brown sandy gravelly silty CLAY.			Depth	0.50 m
Specimen Ref.	5	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	Caus20180809100
				Compaction Test Reference/No.	

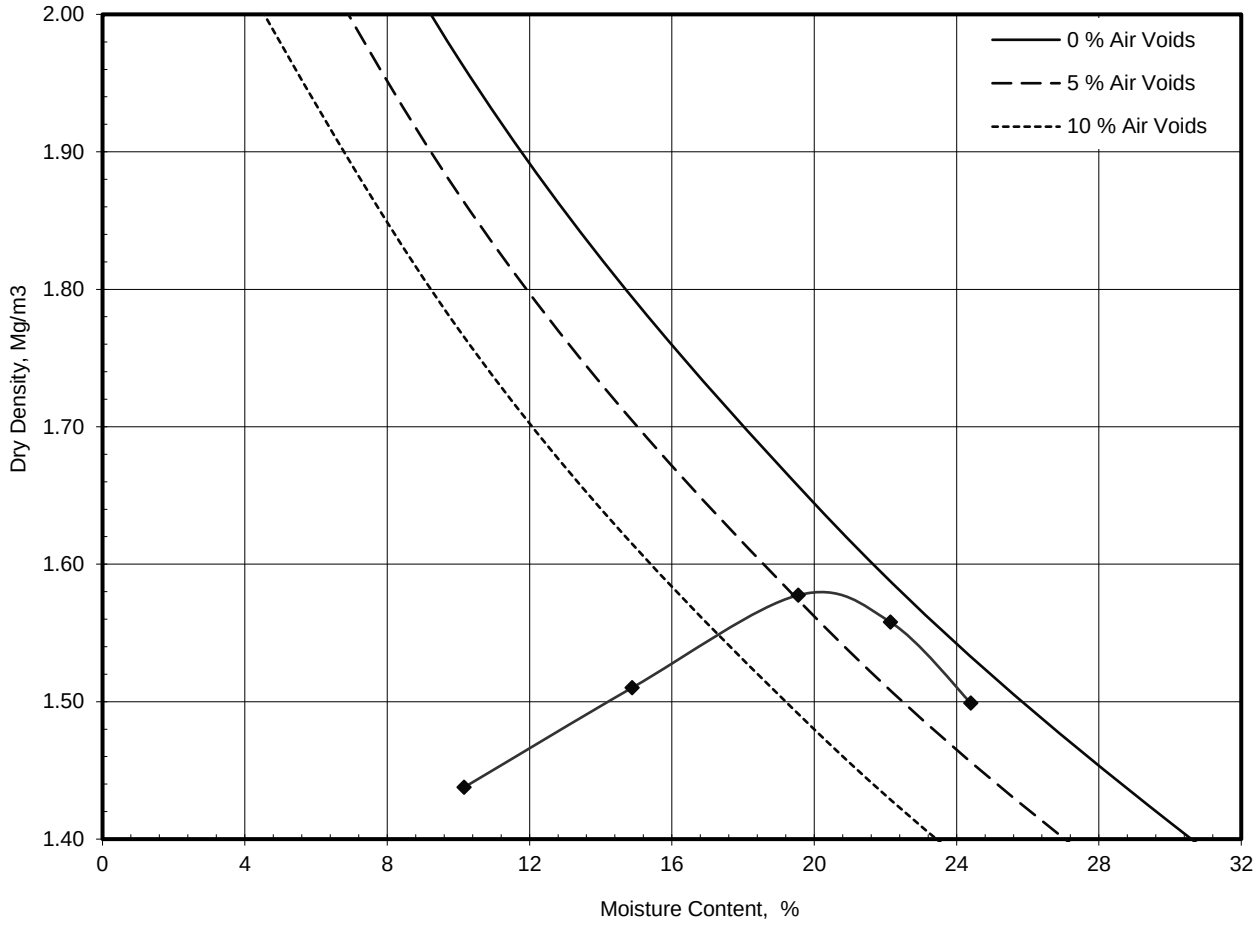


Preparation		Material used was air dried
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.60
GRADING ZONE		1
Maximum Dry Density	Mg/m³	**1.48**

Optimum Moisture Content	%	**26**

Approved	Remarks	UKAS TESTING 10122
Stephen.Watson		

CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship Light Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP23
Site Name	**DAA Surveys and Investigations**			Sample No	1
Soil Description	Light brown sandy gravelly silty CLAY.			Depth	0.50 m
Specimen Ref.	5	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	Caus20180809103
				Compaction Test Reference/No.	

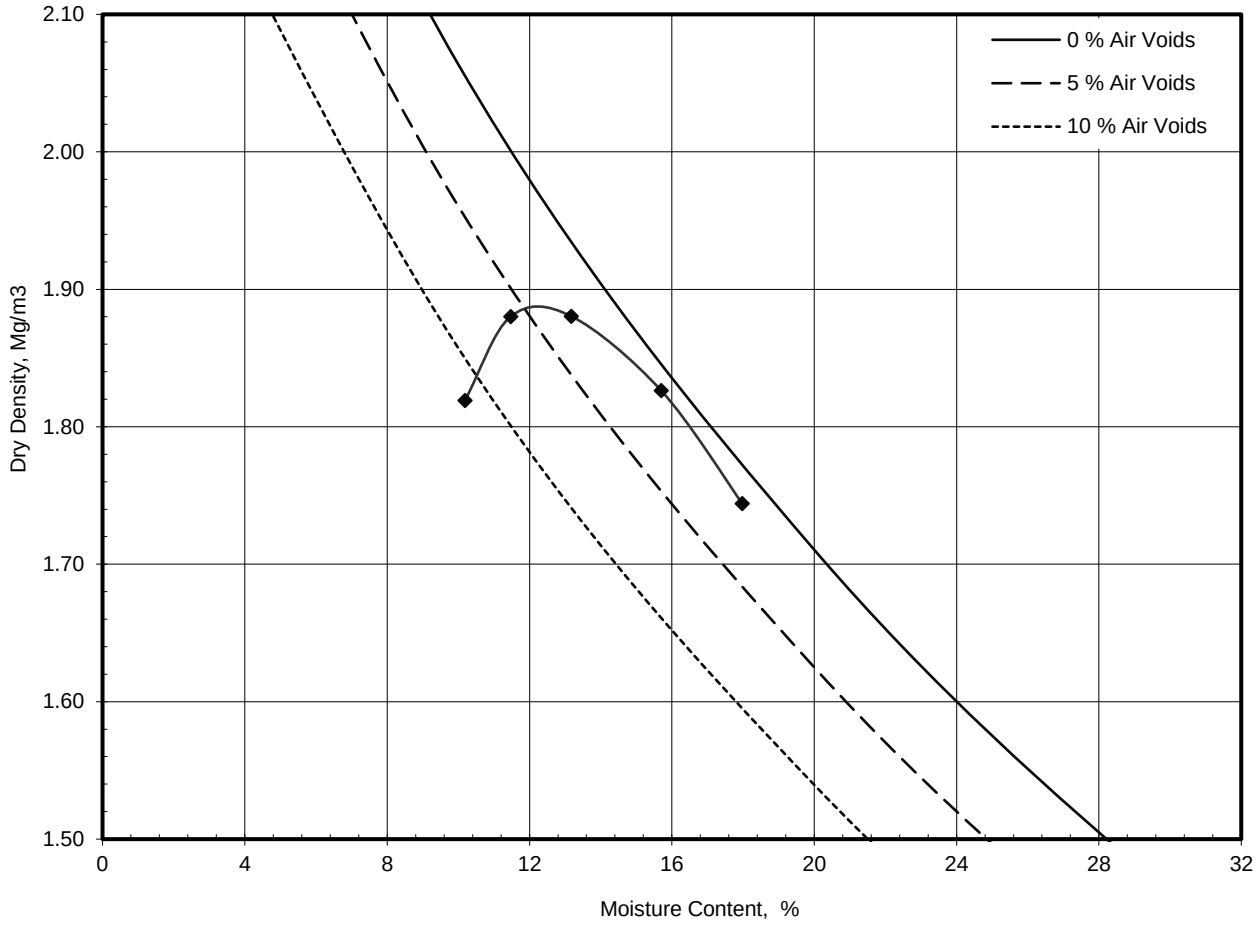


Preparation		Material used was air dried
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	1
Particle Density - Assumed	Mg/m³	2.45
GRADING ZONE		2
Maximum Dry Density	Mg/m³	**1.58**

Optimum Moisture Content	%	**20**

Approved	Remarks	UKAS TESTING 10122
Stephen.Watson		

CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship Light Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP24
Site Name	**DAA Surveys and Investigations**			Sample No	4
Soil Description	Brown sandy gravelly silty CLAY.			Depth	1.50 m
Specimen Ref.	5	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	Caus20180809109
				Compaction Test Reference/No.	

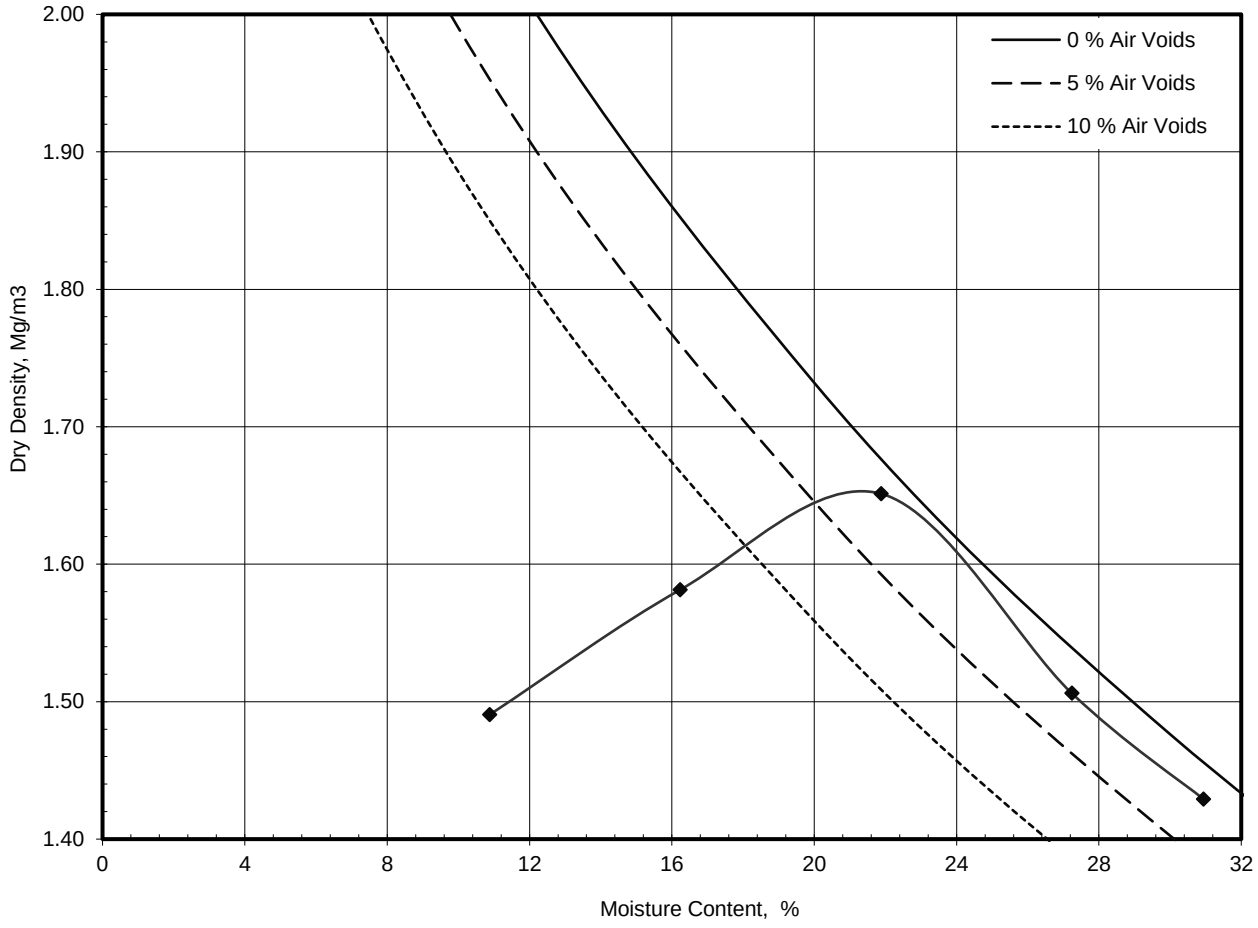


Preparation		Material used was air dried
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	3
Particle Density - Assumed	Mg/m³	2.60
GRADING ZONE		2
Maximum Dry Density	Mg/m³	**1.88**

Optimum Moisture Content	%	**13**

Approved	Remarks	UKAS TESTING 10122
Stephen.Watson		

CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship Light Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP28
Site Name	**DAA Surveys and Investigations**			Sample No	1
Soil Description	Orangish brown sandy gravelly CLAY.			Depth	0.50 m
Specimen Ref.	3	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	Caus20180809122
				Compaction Test Reference/No.	

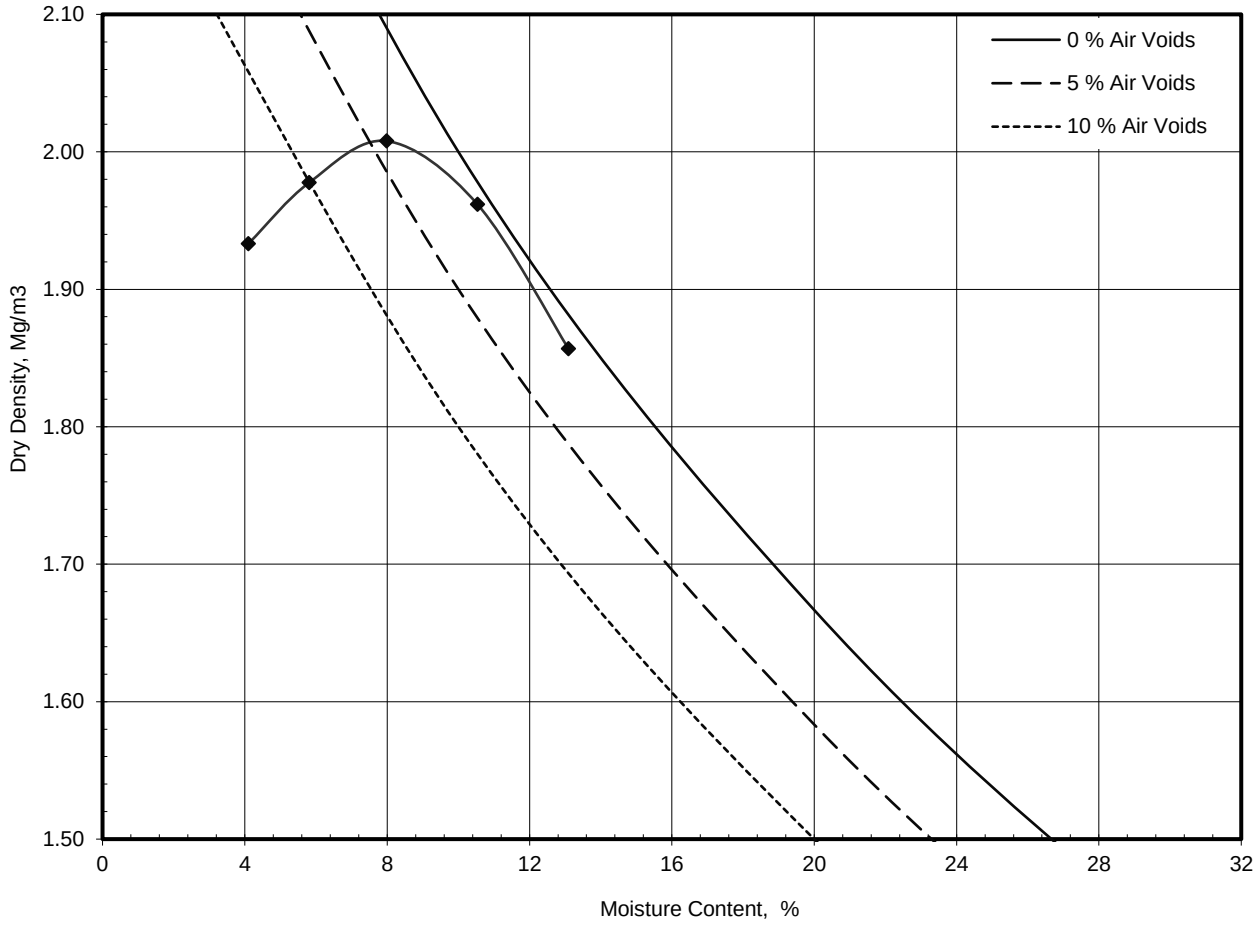


Preparation		Material used was air dried
Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	4
Material Retained on 20.0 mm Sieve	%	4
Particle Density - Assumed	Mg/m³	2.65
GRADING ZONE		4
Maximum Dry Density	Mg/m³	**1.65**

Optimum Moisture Content	%	**22**

Approved	Remarks	UKAS TESTING 10122
Stephen.Watson		

CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship Light Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP28
Site Name	**DAA Surveys and Investigations**			Sample No	7
Soil Description	Grey sandy gravelly silty CLAY.			Depth	2.00 m
Specimen Ref.	5	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	Caus20180809126
				Compaction Test Reference/No.	

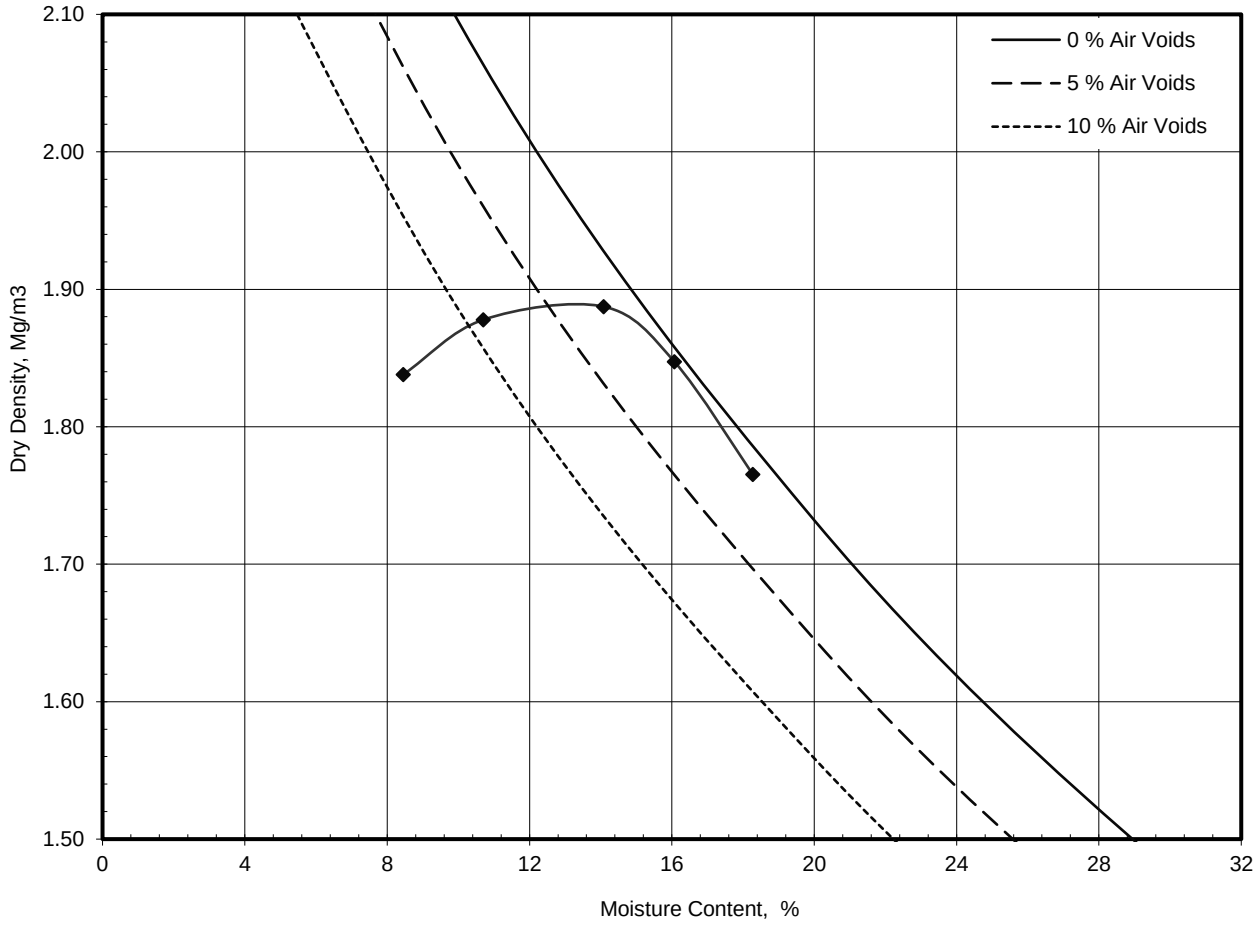


Preparation		Material used was air dried
Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	4
Material Retained on 20.0 mm Sieve	%	17
Particle Density - Assumed	Mg/m³	2.50
GRADING ZONE		4
Maximum Dry Density	Mg/m³	**2.01**

Optimum Moisture Content	%	**8**

Approved	Remarks	UKAS TESTING 10122
Stephen.Watson		

CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship Light Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP29
Site Name	**DAA Surveys and Investigations**			Sample No	4
Soil Description	Light grey slightly sandy gravelly silty CLAY.			Depth	1.10 m
Specimen Ref.	7	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	Caus20180809130
				Compaction Test Reference/No.	



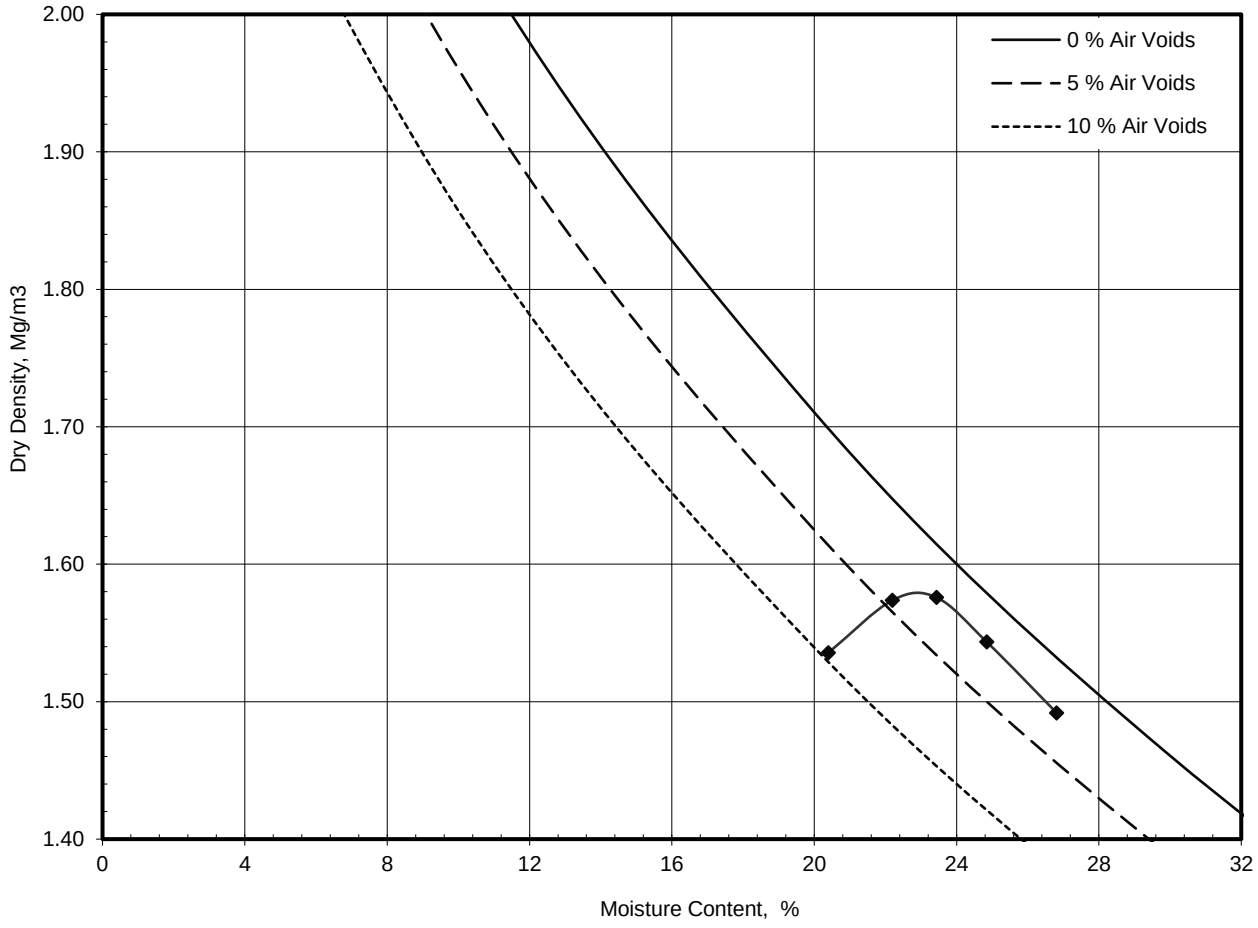
Preparation		Material used was air dried
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	10
Material Retained on 20.0 mm Sieve	%	24
Particle Density - Assumed	Mg/m³	2.65
GRADING ZONE		X
Maximum Dry Density	Mg/m³	**1.89**

Optimum Moisture Content	%	**14**

Approved	Remarks
Stephen.Watson	GRADING ZONE (X) - Gravel removed and test carried out non-standard

UKAS TESTING
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CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship Light Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP30
Site Name	**DAA Surveys and Investigations**			Sample No	1
Soil Description	Orangish brown slightly sandy slightly gravelly CLAY.			Depth	0.50 m
Specimen Ref.	5	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	Caus20180809134
				Compaction Test Reference/No.	

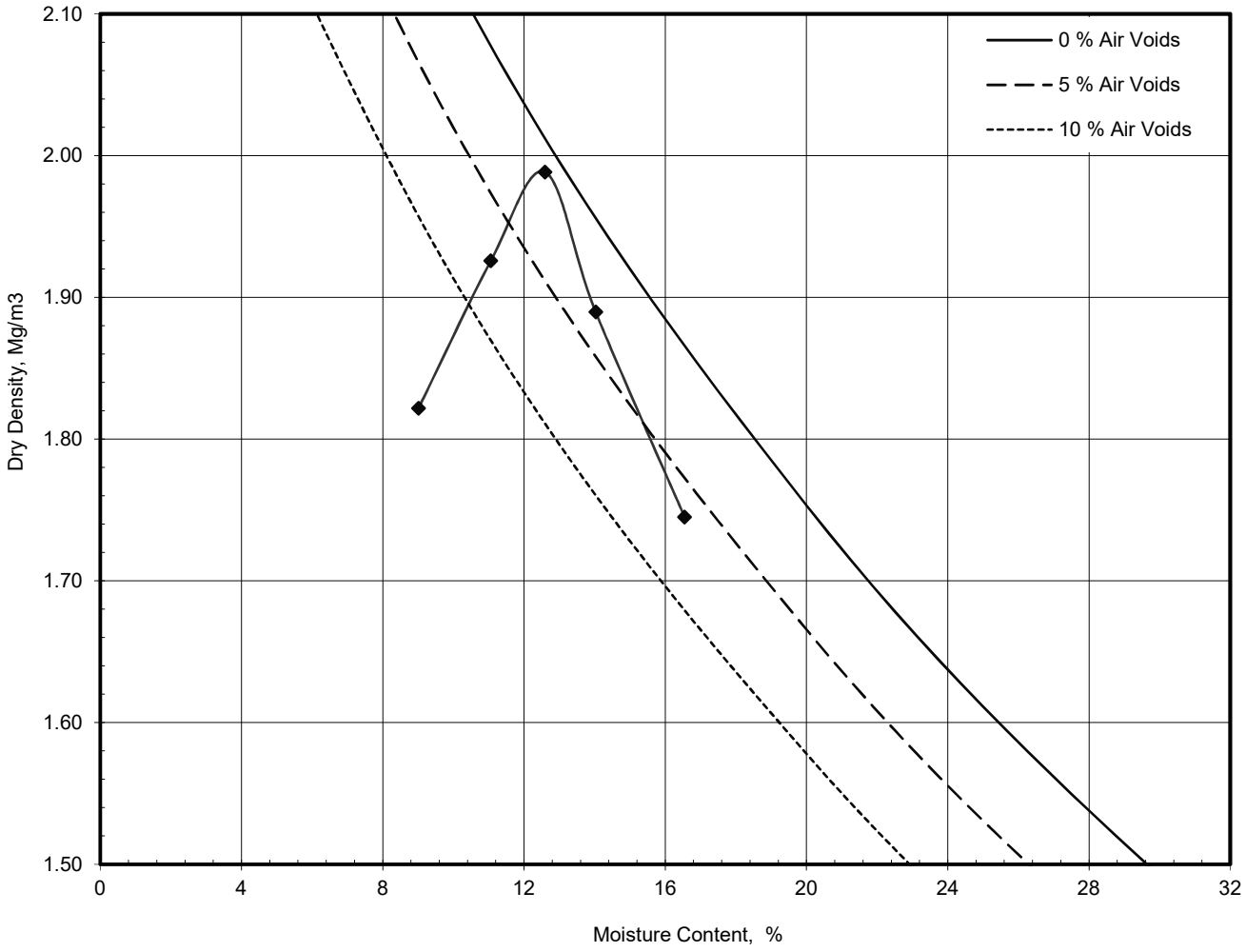


Preparation		Material used was air dried
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	2
Particle Density - Assumed	Mg/m³	2.60
GRADING ZONE		2
Maximum Dry Density	Mg/m³	**1.58**

Optimum Moisture Content	%	**23**

Approved	Remarks	UKAS TESTING 10122
Stephen.Watson		

CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship** **Heavy Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP05
Site Name	**DAA Surveys and Investigations**			Sample No	4
Soil Description	Grey sandy gravelly silty CLAY.			Depth	1.50 m
Specimen Ref.	9	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer			Keylab ID	Caus2018080937
				Compaction Test Reference/No.	



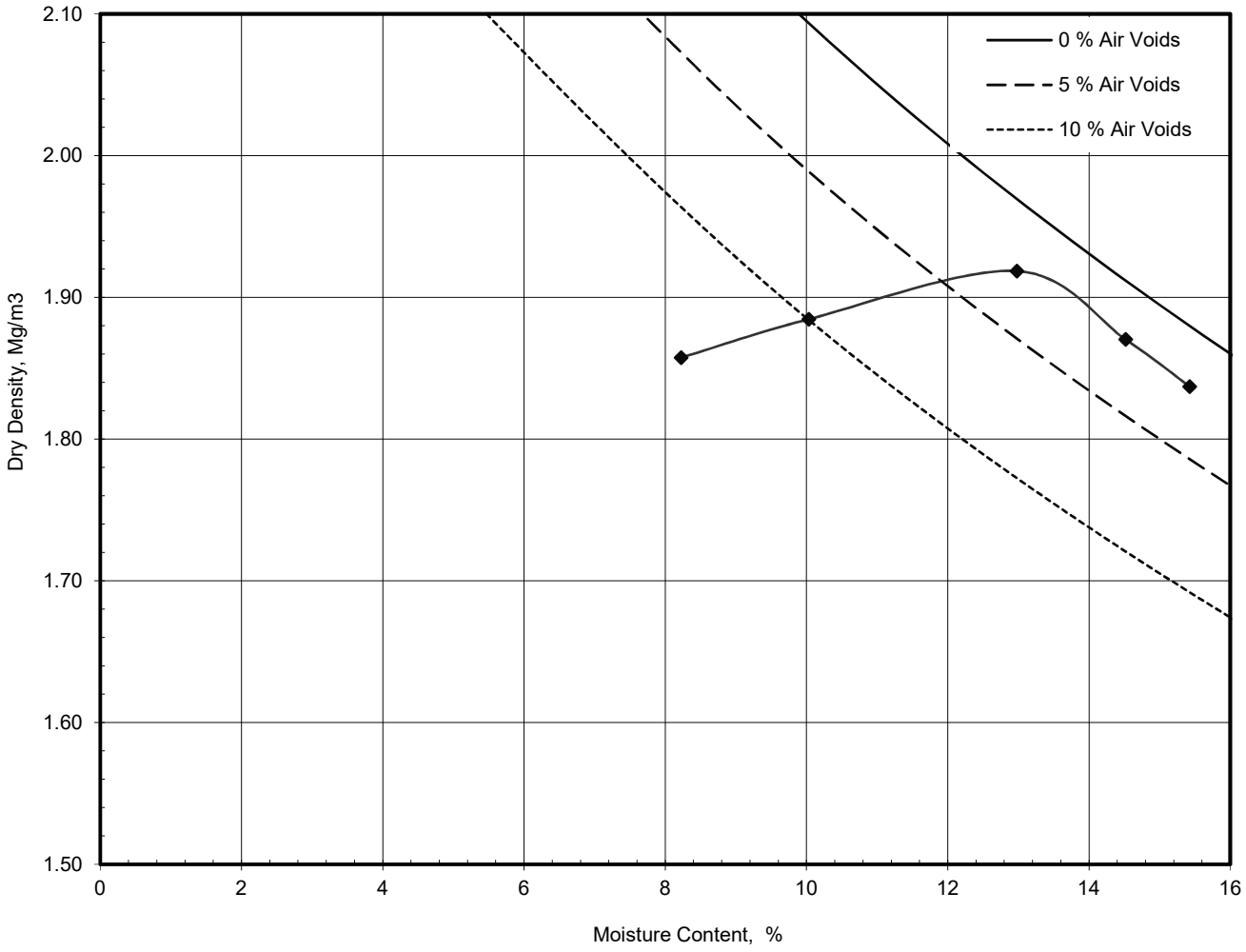
Preparation		Material used was air dried
Mould Type		One Litre
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	4
Particle Density - Assumed	Mg/m³	2.70

Maximum Dry Density	Mg/m³	**1.99**

Optimum Moisture Content	%	**13**

Approved	Remarks	UKAS TESTING 10122
Stephen.Watson		

CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship** **Heavy Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP06
Site Name	**DAA Surveys and Investigations**			Sample No	4
Soil Description	Yellowish brown sandy gravelly SILT/CLAY.			Depth	1.50 m
Specimen Ref.	11	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer			Keylab ID	Caus2018080941
				Compaction Test Reference/No.	



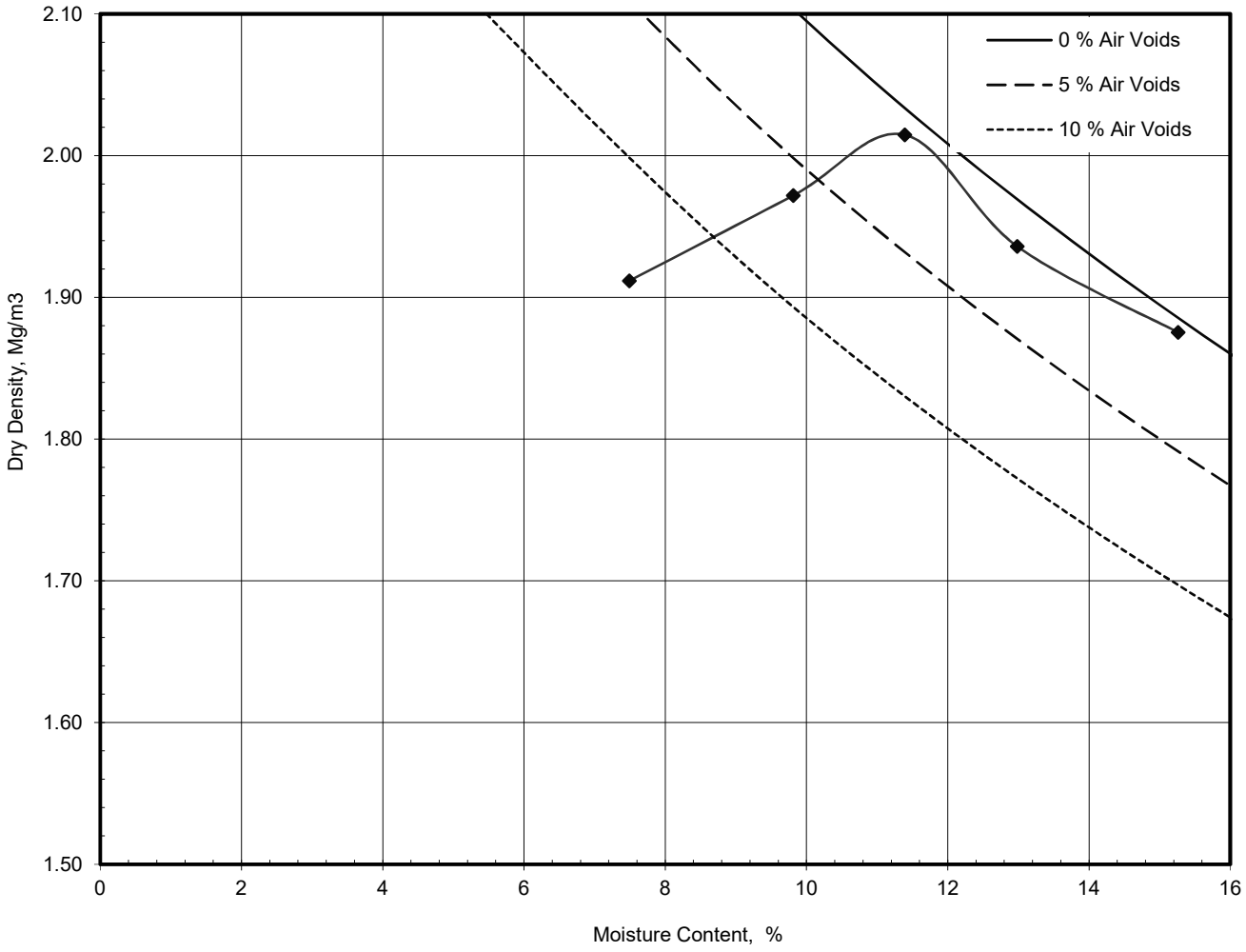
Preparation		Material used was air dried
Mould Type		
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	4
Material Retained on 20.0 mm Sieve	%	11
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.92**

Optimum Moisture Content	%	**13**

Approved	Remarks	UKAS TESTING
Stephen.Watson		**10122**

CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship** **Heavy Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP08
Site Name	**DAA Surveys and Investigations**			Sample No	4
Soil Description	Grey sandy gravelly clayey SILT.			Depth	1.50 m
Specimen Ref.	5	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.6, 4.5kg rammer			Keylab ID	Caus2018080951
				Compaction Test Reference/No.	



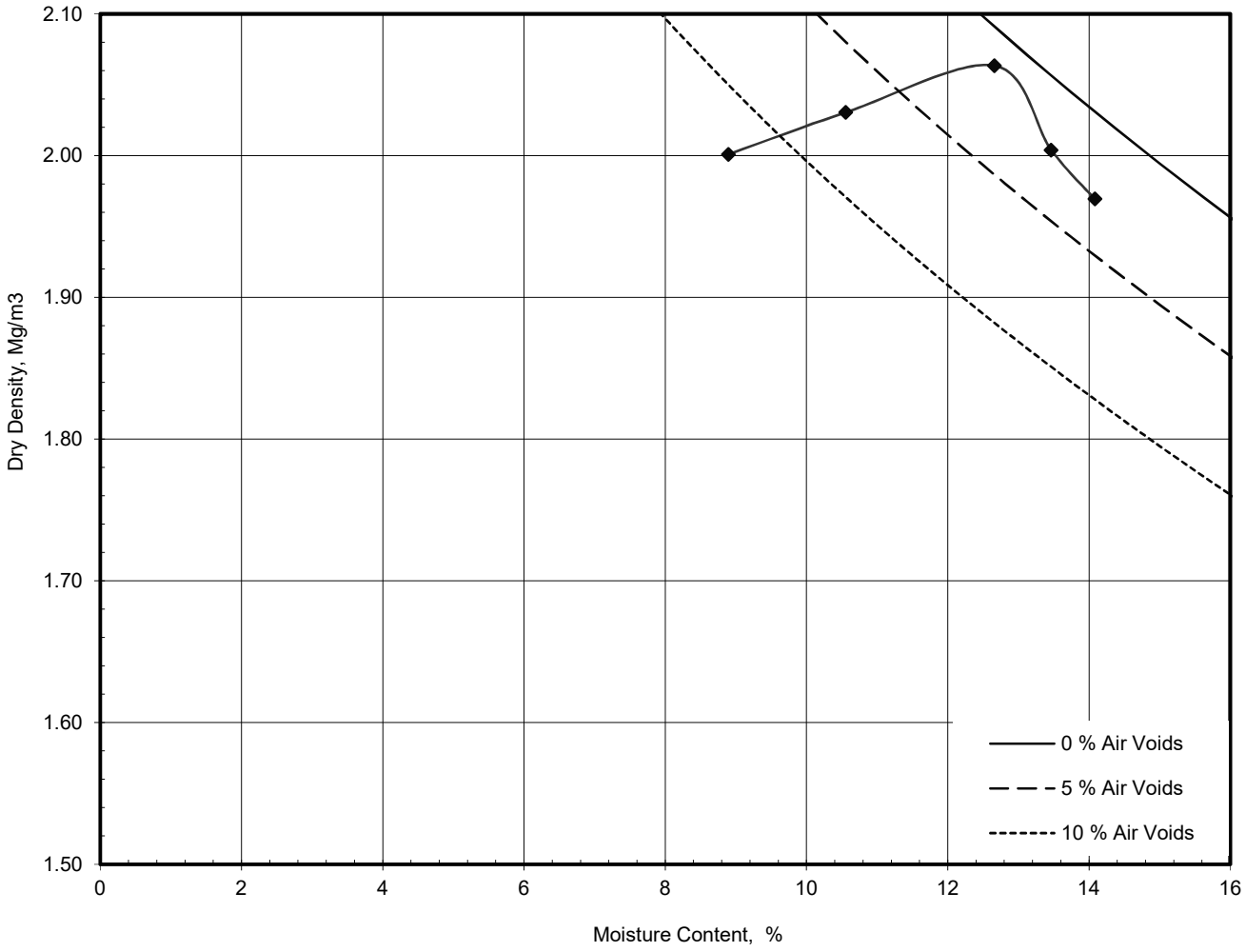
Preparation		Material used was air dried
Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	6
Material Retained on 20.0 mm Sieve	%	12
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.01**

Optimum Moisture Content	%	**11**

Approved	Remarks	UKAS TESTING 10122
Stephen.Watson		

CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship** **Heavy Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP12
Site Name	**DAA Surveys and Investigations**			Sample No	3
Soil Description	Grey brown sandy slightly gravelly CLAY.			Depth	1.30 m
Specimen Ref.	6	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer			Keylab ID	Caus2018080966
				Compaction Test Reference/No.	



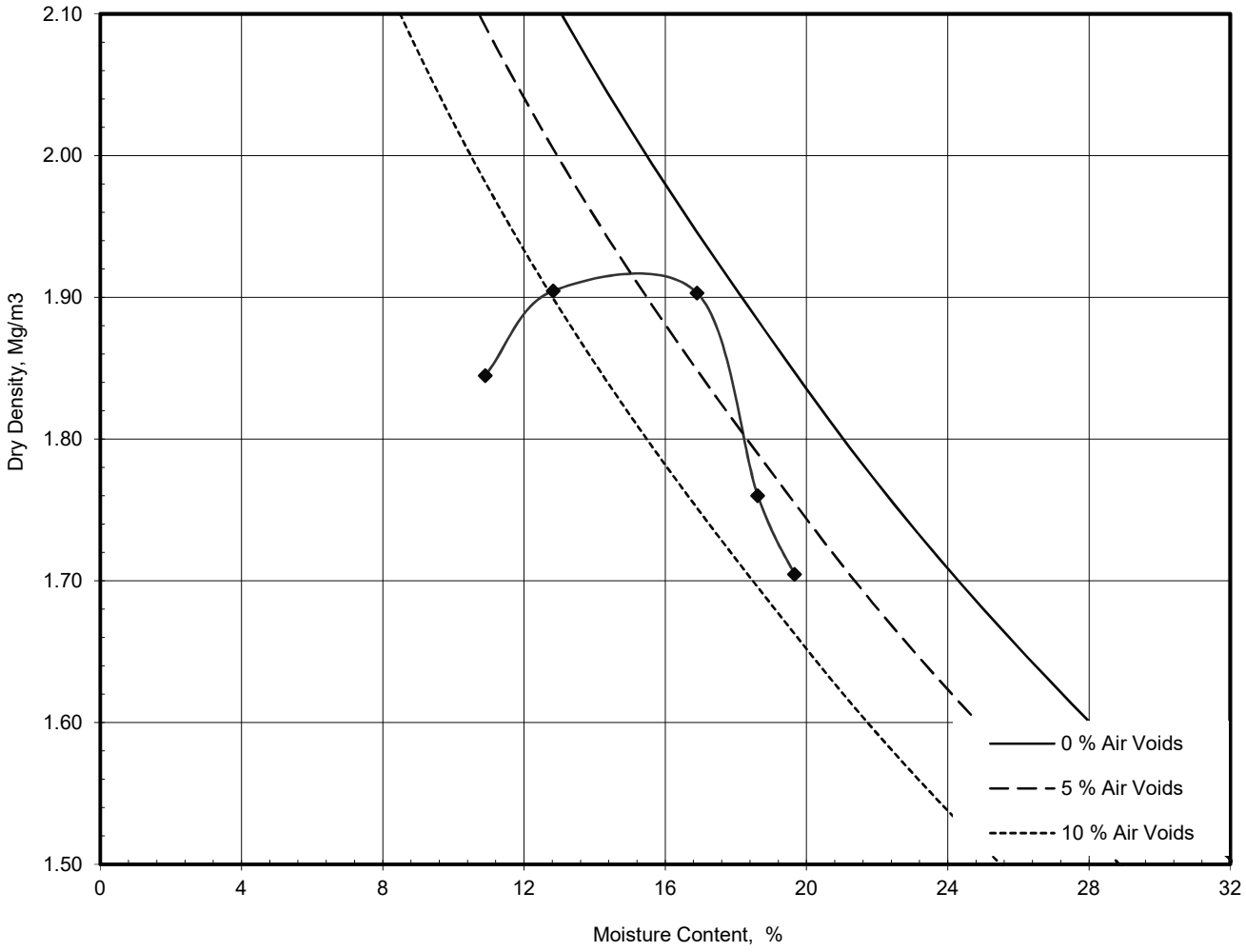
Preparation		Material used was air dried
Mould Type		One Litre
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	3
Particle Density - Assumed	Mg/m³	2.85

Maximum Dry Density	Mg/m³	**2.06**

Optimum Moisture Content	%	**13**

Approved	Remarks	UKAS TESTING 10122
Stephen.Watson		

CAUSEWAY GEOTECH	**Dry Density / Moisture Content Relationship** **Heavy Compaction**			Job Ref	**18-0577**
				Borehole / Pit No	TP16
Site Name	**DAA Surveys and Investigations**			Sample No	1
Soil Description	Brownish grey sandy gravelly clayey SILT.			Depth	0.50 m
Specimen Ref.	11	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer			Keylab ID	Caus2018080981
				Compaction Test Reference/No.	



Preparation		Material used was air dried
Mould Type		One Litre
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	4
Particle Density - Assumed	Mg/m³	2.90

Maximum Dry Density	Mg/m³	**1.90**
Optimum Moisture Content	%	**17**

Approved	Remarks	UKAS TESTING 10122
Stephen.Watson		

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	18-27782-1
Initial Date of Issue:	02-Oct-2018
Client	Causeway Geotech Ltd
Client Address:	8 Drumahiskey Road Balnamore Ballymoney County Antrim BT53 7QL
Contact(s):	Carin Cornwall Colm Hurley Darren O'Mahony Gabriella Horan John Cameron Lucy Newland Matthew Gilbert Neil Haggan Paul Dunlop Paul McNamara Sean Ross Stephen Franey Stephen Watson Stuart Abraham
Project	18-0577 DAA Surveys & Investigations

Quotation No.:		**Date Received:**	13-Sep-2018
Order No.:		**Date Instructed:**	13-Sep-2018
No. of Samples:	7		
Turnaround (Wkdays):	3	**Results Due:**	17-Sep-2018
Date Approved:	01-Oct-2018	**Subcon Results Due:**	04-Oct-2018

Approved By:



Details: Glynn Harvey, Laboratory Manager

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Chemtest
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Results - Soil

Project: 18-0577 DAA Surveys & Investigations

Client: Causeway Geotech Ltd			**Chemtest Job No.:**		18-27782	18-27782	18-27782	18-27782	18-27782	18-27782	18-27782
Quotation No.:			**Chemtest Sample ID.:**		687725	687726	687727	687728	687729	687730	687731
Order No.:			Client Sample Ref.:		1	1	1	1	1	4	4
			Sample Location:		TP05	TP06	TP08	TP17	TP18	TP25	TP28
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	0.50	0.50	0.50	0.50	0.90	1.50
			Date Sampled:		11-Sep-2018	11-Sep-2018	11-Sep-2018	11-Sep-2018	11-Sep-2018	11-Sep-2018	11-Sep-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Moisture	N	2030	%	0.020	14	12	7.1	9.2	12	16	8.5
pH	U	2010		N/A		8.3	7.7		8.1	8.3	8.2
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		< 0.010	< 0.010		< 0.010	< 0.010	< 0.010
Redox Potential	N	2150	mV	N/A	170		160	170			
Organic Matter	U	2625	%	0.40		2.4	2.6		1.3	1.0	0.57
Soil Resistivity (Subcon)	SN			N/A	275		477	499			

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2150	Redox Potential	Redox Potential	Meter
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

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Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

LABORATORY RESTRICTION REPORT

Project Reference	18-0577	To	Colm Hurley
Project Name	DAA Surveys	Position	Project Manager
TR reference	18-0577 / 1	From	Stephen Watson
		Position	Laboratory Manager

The following sample(s) and test(s) are restricted as detailed below. Could you please complete the "Required Action" column and return the completed form to the laboratory.

Hole Number	Sample			Test Type	Reason for Restriction	Required Action
	Number	Depth (m)	Type			
TP01	1	0.5	B	Compaction	Insufficient material to conduct test to BS1377-4:1990 40,000g required - 14,000g available Gravel susceptible to crushing	Cancel
TP02	4	1	B	NMC, Atterberg Limits, Bulk Density, PSD, Compaction	NO SAMPLE	Cancel
TP02	7	1.7	B	Atterberg limits	Unsuitable material for test - GRAVEL	Cancel
TP03	2	0.5	B	Compaction	>10% retained on 37.5mm test sieve. Insufficient material to conduct test	Cancel
TP07	4	1.5	B	Compaction	>10% retained on 37.5mm test sieve. Insufficient material to conduct test	Cancel
TP11	4	1	B	NMC, Atterberg Limits, Bulk Density, PSD, Compaction	NO SAMPLE	Cancel
TP12	5	2	B	NMC, PSD	NO SAMPLE	Cancel
TP16	4	1	D	NMC	NO SAMPLE	Cancel
TP19	4	1.5	B	PSD, MCV	NO SAMPLE	Cancel
TP20	4	1.5	B	Compaction	>10% retained on 37.5mm test sieve Material too gravelly to conduct test to BS1377-4:1990	Cancel
TP25	1	0.5	B	Compaction	>10% retained on 37.5mm test sieve >30% retained on 20mm test sieve Material too gravelly to conduct test to BS1377-4:1990	Cancel
TP27	4	1.5	B	PSD, Compaction	Insufficient material to conduct PSD to BS1377-2:1990 35,000g required - 13,000g available Gravel content too high to conduct compaction test to BS1377-4:1990	Cancel

For electronic reporting a form of electronic signature or printed name is acceptable

Laboratory Signature Stephen Watson	Project Manager Signature Colm Hurley
Date 14 September 2018	Date 14 September 2018

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CAUSEWAY GEOTECH

10122

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www.causewaygeotech.com

SOIL AND ROCK SAMPLE ANALYSIS
LABORATORY TEST REPORT

Project Name:	DAA Surveys and Investigations
Project No.:	18-0577
Client:	Dublin Airport Authority
Engineer:	Balfour Beatty
Date:	19/09/18

We are pleased to attach the results of laboratory testing carried out for the above project. This memo and its attachments constitute a report of the results of tests as detailed in the Contents page(s).

The attached results complete the testing requested and we would therefore wish to confirm that samples will be retained without charge for a period of 28 days from the above date after which they will be appropriately disposed of unless we receive written instructions to the contrary prior to that date.

We trust our report meets with your approval but if you have any queries or require additional information, please do not hesitate to contact the undersigned.

Approved Signatory



Stephen Watson
Laboratory Manager

Signed for and on behalf of Causeway Geotech Ltd

CAUSEWAY GEOTECH

10122

+44 (0)28 2766 6640
info@causewaygeotech.com
www.causewaygeotech.com

Project Name: DAA Surveys and Investigations

Report Reference: Soils Schedule 2 - FINAL

The table below details the tests carried out, the specifications used, and the number of tests included in this report.

Tests marked with* in this report are not United Kingdom Accreditation Service (UKAS) accredited and are not included in Causeway Geotech Limited's scope of UKAS Accreditation Schedule of Tests. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL	Moisture Content of Soil	BS 1377-2: 1990: Cl 3.2	9
SOIL	Liquid and Plastic Limits of soil-1 point cone penetrometer method	BS 1377-2: 1990: Cl 4.4, 5.3 & 5.4	9
SOIL	Bulk and dry density by Linear Measurement Method	BS 1377-2: 1990: Cl 7.2	4
SOIL	Particle size distribution - wet sieving	BS 1377-2: 1990: Cl 9.2	11
SOIL	Particle size distribution - sedimentation hydrometer method	BS 1377-2: 1990: Cl 9.5	11
SOIL	California Bearing Ratio (CBR)	BS 1377-4: 1990: Cl 7	2
SOIL	Consolidation properties in oedometer - Using 5 pressures (up to 5 days total duration)	BS 1377-5: 1990: Cl 3: 1	1
	Extra over days (more than initial 5 days)		1

CAUSEWAY GEOTECH

Summary of Classification Test Results

Project No.	Project Name
18-0577	DAA Surveys and Investigations

Hole No.	Sample				Soil Description	Density bulk Mg/m^3	Density dry Mg/m^3	w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m^3	Casagrande Classification
	Ref	Top	Base	Type										
BH01	2	1.00		B	Brownish grey sandy gravelly silty CLAY.			9.3	50	26 -1pt	18	8		CL
BH01	4	3.00		B	Brownish grey sandy gravelly silty CLAY.			15	61	23 -1pt	13	10		CL
BH02	2	1.00		B	Brown slightly sandy slightly gravelly silty CLAY.			22	97	39 -1pt	21	18		CI
BH02	4	3.00		B	Brown sandy gravelly silty CLAY.			9.8	99	32 -1pt	20	12		CL
BH03	2	1.00		B	Brownish grey sandy gravelly silty CLAY.			20	68	30 -1pt	NP			
BH03	5	4.00		B	Dark grey sandy gravelly silty CLAY.			15	61	24 -1pt	15	9		CL
BH04	2	1.00		B	Brown sandy slightly gravelly clayey SILT.			58	87	61 -1pt	47	14		MH
BH04	6	2.50		D	Brownish grey sandy slightly gravelly clayey SILT.			9.0						
BH04	4	3.00		B	Brownish grey sandy gravelly silty CLAY.			14	62	27 -1pt	19	8		CL
BH06	7	2.00		D	Blackish grey slightly sandy slightly gravelly silty CLAY.			10						
BH06	5	3.00		B	Blackish grey sandy gravelly silty CLAY.			15	67	22 -1pt	14	8		CL
BH06	9	4.00		D	Blackish grey slightly sandy slightly gravelly silty CLAY.			15						

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key

Density test — wd - water displacement — wi - immersion in water

Liquid Limit — Linear measurement unless : 4pt cone unless : — cas - Casagrande method — 1pt - single point test

Particle density — sp - small pyknometer — gj - gas jar

Date Printed: 19/09/2018

Approved By: Stephen.Watson

UKAS TESTING 10122

CAUSEWAY GEOTECH

Density Tests - Summary of Results

Project No.	Project Name
18-0577	DAA Surveys and Investigations

Hole No.	Sample				Soil Description	Linear Measurement			Immersion in water			Water displacement			Remarks
	Ref	Top	Base	Type		Bulk density Mg/m^3	Dry density Mg/m^3	w %	Bulk density Mg/m^3	Dry density Mg/m^3	w %	Bulk density Mg/m^3	Dry density Mg/m^3	w %	
BH01	3	2.00		B	Brownish grey sandy gravelly silty CLAY.	2.22	1.93	14.9							
BH01	11	4.00		U	Brownish grey sandy gravelly silty CLAY.	2.24	1.98	13.0							
BH04	8	2.00		U	Brownish grey sandy slightly gravelly clayey SILT.	2.22	1.95	13.7							
BH06	4	2.00		B	Blackish grey slightly sandy slightly gravelly silty CLAY.	2.22	1.98	11.8							

Legend w moisture content of the density test specimen

Notes

Tests carried out in accordance with BS1377:Part2:1990 and the following clauses unless annotated otherwise

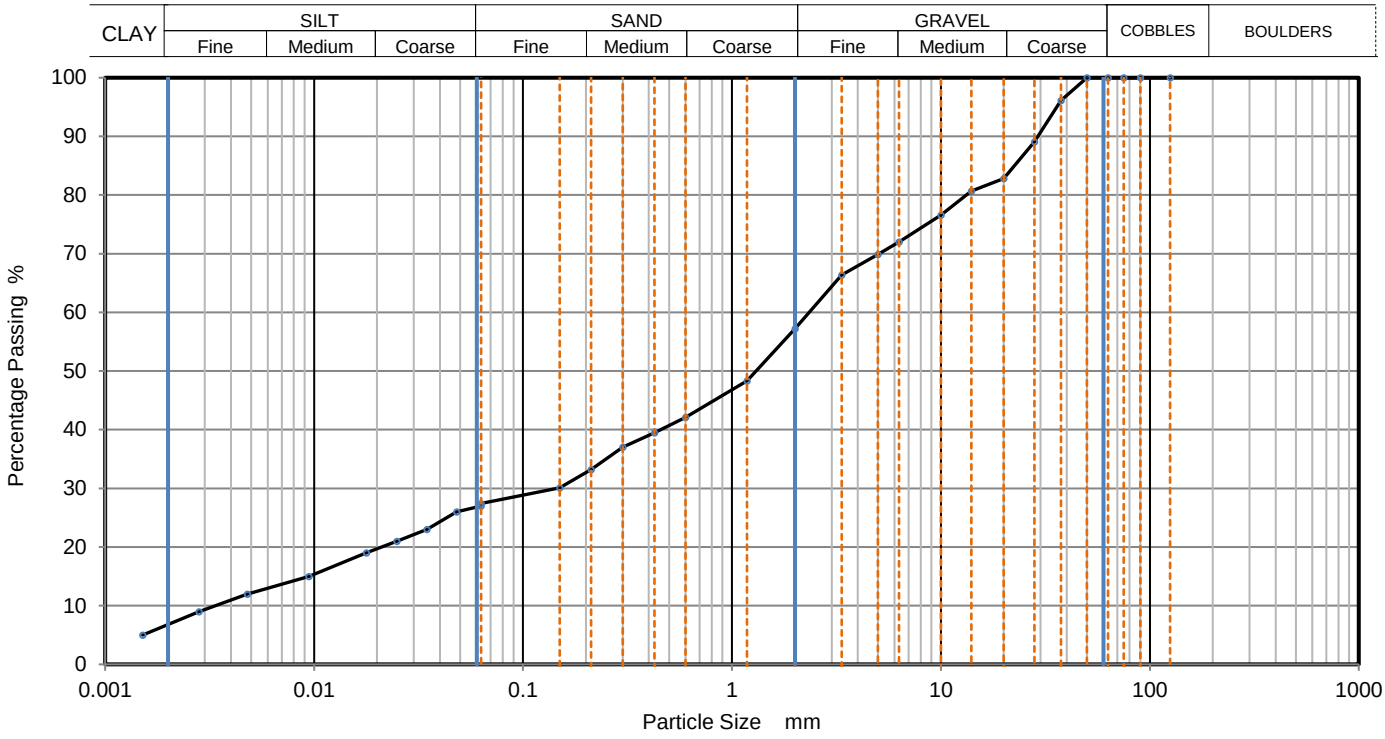
Linear measurement	clause 7.2
Immersion in water	clause 7.3
Water displacement	clause 7.4

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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	BH01
Site Name	DAA Surveys and Investigations			Sample No.	2
Soil Description	Brownish grey sandy gravelly silty CLAY.			Depth, m	1.00
Specimen Reference	15	Specimen Depth	1 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018081517



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	27
90	100	0.0481	26
75	100	0.0347	23
63	100	0.0248	21
50	100	0.0178	19
37.5	96	0.0094	15
28	89	0.0048	12
20	83	0.0028	9
14	81	0.0015	5
10	77		
6.3	72		
5	70		
3.35	66		
2	57		
1.18	48		
0.6	42	Particle density	(assumed)
0.425	40	2.65	Mg/m3
0.3	37		
0.212	33		
0.15	30		
0.063	27		

Dry Mass of sample, g	4561

Sample Proportions	% dry mass
Cobbles	0
Gravel	43
Sand	30
Silt	21
Clay	7

Grading Analysis		
D100	mm	
D60	mm	2.34
D30	mm	0.145
D10	mm	0.00327
Uniformity Coefficient		720
Curvature Coefficient		2.7

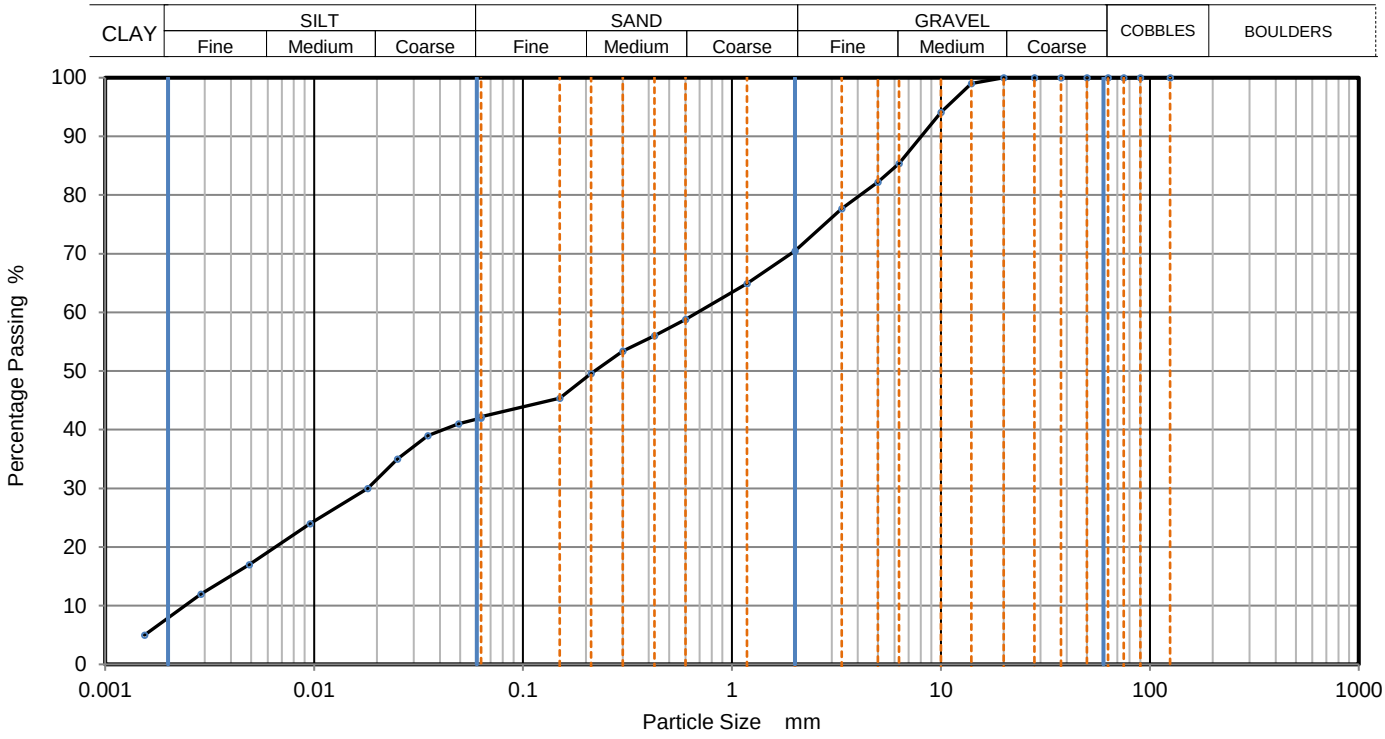
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CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION			Job Ref	18-0577
				Borehole/Pit No.	BH01
Site Name	DAA Surveys and Investigations			Sample No.	4
Soil Description	Brownish grey sandy gravelly silty CLAY.			Depth, m	3.00
Specimen Reference	15	Specimen Depth	3 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018081520



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	42
90	100	0.0492	41
75	100	0.0350	39
63	100	0.0251	35
50	100	0.0181	30
37.5	100	0.0096	24
28	100	0.0049	17
20	100	0.0029	12
14	99	0.0015	5
10	94		
6.3	85		
5	82		
3.35	78		
2	71		
1.18	65		
0.6	59	Particle density	(assumed)
0.425	56	2.65	Mg/m3
0.3	53		
0.212	50		
0.15	45		
0.063	42		

Dry Mass of sample, g	541

Sample Proportions	% dry mass
Cobbles	0
Gravel	30
Sand	28
Silt	34
Clay	8

Grading Analysis		
D100	mm	
D60	mm	0.683
D30	mm	0.0174
D10	mm	0.00243
Uniformity Coefficient		280
Curvature Coefficient		0.18

Remarks

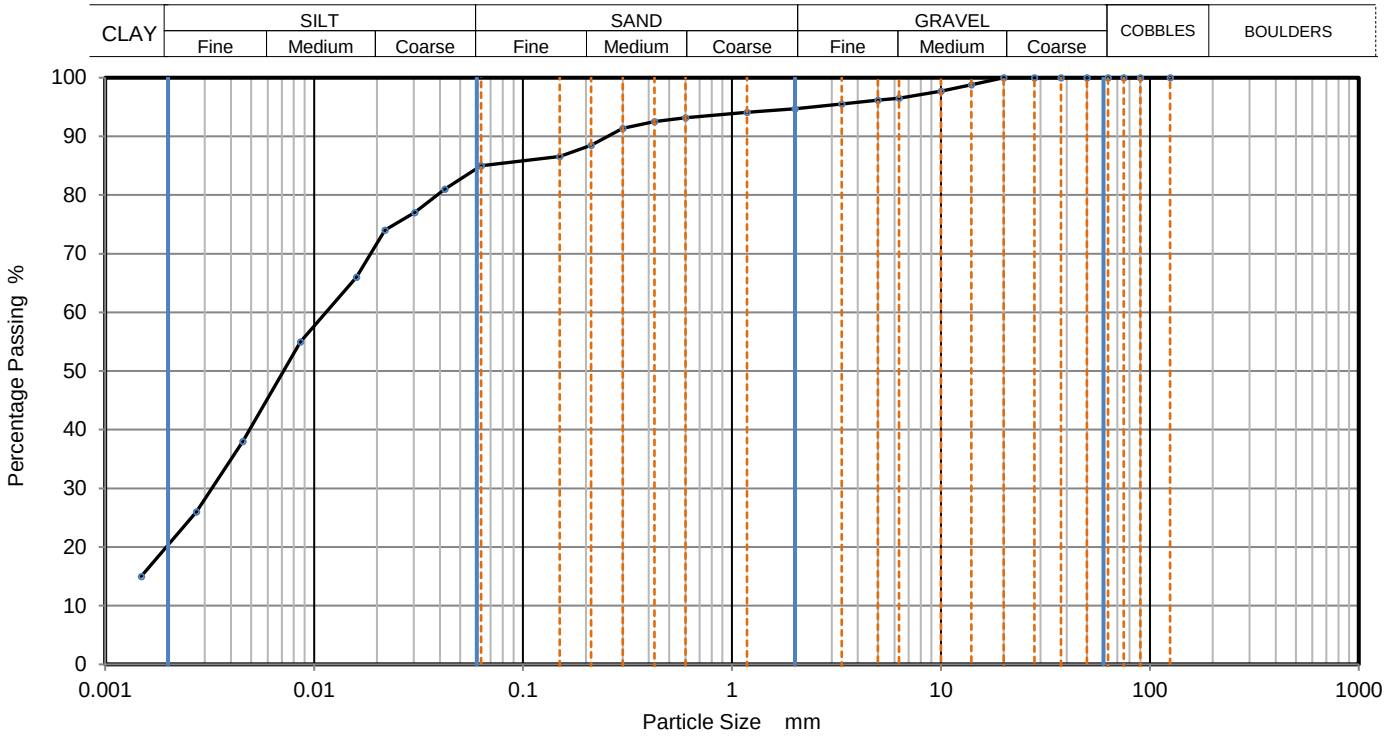
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PARTICLE SIZE DISTRIBUTION

				Job Ref	**18-0577**
				Borehole/Pit No.	BH02
Site Name	DAA Surveys and Investigations			Sample No.	2
Soil Description	Brown slightly sandy slightly gravelly silty CLAY.			Depth, m	1.00
Specimen Reference	15	Specimen Depth	1 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018081522



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	85
90	100	0.0422	81
75	100	0.0303	77
63	100	0.0218	74
50	100	0.0159	66
37.5	100	0.0086	55
28	100	0.0046	38
20	100	0.0027	26
14	99	0.0015	15
10	98		
6.3	97		
5	96		
3.35	96		
2	95		
1.18	94		
0.6	93	Particle density	(assumed)
0.425	93	2.65	Mg/m3
0.3	91		
0.212	89		
0.15	87		
0.063	85		

Dry Mass of sample, g: 629

Sample Proportions	% dry mass
Cobbles	0
Gravel	5
Sand	10
Silt	64
Clay	21

Grading Analysis		
D100	mm	
D60	mm	0.0114
D30	mm	0.00321
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

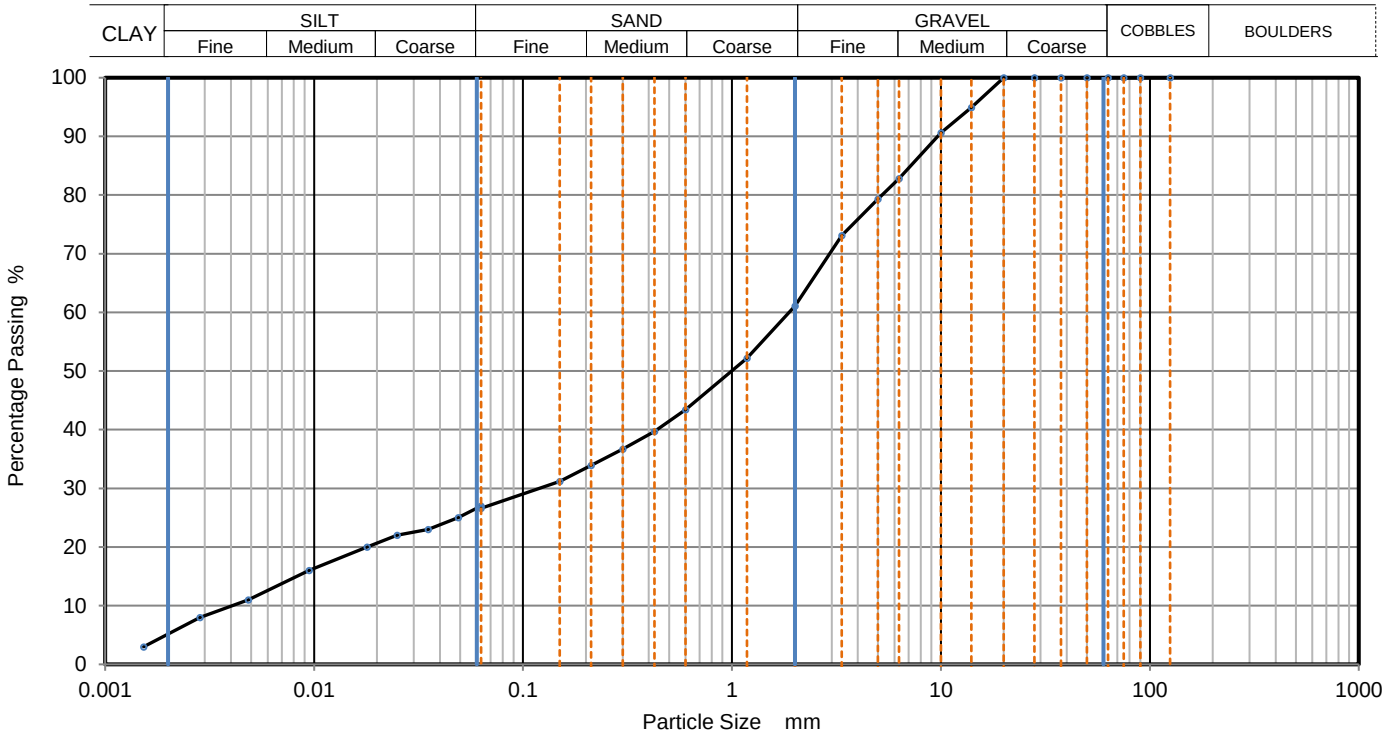
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	BH02
Site Name	DAA Surveys and Investigations			Sample No.	4
Soil Description	Brown sandy gravelly silty CLAY.			Depth, m	3.00
Specimen Reference	15	Specimen Depth	3 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018081524



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	27
90	100	0.0491	25
75	100	0.0351	23
63	100	0.0250	22
50	100	0.0179	20
37.5	100	0.0095	16
28	100	0.0048	11
20	100	0.0028	8
14	95	0.0015	3
10	91		
6.3	83		
5	79		
3.35	73		
2	61		
1.18	52		
0.6	43	Particle density	(assumed)
0.425	40	2.65	Mg/m3
0.3	37		
0.212	34		
0.15	31		
0.063	27		

Dry Mass of sample, g	877

Sample Proportions	% dry mass
Cobbles	0
Gravel	39
Sand	35
Silt	21
Clay	5

Grading Analysis		
D100	mm	
D60	mm	1.88
D30	mm	0.119
D10	mm	0.00407
Uniformity Coefficient		460
Curvature Coefficient		1.8

Remarks

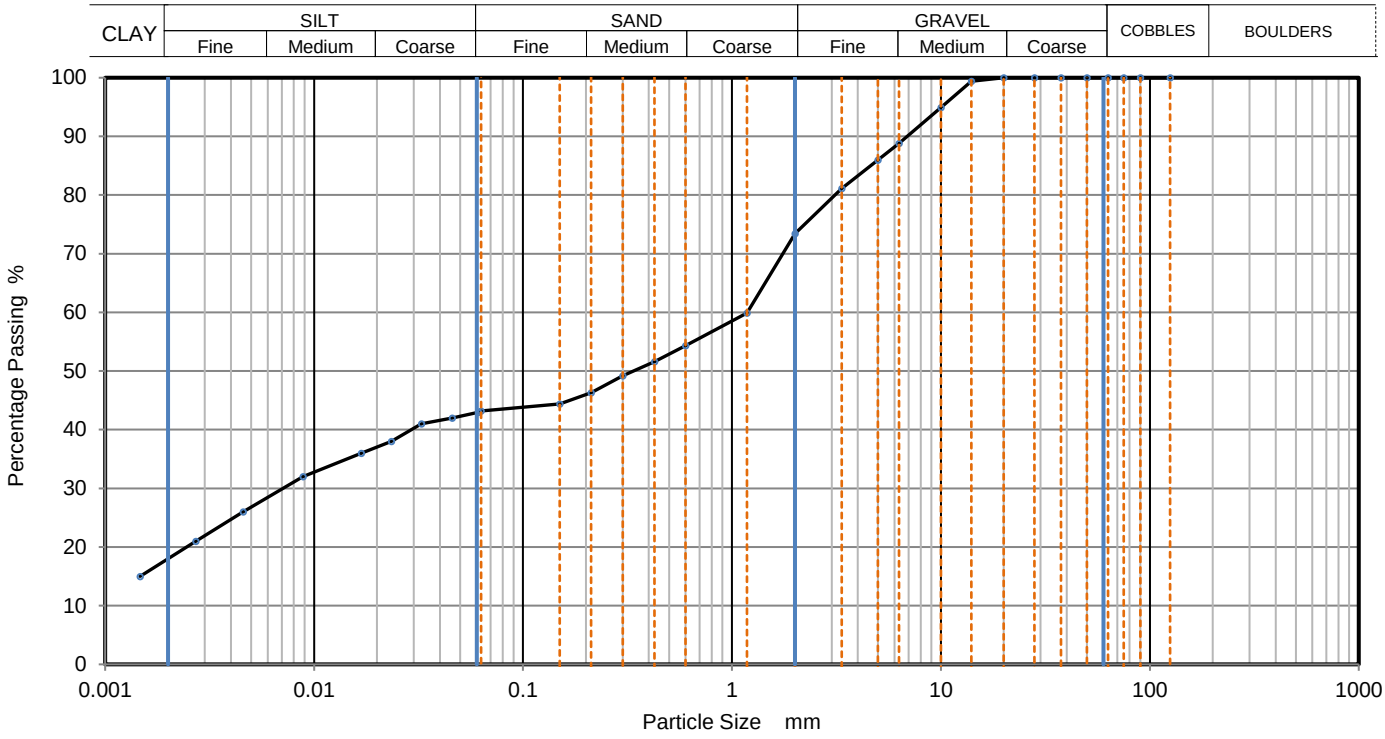
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PARTICLE SIZE DISTRIBUTION

				Job Ref	**18-0577**
				Borehole/Pit No.	BH03
Site Name	DAA Surveys and Investigations			Sample No.	2
Soil Description	Brownish grey sandy gravelly silty CLAY.			Depth, m	1.00
Specimen Reference	15	Specimen Depth	1 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018081525



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0611	43
90	100	0.0458	42
75	100	0.0326	41
63	100	0.0234	38
50	100	0.0168	36
37.5	100	0.0089	32
28	100	0.0046	26
20	100	0.0027	21
14	99	0.0015	15
10	95		
6.3	89		
5	86		
3.35	81		
2	73		
1.18	60		
0.6	54	Particle density	(assumed)
0.425	52	2.65	Mg/m3
0.3	49		
0.212	46		
0.15	44		
0.063	43		

Dry Mass of sample, g: 810

Sample Proportions	% dry mass
Cobbles	0
Gravel	27
Sand	30
Silt	25
Clay	18

Grading Analysis		
D100	mm	
D60	mm	1.19
D30	mm	0.00708
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

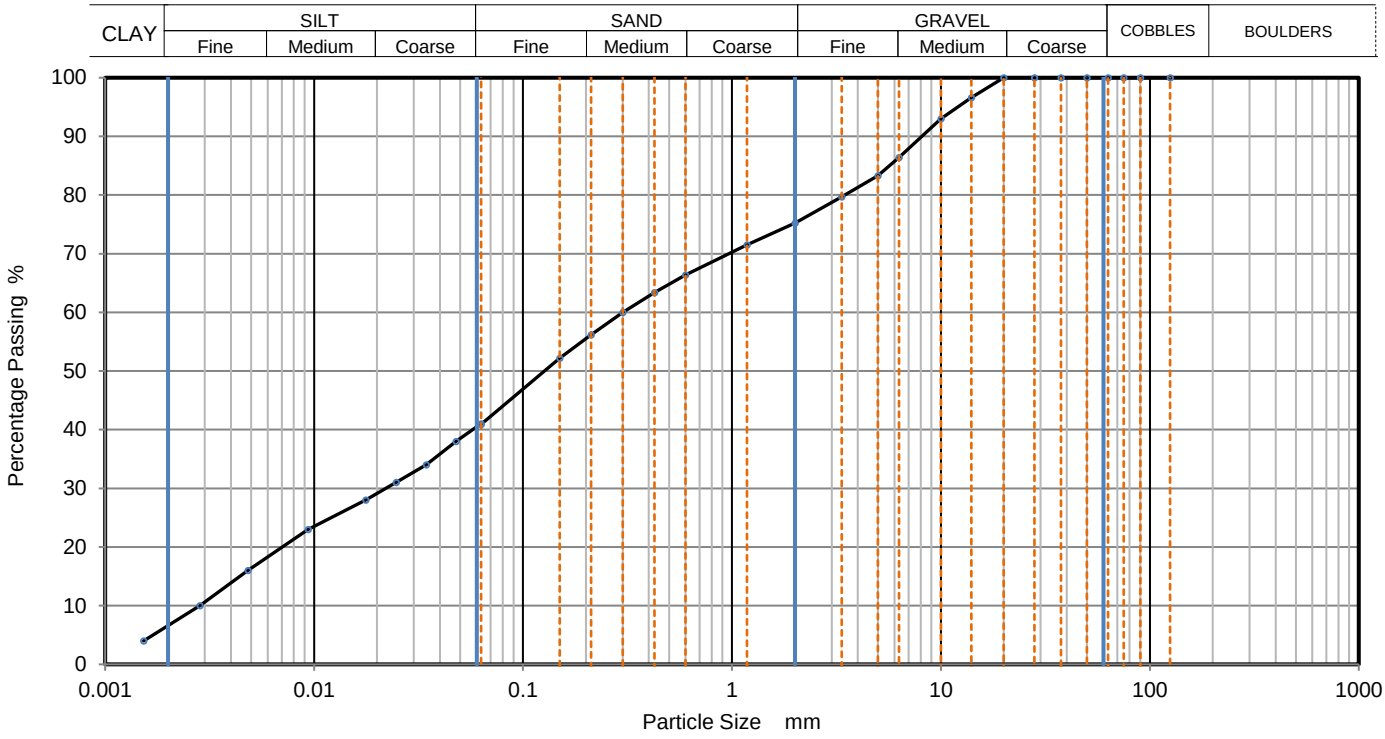
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PARTICLE SIZE DISTRIBUTION

				Job Ref	**18-0577**
				Borehole/Pit No.	BH03
Site Name	DAA Surveys and Investigations			Sample No.	3
Soil Description	Brownish grey sandy gravelly silty CLAY.			Depth, m	2.00
Specimen Reference	9	Specimen Depth	2 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018081526



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	41
90	100	0.0478	38
75	100	0.0345	34
63	100	0.0247	31
50	100	0.0177	28
37.5	100	0.0094	23
28	100	0.0048	16
20	100	0.0028	10
14	97	0.0015	4
10	93		
6.3	86		
5	83		
3.35	80		
2	75		
1.18	72		
0.6	66	Particle density	(assumed)
0.425	63	2.65	Mg/m3
0.3	60		
0.212	56		
0.15	52		
0.063	41		

Dry Mass of sample, g: 718

Sample Proportions	% dry mass
Cobbles	0
Gravel	25
Sand	34
Silt	34
Clay	7

Grading Analysis		
D100	mm	
D60	mm	0.301
D30	mm	0.0219
D10	mm	0.00288
Uniformity Coefficient		100
Curvature Coefficient		0.55

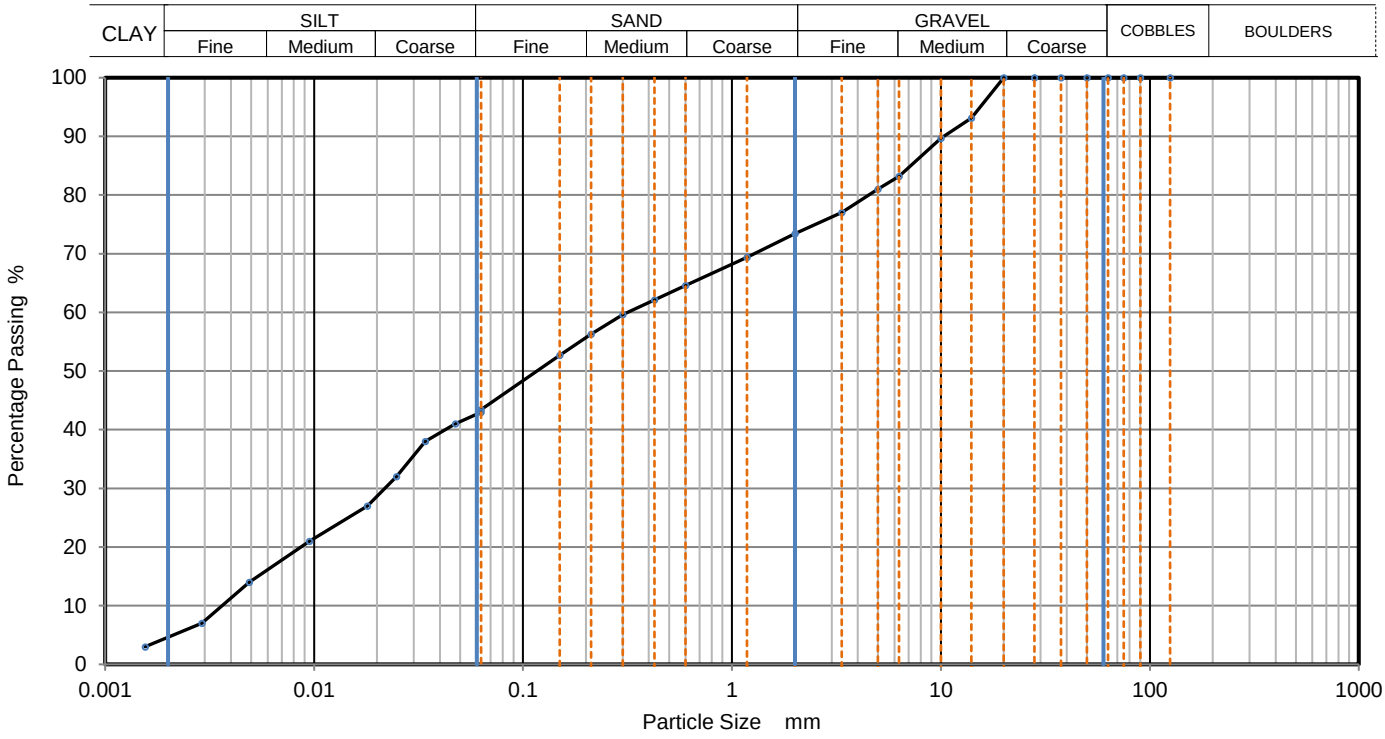
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	BH03
Site Name	DAA Surveys and Investigations			Sample No.	5
Soil Description	Dark grey sandy gravelly silty CLAY.			Depth, m	4.00
Specimen Reference	15	Specimen Depth	4 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018081528



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	43
90	100	0.0475	41
75	100	0.0341	38
63	100	0.0248	32
50	100	0.0180	27
37.5	100	0.0095	21
28	100	0.0049	14
20	100	0.0029	7
14	93	0.0016	3
10	90		
6.3	83		
5	81		
3.35	77		
2	73		
1.18	69		
0.6	65	Particle density	(assumed)
0.425	62	2.65	Mg/m3
0.3	60		
0.212	56		
0.15	53		
0.063	43		

Dry Mass of sample, g: 891

Sample Proportions	% dry mass
Cobbles	0
Gravel	27
Sand	30
Silt	39
Clay	5

Grading Analysis		
D100	mm	
D60	mm	0.319
D30	mm	0.0218
D10	mm	0.00363
Uniformity Coefficient		88
Curvature Coefficient		0.41

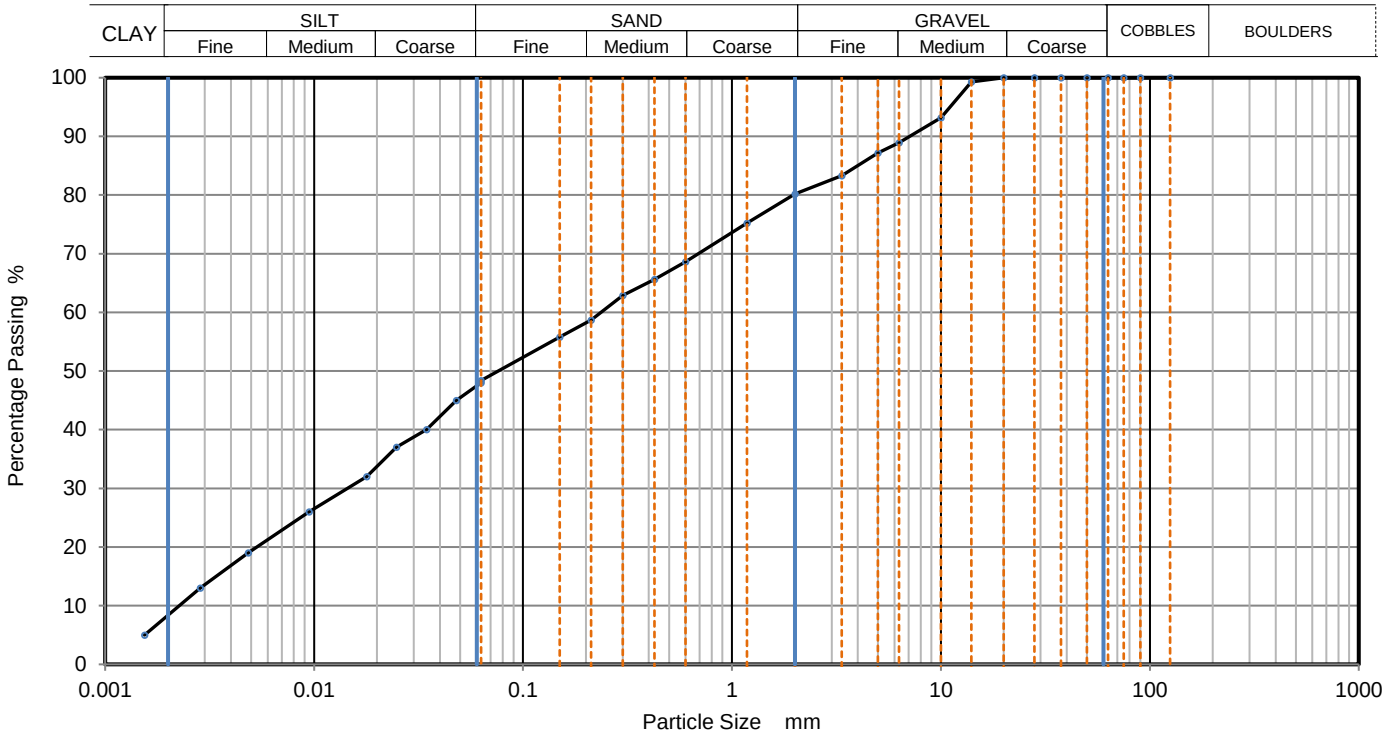
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	BH04
Site Name	DAA Surveys and Investigations			Sample No.	2
Soil Description	Brown sandy slightly gravelly clayey SILT.			Depth, m	1.00
Specimen Reference	15	Specimen Depth	1 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018081529



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	48
90	100	0.0479	45
75	100	0.0346	40
63	100	0.0248	37
50	100	0.0179	32
37.5	100	0.0094	26
28	100	0.0048	19
20	100	0.0029	13
14	99	0.0015	5
10	93		
6.3	89		
5	87		
3.35	83		
2	80		
1.18	75		
0.6	69	Particle density	(assumed)
0.425	66	2.65	Mg/m3
0.3	63		
0.212	59		
0.15	56		
0.063	48		

Dry Mass of sample, g: 545

Sample Proportions	% dry mass
Cobbles	0
Gravel	20
Sand	32
Silt	40
Clay	8

Grading Analysis		
D100	mm	
D60	mm	0.236
D30	mm	0.0143
D10	mm	0.00229
Uniformity Coefficient		100
Curvature Coefficient		0.38

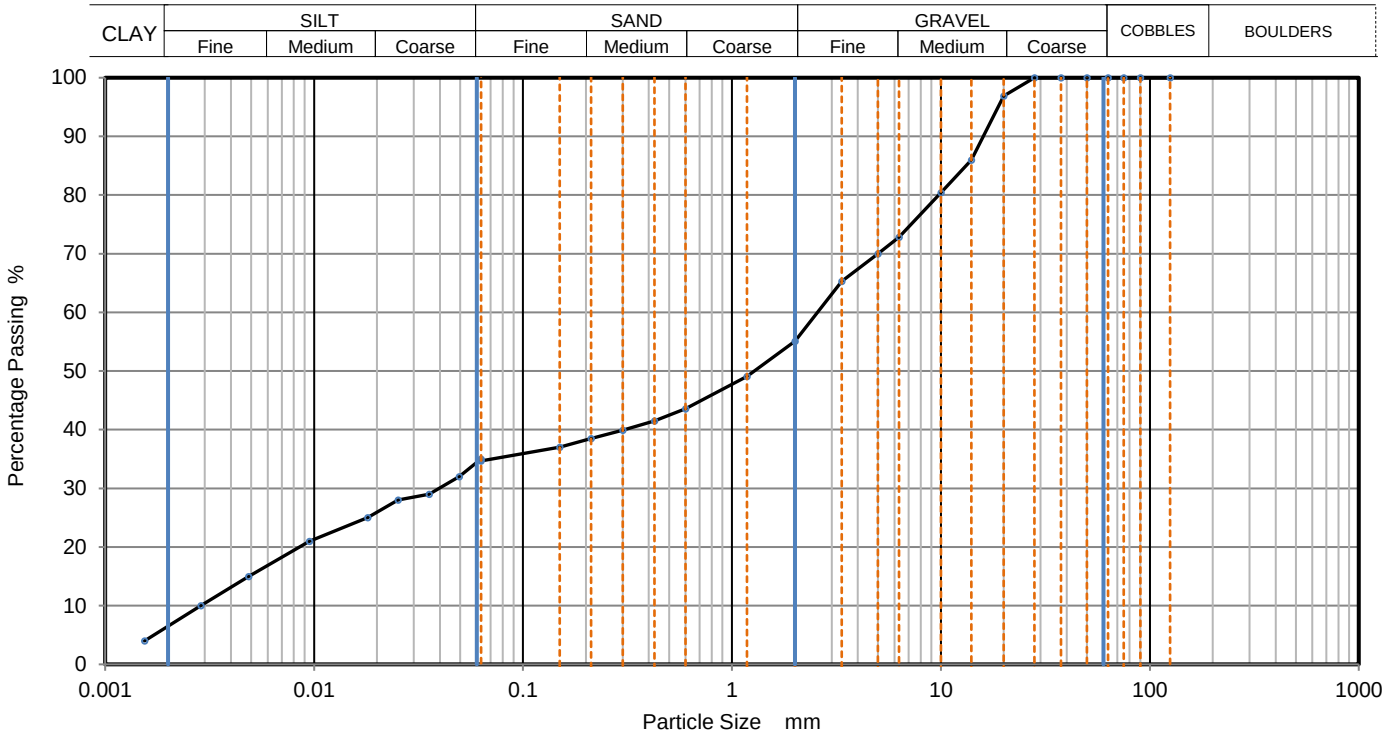
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	BH04
Site Name	DAA Surveys and Investigations			Sample No.	4
Soil Description	Brownish grey sandy gravelly silty CLAY.			Depth, m	3.00
Specimen Reference	15	Specimen Depth	3 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018081532



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	35
90	100	0.0495	32
75	100	0.0355	29
63	100	0.0252	28
50	100	0.0181	25
37.5	100	0.0095	21
28	100	0.0049	15
20	97	0.0029	10
14	86	0.0015	4
10	80		
6.3	73		
5	70		
3.35	65		
2	55		
1.18	49		
0.6	44	Particle density	(assumed)
0.425	42	2.65	Mg/m3
0.3	40		
0.212	39		
0.15	37		
0.063	35		

Dry Mass of sample, g: 3691

Sample Proportions	% dry mass
Cobbles	0
Gravel	45
Sand	21
Silt	28
Clay	7

Grading Analysis		
D100	mm	
D60	mm	2.56
D30	mm	0.0393
D10	mm	0.00295
Uniformity Coefficient		870
Curvature Coefficient		0.2

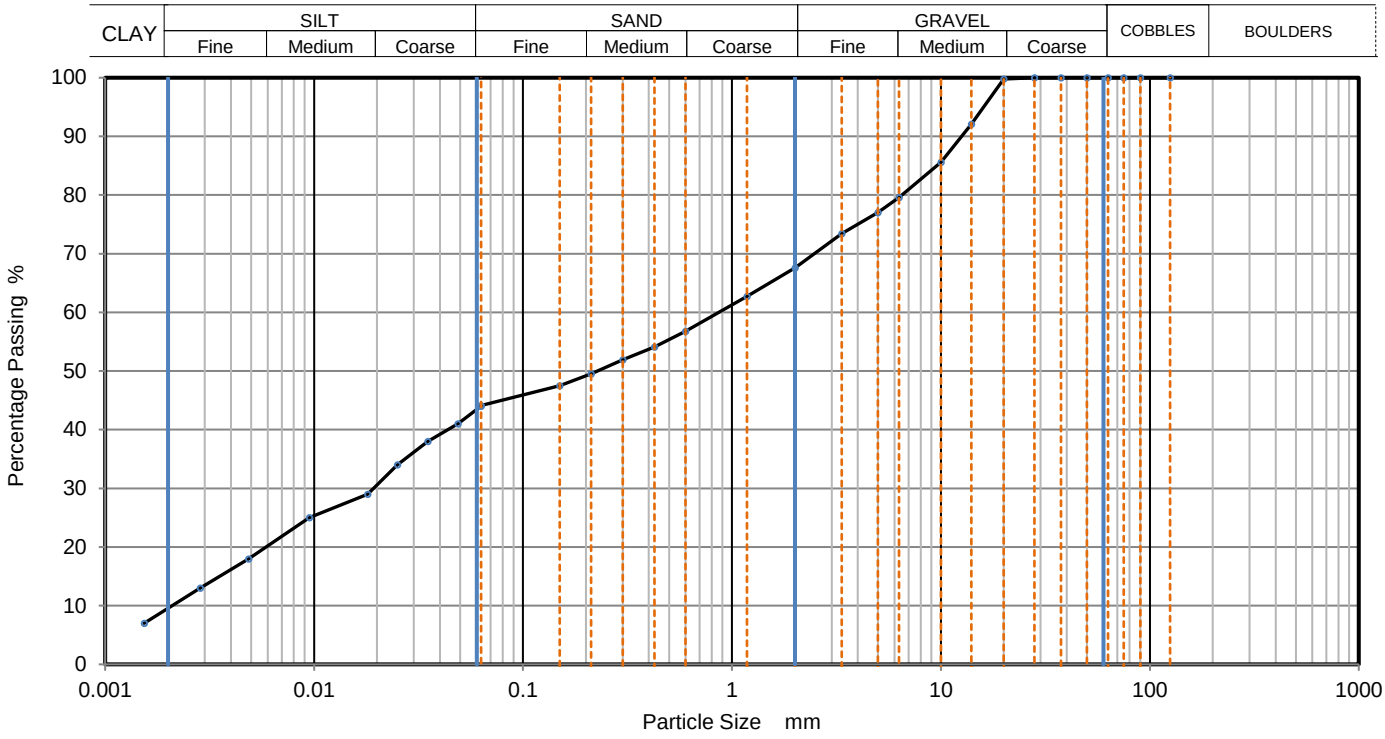
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	BH06
Site Name	DAA Surveys and Investigations			Sample No.	3
Soil Description	Brownish grey sandy slightly gravelly CLAY.			Depth, m	1.00
Specimen Reference	5	Specimen Depth	1 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018081535



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	44
90	100	0.0489	41
75	100	0.0350	38
63	100	0.0251	34
50	100	0.0181	29
37.5	100	0.0095	25
28	100	0.0049	18
20	100	0.0029	13
14	92	0.0015	7
10	86		
6.3	80		
5	77		
3.35	73		
2	68		
1.18	63		
0.6	57	Particle density	(assumed)
0.425	54	2.65	Mg/m3
0.3	52		
0.212	50		
0.15	48		
0.063	44		

Dry Mass of sample, g: 3724

Sample Proportions	% dry mass
Cobbles	0
Gravel	32
Sand	24
Silt	35
Clay	9

Grading Analysis		
D100	mm	
D60	mm	0.867
D30	mm	0.0188
D10	mm	0.00213
Uniformity Coefficient		410
Curvature Coefficient		0.19

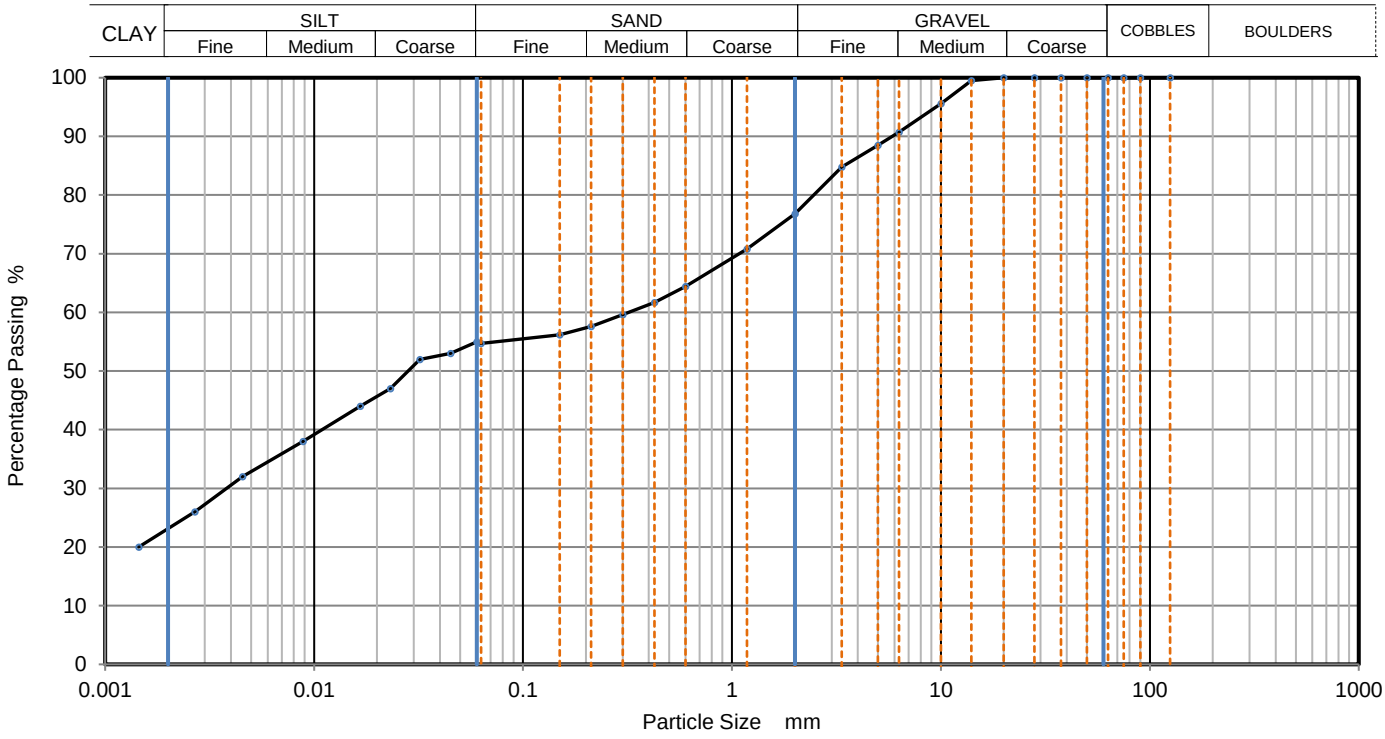
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CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**18-0577**
				Borehole/Pit No.	BH06
Site Name	DAA Surveys and Investigations			Sample No.	5
Soil Description	Blackish grey sandy gravelly silty CLAY.			Depth, m	3.00
Specimen Reference	15	Specimen Depth	3 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2018081539



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0601	55
90	100	0.0450	53
75	100	0.0321	52
63	100	0.0232	47
50	100	0.0166	44
37.5	100	0.0088	38
28	100	0.0045	32
20	100	0.0027	26
14	100	0.0014	20
10	96		
6.3	91		
5	89		
3.35	85		
2	77		
1.18	71		
0.6	64	Particle density	(assumed)
0.425	62	2.65	Mg/m3
0.3	60		
0.212	58		
0.15	56		
0.063	55		

Dry Mass of sample, g	971

Sample Proportions	% dry mass
Cobbles	0
Gravel	23
Sand	22
Silt	32
Clay	23

Grading Analysis		
D100	mm	
D60	mm	0.32
D30	mm	0.00385
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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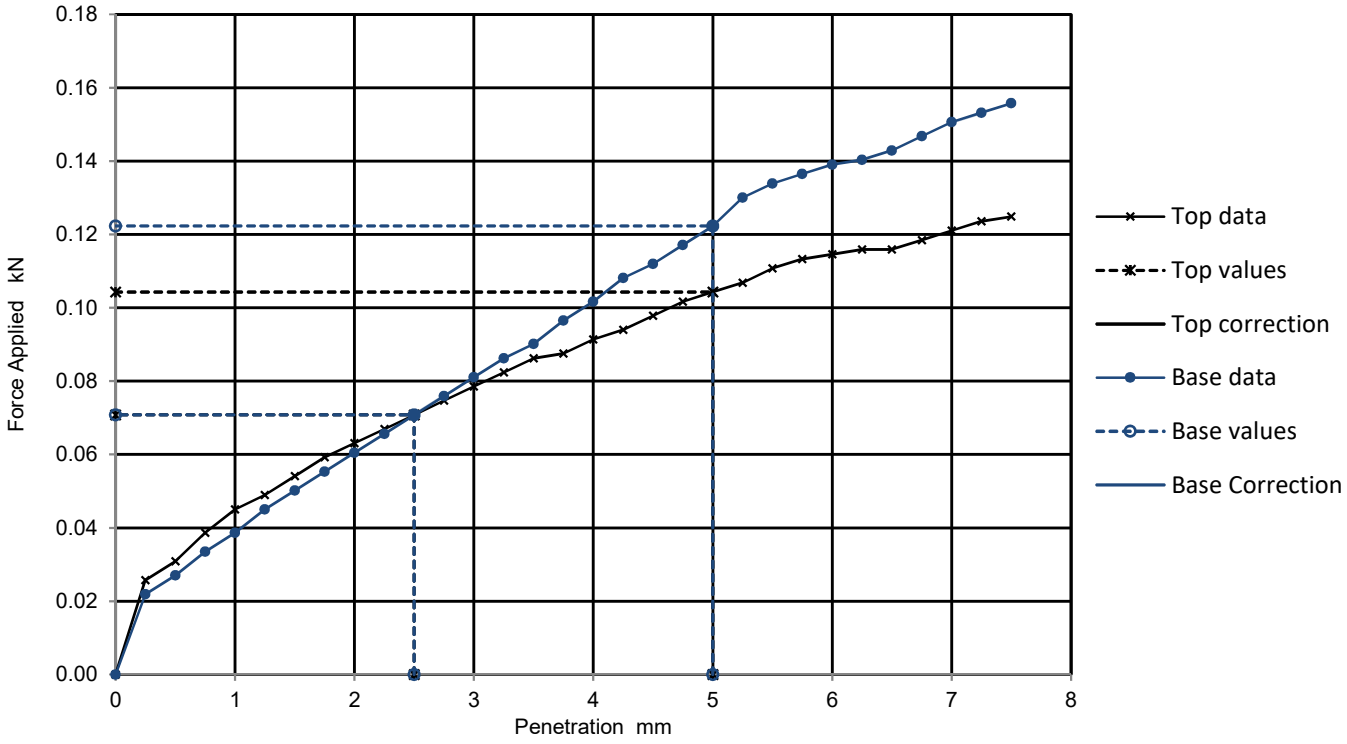
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CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**				Job Ref	18-0577
					Borehole/Pit No.	BH03
Site Name	DAA Surveys and Investigations				Sample No.	3
Soil Description	Brownish grey sandy gravelly silty CLAY.				Depth m	2.00
Specimen Reference	1	Specimen Depth	2.00	m	Sample Type	B
Specimen Description	Brownish grey sandy gravelly silty CLAY.				KeyLAB ID	Caus2018081526
Test Method	BS1377 : Part 4 : 1990, clause 7				CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		25	%	Dry density after soaking		Mg/m^3
Initial Specimen details	Bulk density	2.17	Mg/m^3	Surcharge applied	13.5	kg
	Dry density	1.86	Mg/m^3		8	kPa
	Moisture content	16.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	0.54	0.52	0.54	0.57	16.6
BASE	No	0.54	0.61	0.61		16.7

General remarks	Test specific remarks	Approved
Tested at natural moisture content	Average result may be reported if within 10% of the mean CBR value of top and base	Stephen.Watson

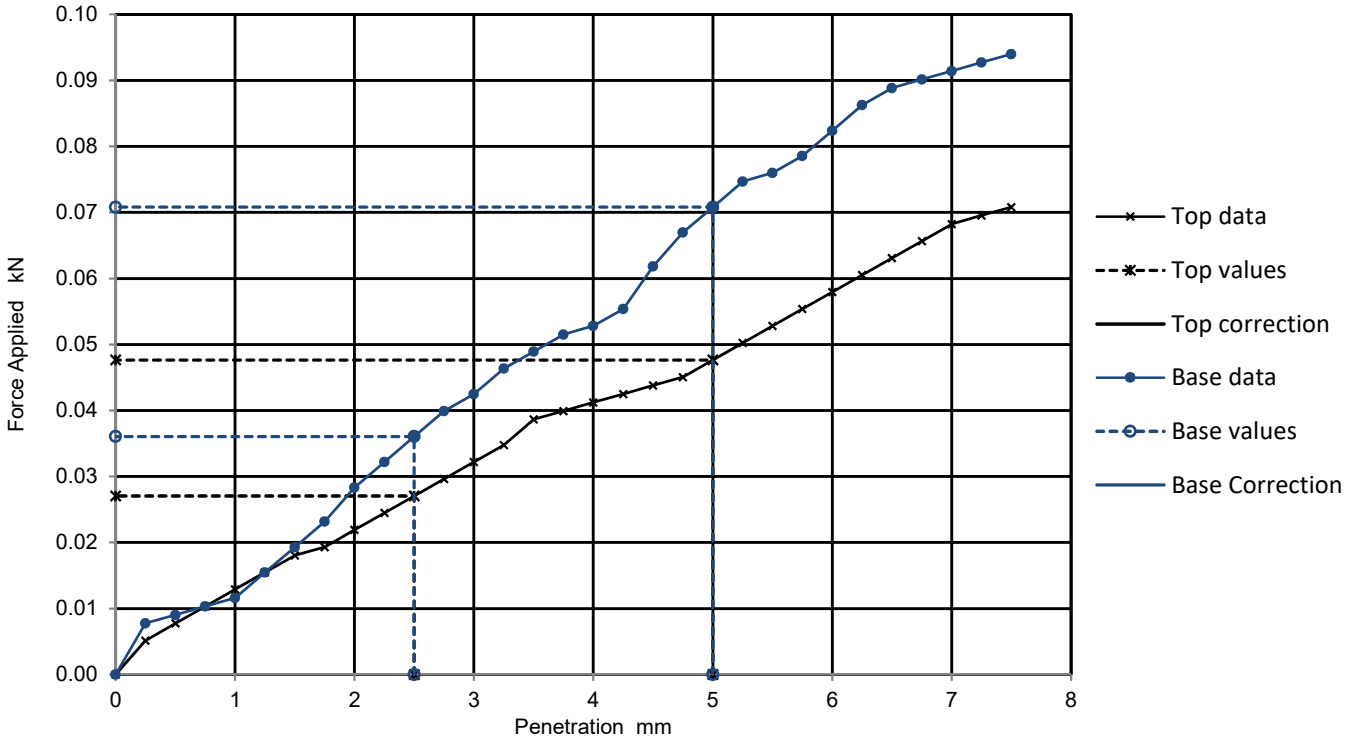
UKAS TESTING
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CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**				Job Ref	18-0577
					Borehole/Pit No.	BH06
Site Name	DAA Surveys and Investigations				Sample No.	6
Soil Description	Blackish grey slightly sandy slightly gravelly silty CLAY.				Depth m	4.00
Specimen Reference	2	Specimen Depth	4.00	m	Sample Type	B
Specimen Description	Blackish grey slightly sandy slightly gravelly silty CLAY.				KeyLAB ID	Caus2018081540
Test Method	BS1377 : Part 4 : 1990, clause 7				CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		3	%	Dry density after soaking		Mg/m^3
Initial Specimen details	Bulk density	1.96	Mg/m^3	Surcharge applied	13.5	kg
	Dry density	1.68	Mg/m^3		8	kPa
	Moisture content	16.4	%			

Force v Penetration Plots



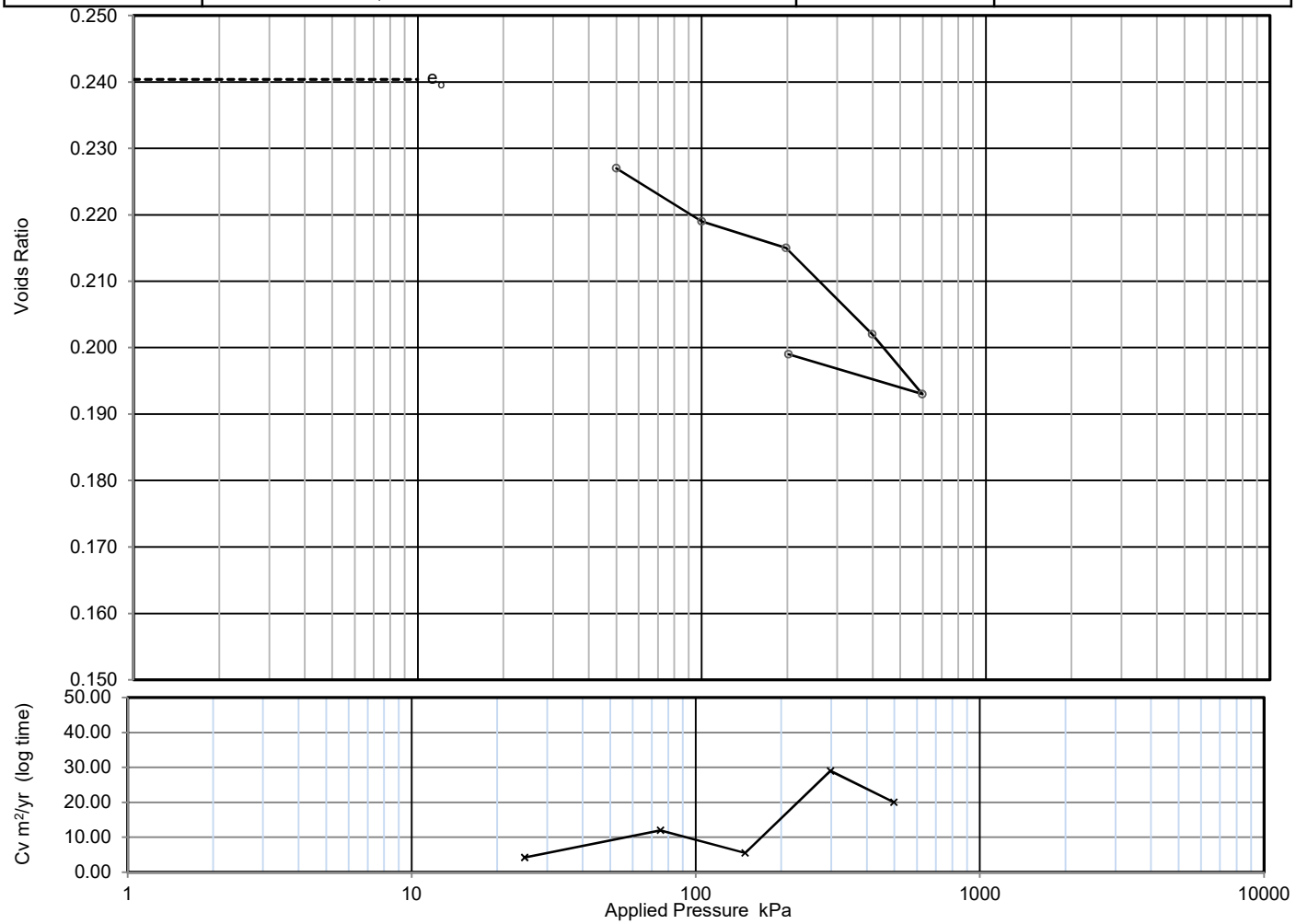
Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	0.20	0.24	0.24		16.4
BASE	No	0.27	0.35	0.35		15.8

General remarks	Test specific remarks	Approved
Tested at natural moisture content	Average result may be reported if within 10% of the mean CBR value of top and base	Stephen.Watson

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CAUSEWAY GEOTECH	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3				Job Ref	18-0577
					Borehole/Pit No.	BH01
Site Name	DAA Surveys and Investigations				Sample No.	10
Soil Description	Brownish grey sandy gravelly silty CLAY.				Depth	1.2
Specimen Reference	12	Specimen Depth	1.25	m	Sample Type	U
Specimen Description	Brownish grey sandy gravelly silty CLAY.				KeyLAB ID	Caus2018081518
Test Method	BS1377:Part 5:1990, clause 3				Date started	03/09/2018



Applied Pressure kPa	Voids ratio	M_v m^2/MN	C_v ($t_{50, log}$) m^2/yr	C_v ($t_{90, root}$) m^2/yr	C_{sec}
0.0	0.240	-	-	-	-
50	0.227	0.22	4.2	4.0	0.00044
100	0.219	0.13	12	160	0.00041
198	0.215	0.031	5.5	4.4	0.00025
398	0.202	0.054	29	440	0.00071
598	0.193	0.038	20	430	0.00068
202	0.199	0.014			

Preparation

Index tests Liquid limit % Plastic limit %

Particle density assumed 2.65 Mg/m^3

Specimen details	Initial	Final	
Diameter	74.90	-	mm
Height	19.65	19.00	mm
Moisture Content	10.6	9.6	%
Bulk density	2.36	2.42	Mg/m^3
Dry density	2.14	2.21	Mg/m^3
Voids Ratio	0.240	0.199	
Saturation	117	128	%
Average temperature for test			°C
Swelling Pressure			kPa
Settlement on saturation			%

Remarks

Final values should be used with caution

C_v plotted at mid point of load increments

C_v corrected to 20°C

Approved

Stephen.Watson

Printed :

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LABORATORY RESTRICTION REPORT

Project Reference	18-0577	To	Colm Hurley
Project Name	DAA Surveys and Investigations	Position	Project Manager
TR reference	18-0577 / 2	From	Stephen Watson
		Position	Laboratory Manager

The following sample(s) and test(s) are restricted as detailed below. Could you please complete the "Required Action" column and return the completed form to the laboratory.

Hole Number	Sample			Test Type	Reason for Restriction	Required Action
	Number	Depth (m)	Type			
BH01	U10	1.2	U	UU Triaxial, Lab Vane	Sample too gravelly and broken on extrusion. Cobble through middle of sample.	Cancel
BH01	U11	4	U	Lab Vane	Sample too broken on extrusion. High gravel content	Cancel
BH02	U8	2	U	Oedometer, Lab Vane, UU Triaxial	Loose gravelly SAND	Cancel
BH03	U10	3	U	UU Triaxial, Lab Vane	Sample too broken and disturbed on extrusion. High gravel content	Cancel
BH04	U10	2	U	UU Triaxial, Lab Vane	Sample too broken and disturbed on extrusion. High gravel content. 10% recovery	Cancel
BH04	3	2	B	Bulk Density	NO SAMPLE	Cancel
BH05	2	1	B	PSD	NO SAMPLE	Cancel
BH05	4	1.2	D	NMC	NO SAMPLE	Cancel
BH06	U1	1.2	U	Oedometer, Lab Vane, UU Triaxial	Sample too broken and disturbed on extrusion. High gravel content	Cancel
BH07	U5	1.2	U	UU Triaxial, Lab Vane	Sample too broken and disturbed on extrusion. High gravel content. 30% recovery	Cancel

For electronic reporting a form of electronic signature or printed name is acceptable

Laboratory Signature	Project Manager Signature
Stephen Watson	Colm Hurley
Date	Date
03 September 2018	03 September 2018

CAUSEWAY GEOTECH

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info@causewaygeotech.com
www.causewaygeotech.com

SOIL AND ROCK SAMPLE ANALYSIS
LABORATORY TEST REPORT

Project Name:	DAA Surveys and Investigations
Project No.:	18-0577
Client:	Dublin Airport Authority
Engineer:	Balfour Beatty
Date:	30/10/18

We are pleased to attach the results of laboratory testing carried out for the above project. This memo and its attachments constitute a report of the results of tests as detailed in the Contents page(s).

The attached results complete the testing requested and we would therefore wish to confirm that samples will be retained without charge for a period of 28 days from the above date after which they will be appropriately disposed of unless we receive written instructions to the contrary prior to that date.

We trust our report meets with your approval but if you have any queries or require additional information, please do not hesitate to contact the undersigned.

Approved Signatory



Stephen Watson
Laboratory Manager

Signed for and on behalf of Causeway Geotech Ltd

CAUSEWAY GEOTECH

10122

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info@causewaygeotech.com
www.causewaygeotech.com

Project Name: DAA Surveys and Investigations

Report Reference: Core Schedule 1 - FINAL

The table below details the tests carried out, the specifications used, and the number of tests included in this report.

Tests marked with* in this report are not United Kingdom Accreditation Service (UKAS) accredited and are not included in Causeway Geotech Limited's scope of UKAS Accreditation Schedule of Tests. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL	Consolidation properties in oedometer - Using 5 pressures (up to 5 days total duration)	BS 1377-5: 1990: Cl 3: 1	1
	Extra over days (more than initial 5 days)		1
SOIL	Laboratory Vane Shear Strength (3 determinations) *	BS 1377-7: 1990: Cl 3	3
SOIL	Undrained shear strength – triaxial compression without measurement of pore pressure (loads from 0.12 to 24 kN)	BS 1377-7: 1990: Cl 8	5

SUB-CONTRACTED TESTS

In agreement with Client, the following tests were conducted by an approved sub-contractor. All sub-contracting laboratories used are UKAS accredited.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL – subcontracted to Pro Soils Limited *(UKAS 4043)*	Consolidated undrained TX with pwp measurement	BS 1377: Part 8:1990	3
SOIL – subcontracted to Pro Soils Limited *(UKAS 4043)*	Laboratory Vane Shear Strength (3 determinations) *	BS 1377-7: 1990: Cl 3	3

Summary of Laboratory Vane Test Results

Project No.	Project Name
18-0577	DAA Surveys and Investigations

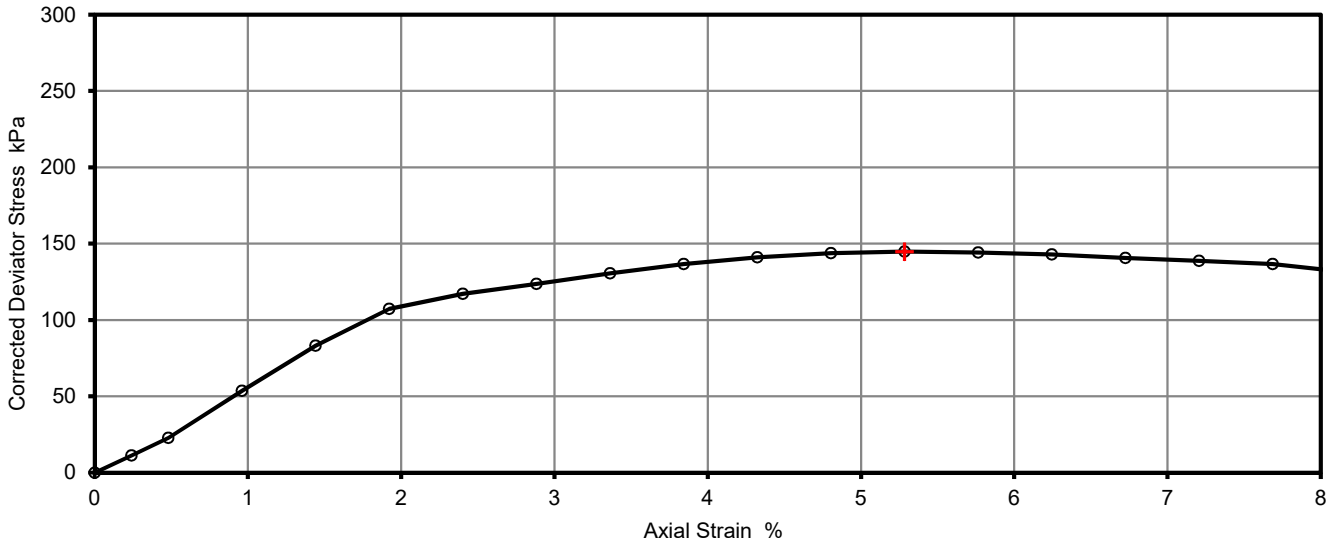
Hole No.	Sample				Soil Description at test horizon	Moisture Content %	Vane shear strength		Sensitivity	Remarks
	Ref	Top	Base	Type			Undisturbed kPa	Remoulded kPa		
BH04		6.65	6.95	C	Greyish brown slightly sandy slightly gravelly CLAY.	1.9	74			
BH06		5.75	6.20	C	Dark brown slightly sandy slightly gravelly silty CLAY.	25	74			
BH06		11.00	11.55	C	Reddish brown slightly gravelly sandy CLAY.	23	56			

Notes	Date Printed	Approved By	Table
Tests performed in accordance with BS 1377:Part 7:clause 3 using 19mm x 30mm vane Tests carried out in nominally 100mm diameter tube unless noted otherwise Shear strengths are average of at least 3 tests unless noted otherwise	19/09/2018	Stephen.Watson	1 sheet 1

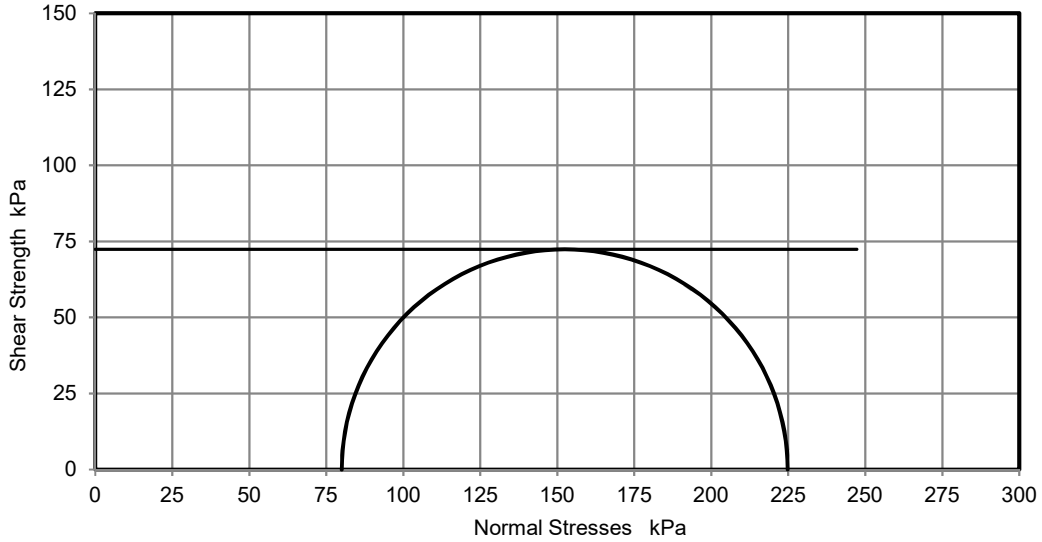
CAUSEWAY GEOTECH	**Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen**				Job Ref	18-0577
					Borehole/Pit No.	BH03
Site Name	DAA Surveys and Investigations				Sample No.	
Soil Description	Blackish grey slightly sandy slightly gravelly CLAY.				Depth	4.30
Specimen Reference	3	Specimen Depth	4.30	m	Sample Type	C
Specimen Description	Firm to stiff blackish grey slightly sandy slightly gravelly CLAY.				KeyLAB ID	Caus2018082956
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen				Date of test	04/09/2018

Test Number		1	
Length		208.2	mm
Diameter		257.2	mm
Bulk Density		0.38	Mg/m^3
Moisture Content		8.2	%
Dry Density		0.35	Mg/m^3
Rate of Strain		2.0	%/min
Cell Pressure		80	kPa
At failure	Axial Strain	5.3	%
	Deviator Stress, $(\sigma_1 - \sigma_3)_f$	145	kPa
	Undrained Shear Strength, c_u	72	kPa $\frac{1}{2}(\sigma_1 - \sigma_3)_f$
	Mode of Failure	Brittle	

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377.
This is provided for information only.

Remarks

Strengths corrected for area change, and membrane effects based on Fig 11 BS1377

Approved: Stephen.Watson

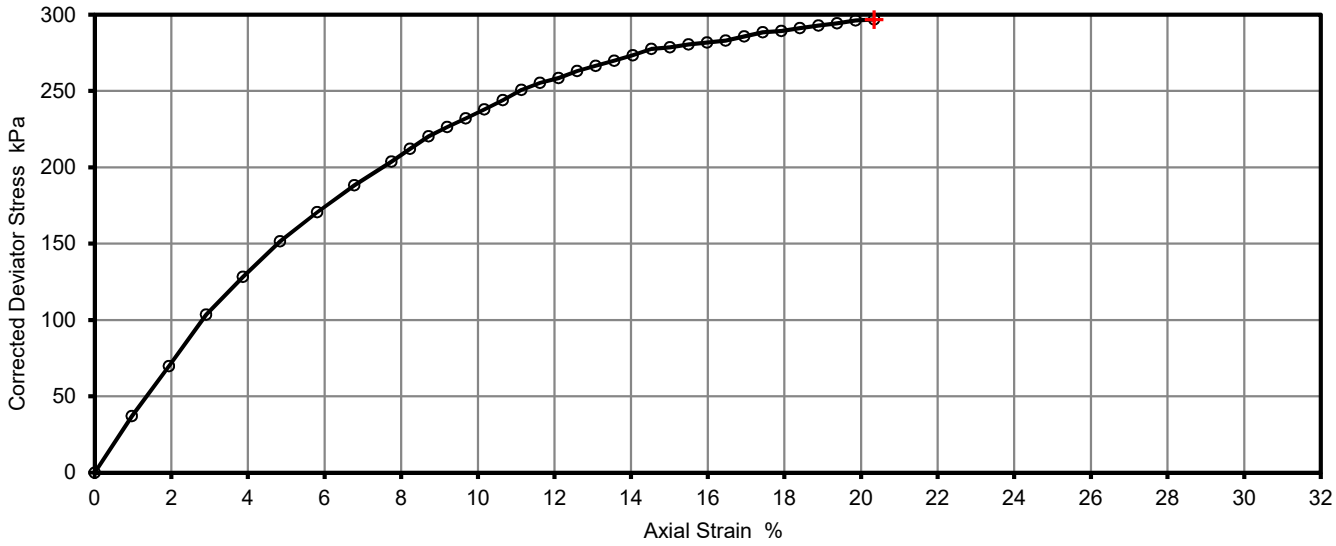
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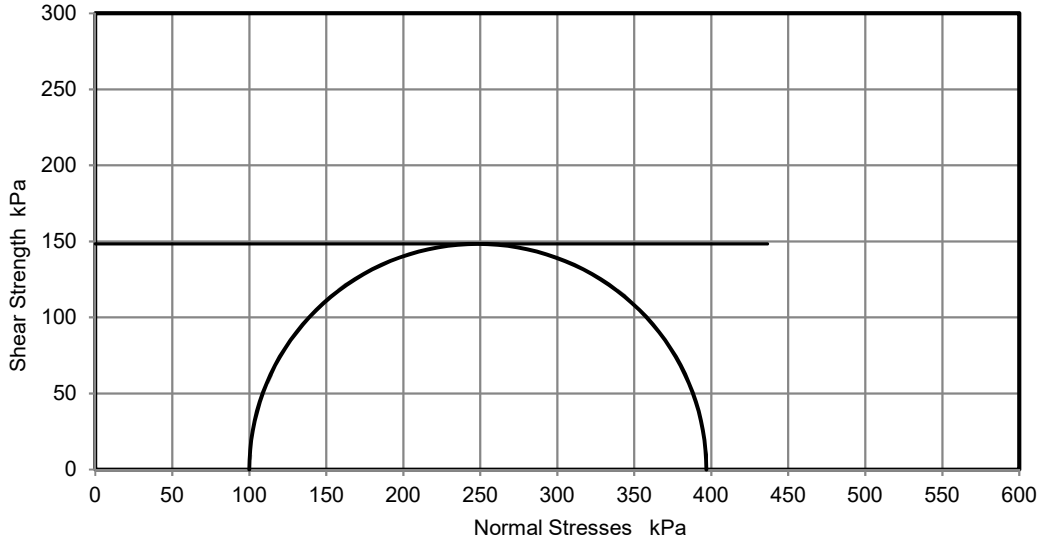
CAUSEWAY GEOTECH	**Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen**				Job Ref	18-0577
					Borehole/Pit No.	BH04
Site Name	DAA Surveys and Investigations				Sample No.	
Soil Description	Brownish grey sandy gravelly CLAY.				Depth	5.10
Specimen Reference	2	Specimen Depth	5.10	m	Sample Type	C
Specimen Description	Stiff brownish grey sandy gravelly CLAY.				KeyLAB ID	Caus2018082958
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen				Date of test	04/09/2018

Test Number		1	
Length		206.5	mm
Diameter		106.1	mm
Bulk Density		2.10	Mg/m^3
Moisture Content		23.3	%
Dry Density		1.71	Mg/m^3
Rate of Strain		2.0	%/min
Cell Pressure		100	kPa
At failure	Axial Strain	20.3	%
	Deviator Stress, $(\sigma_1 - \sigma_3)_f$	297	kPa
	Undrained Shear Strength, c_u	148	kPa $\frac{1}{2}(\sigma_1 - \sigma_3)_f$
	Mode of Failure		

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377.
This is provided for information only.

Remarks

Testing terminated at 20% strain

Approved: Stephen.Watson

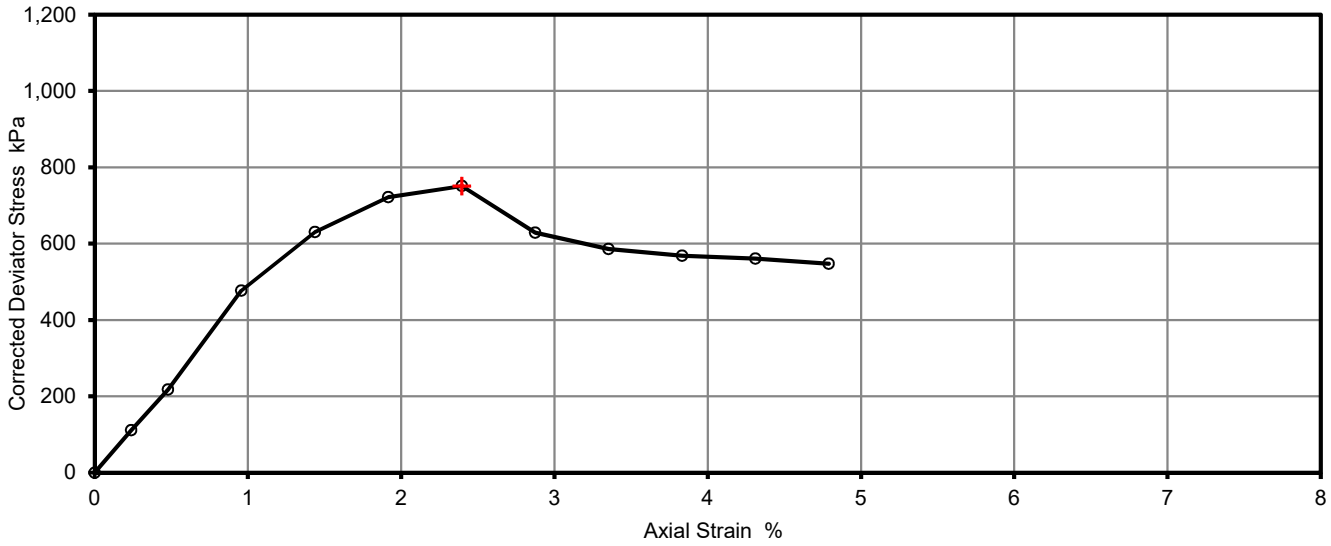
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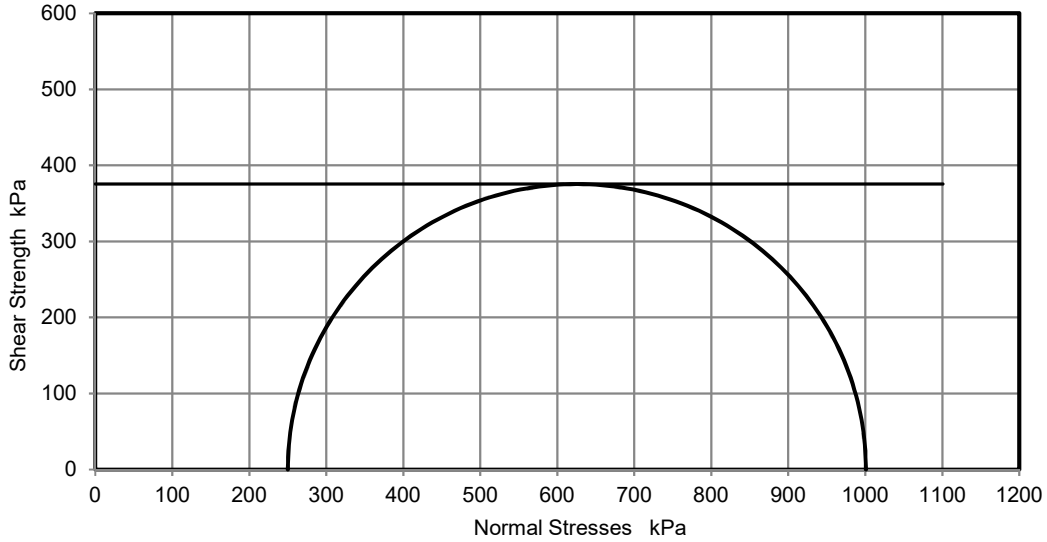
CAUSEWAY GEOTECH	**Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen**				Job Ref	18-0577
					Borehole/Pit No.	BH04
Site Name	DAA Surveys and Investigations				Sample No.	
Soil Description	Reddish brown slightly sandy gravelly silty CLAY.				Depth	11.80
Specimen Reference	2	Specimen Depth	11.80	m	Sample Type	C
Specimen Description					KeyLAB ID	Caus2018082952
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen				Date of test	05/09/2018

Test Number		1	
Length		208.7	mm
Diameter		102.9	mm
Bulk Density		2.30	Mg/m^3
Moisture Content		8.8	%
Dry Density		2.11	Mg/m^3
Rate of Strain		2.0	%/min
Cell Pressure		250	kPa
At failure	Axial Strain	2.4	%
	Deviator Stress, $(\sigma_1 - \sigma_3)_f$	751	kPa
	Undrained Shear Strength, c_u	375	kPa $\frac{1}{2}(\sigma_1 - \sigma_3)_f$
	Mode of Failure	Brittle	

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377.
This is provided for information only.

Remarks

Strengths corrected for area change, and membrane effects based on Fig 11 BS1377

Approved: Stephen.Watson

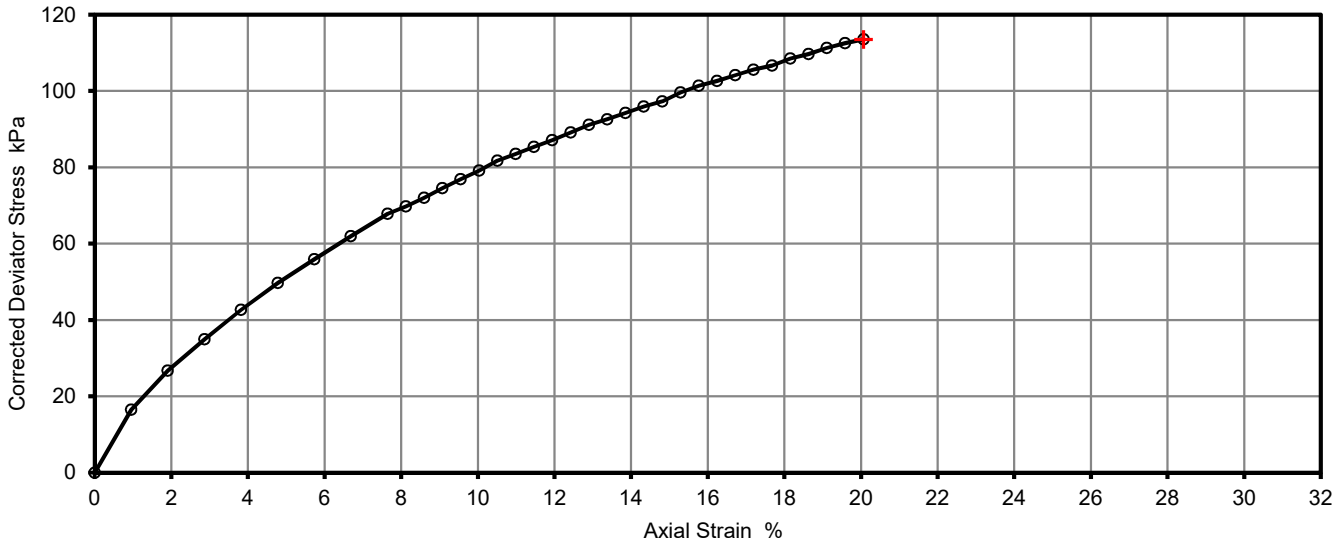
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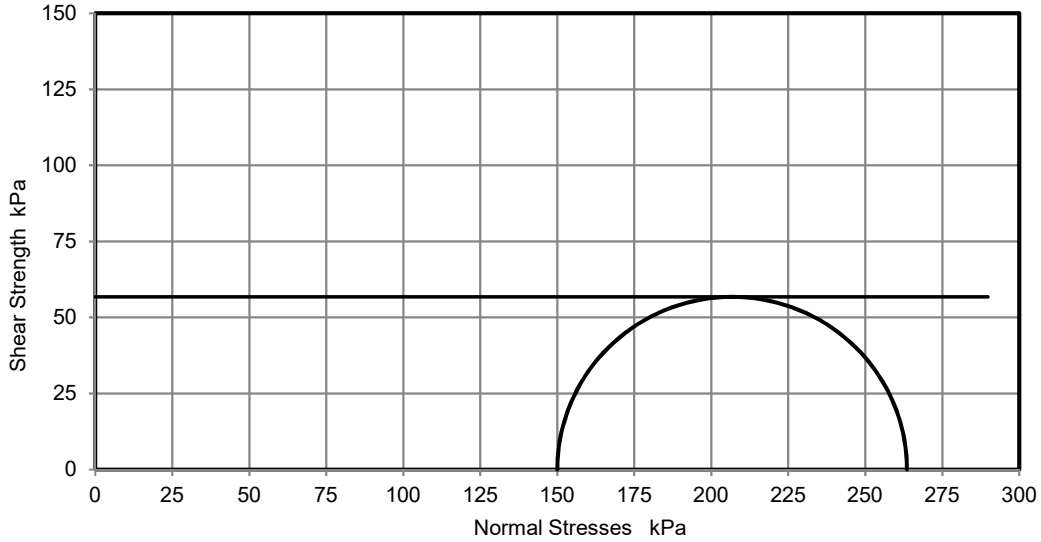
CAUSEWAY GEOTECH	**Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen**				Job Ref	18-0577
					Borehole/Pit No.	BH06
Site Name	DAA Surveys and Investigations				Sample No.	
Soil Description	Dark brown slightly sandy slightly gravelly silty CLAY.				Depth	5.75
Specimen Reference	2	Specimen Depth	5.75	m	Sample Type	C
Specimen Description	Firm dark brown slightly sandy slightly gravelly silty CLAY.				KeyLAB ID	Caus2018082963
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen				Date of test	05/09/2018

Test Number		1	
Length		209.3	mm
Diameter		102.7	mm
Bulk Density		2.06	Mg/m^3
Moisture Content		25.0	%
Dry Density		1.65	Mg/m^3
Rate of Strain		2.0	%/min
Cell Pressure		150	kPa
At failure	Axial Strain	20.1	%
	Deviator Stress, $(\sigma_1 - \sigma_3)_f$	114	kPa
	Undrained Shear Strength, c_u	57	kPa $\frac{1}{2}(\sigma_1 - \sigma_3)_f$
	Mode of Failure		

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377.
This is provided for information only.

Remarks

Testing terminated at 20% strain

Approved: Stephen.Watson

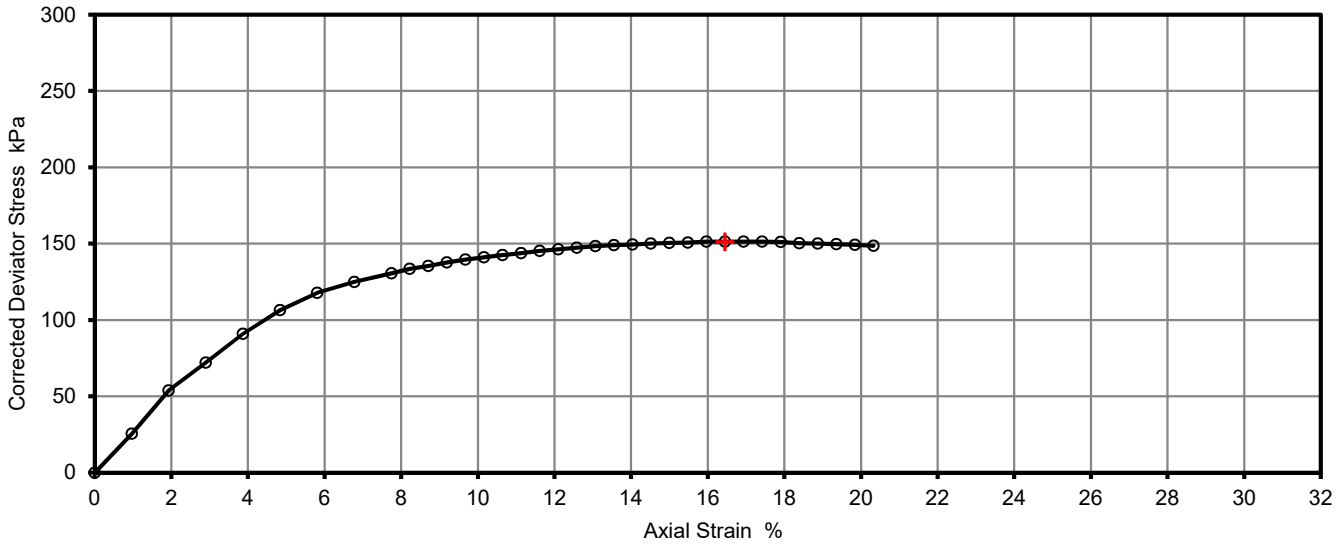
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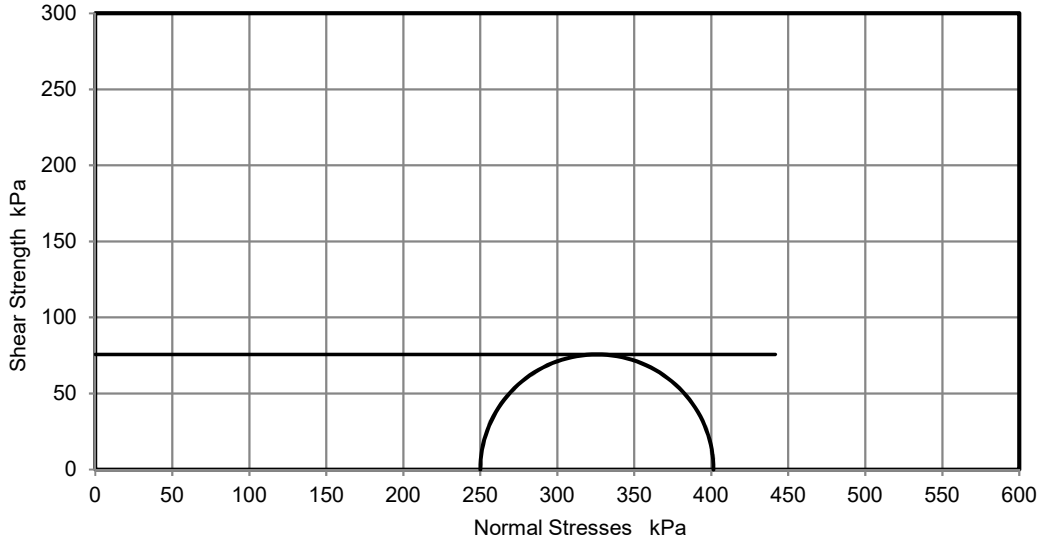
CAUSEWAY GEOTECH	**Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen**				Job Ref	18-0577
					Borehole/Pit No.	BH06
Site Name	DAA Surveys and Investigations				Sample No.	
Soil Description	Reddish brown slightly gravelly sandy CLAY.				Depth	11.00
Specimen Reference	2	Specimen Depth	11.20	m	Sample Type	C
Specimen Description	Stiff reddish brown slightly gravelly sandy CLAY.				KeyLAB ID	Caus2018082965
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen				Date of test	05/09/2018

Test Number		1	
Length		206.6	mm
Diameter		104.6	mm
Bulk Density		2.05	Mg/m^3
Moisture Content		23.1	%
Dry Density		1.66	Mg/m^3
Rate of Strain		2.0	%/min
Cell Pressure		250	kPa
At failure	Axial Strain	16.5	%
	Deviator Stress, $(\sigma_1 - \sigma_3)_f$	151	kPa
	Undrained Shear Strength, c_u	76	kPa $\frac{1}{2}(\sigma_1 - \sigma_3)_f$
	Mode of Failure	Brittle	

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377.
This is provided for information only.

Remarks

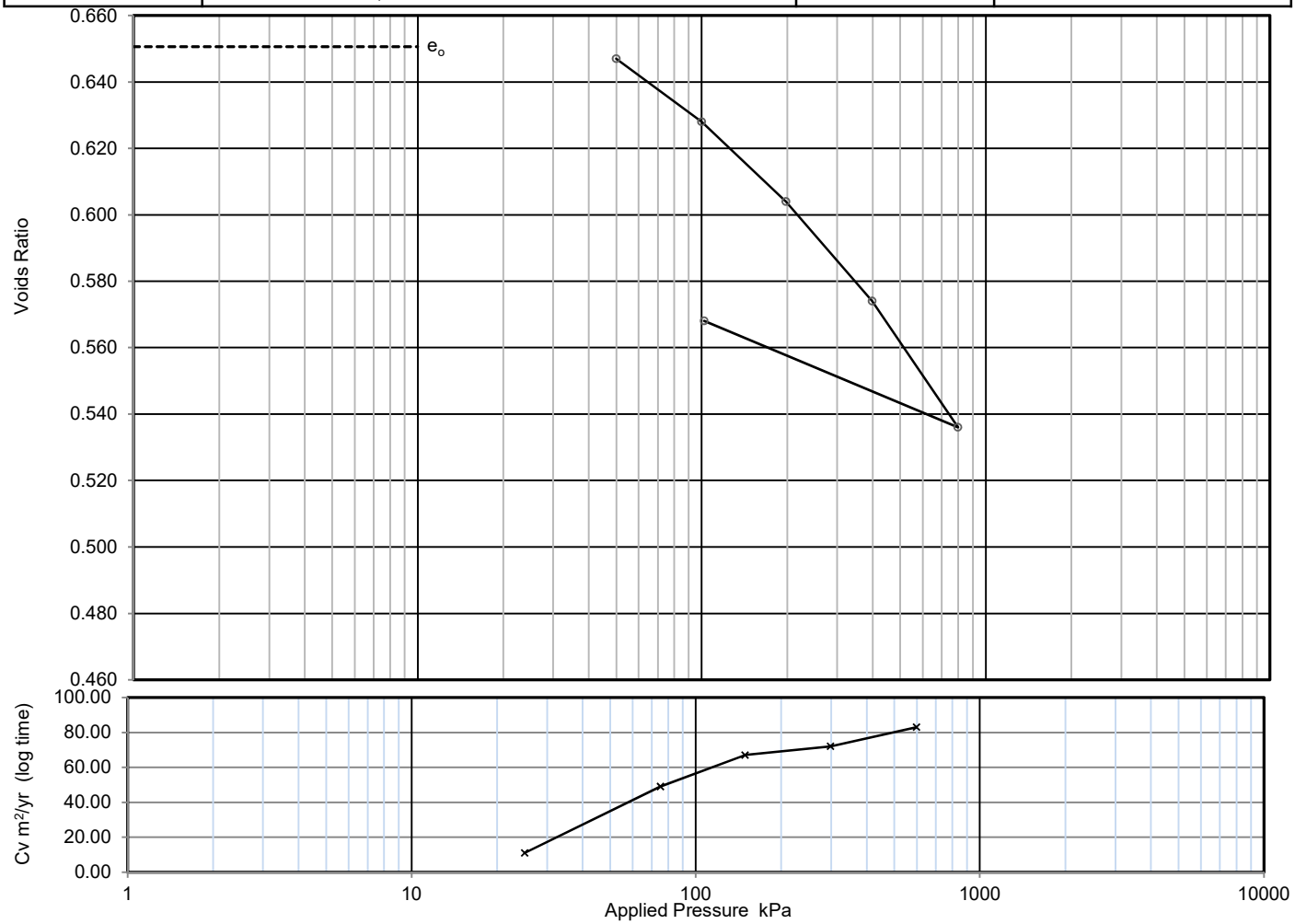
Strengths corrected for area change, and membrane effects based on Fig 11 BS1377

Approved: Stephen.Watson

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CAUSEWAY GEOTECH	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3				Job Ref	18-0577
					Borehole/Pit No.	BH04
Site Name	DAA Surveys and Investigations				Sample No.	
Soil Description	Greyish brown slightly sandy slightly gravelly CLAY.				Depth	6.65
Specimen Reference	1	Specimen Depth	6.65	m	Sample Type	C
Specimen Description	Greyish brown slightly sandy slightly gravelly CLAY.				KeyLAB ID	Caus2018082959
Test Method	BS1377:Part 5:1990, clause 3				Date started	03/09/2018



Applied Pressure kPa	Voids ratio	M_v m^2/MN	C_v ($t_{50, log}$) m^2/yr	C_v ($t_{90, root}$) m^2/yr	C_{sec}
0.0	0.651	-	-	-	-
50	0.647	0.046	11	14	0.00036
100	0.628	0.23	49	180	0.00053
198	0.604	0.15	67	370	0.00090
398	0.574	0.093	72	360	0.00097
798	0.536	0.060	83	230	0.0013
102	0.568	0.030			

Preparation

Index tests Liquid limit % Plastic limit %

Particle density assumed 2.65 Mg/m^3

Specimen details	Initial	Final	
Diameter	75.00	-	mm
Height	19.65	18.67	mm
Moisture Content	28.1	24.7	%
Bulk density	2.06	2.11	Mg/m^3
Dry density	1.61	1.69	Mg/m^3
Voids Ratio	0.651	0.568	
Saturation	114	115	%
Average temperature for test			°C
Swelling Pressure			kPa
Settlement on saturation			%

Remarks

Final values should be used with caution

C_v plotted at mid point of load increments

C_v corrected to 20°C

Approved

Stephen.Watson

Printed :

19/09/2018 12:26

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LABORATORY REPORT

REPORT

4043

Contract Number: PSL18/4642

Report Date: 30 October 2018

Client's Reference: 18-0577

Client Name: Causeway Geotech
8 Drumahiskey Road
Ballymoney
Co.Antrim
BT53 7QL

For the attention of: Stephen Watson

Contract Title: DAA Surveys

Date Received: 13/9/2018
Date Commenced: 13/9/2018
Date Completed: 30/10/2018

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)	S Eyre (Senior Technician)	A Fry (Senior Technician)

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Doncaster DN4 0AR
tel: +44 (0)844 815 6641
fax: +44 (0)844 815 6642
e-mail: rgunson@prosoils.co.uk
awatkins@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH03	2	CS	5.10	5.50	Brown very gravelly sandy CLAY.
BH04	3	CS	9.25	9.70	Brown slightly sandy silty CLAY.
BH06	2	CS	8.60	9.05	Brown gravelly sandy silty CLAY.

UKAS TESTING
4043

PSL
Professional Soils Laboratory

DAA Surveys

Contract No:
PSL18/4642
Client Ref:
18-0577

SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 9 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Peak Shear Strength kPa	Residual Shear Strength kPa	Remarks
BH03	2	CS	5.10	5.50	7.8			Too granular
BH04	2	CS	9.25	9.70	27	58		
BH06	3	CS	8.60	9.05	23	102		

* This test is out of our UKAS scope

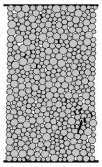
PSL Professional Soils Laboratory	DAA Surveys	Contract No: PSL18/4642 Client Ref: 18-0577

Effective Stress Triaxial Compression

Consolidated Undrained

Summary Report

Sample Details



sketch showing specimen location in original sample

Depth			5.10-5.50m CS2
Description			Brown very gravelly sandy CLAY.
Type			Undisturbed, Vertical orientation.
Initial Sample Length	L_o	(mm)	209.0
Initial Sample Diameter	D_o	(mm)	106.0
Initial Sample Weight	W_o	(gr)	4284.0
Initial Bulk Density	ρ_o	(Mg/m3)	2.32
Particle Density	ρ_s	(Mg/m3)	2.65

Initial Conditions

Initial Cell Pressure	σ_{3i}	(kPa)	670
Initial Back Pressure	U_{bi}	(kPa)	550
Membrane Thickness	m_b	(mm)	0.400
Displacement Input	L_{IP}	(mm)	CH 2
Load Input	N_{IP}	(N)	CH 1
Pore Water Pressure Input	u_{pwp}	(kPa)	CH 3
Sample Volume	V	(cc)	CH 2
Initial Moisture	ω_i	(%)	7.81
Initial Dry Density	ρ_{di}	(Mg/m3)	2.15
Initial Voids Ratio	e_i	.	0.230
Initial Degree of Saturation	S_i	(%)	90
B Value	B	.	0.98

Final Conditions

Final Moisture	ω_f	(%)	9.62
Final Dry Density	ρ_{df}	(Mg/m3)	2.17
Final Voids Ratio	e_f	.	0.219
Final Degree of Saturation	S_f	(%)	100.0
Failure Criteria		.	Max. Dev. Stress
Strain At Failure	ε_f	(%)	11.15
Stress At Failure	$(\sigma_1-\sigma_3)_f$	(kPa)	986.1
Minor Stress At Failure	σ_3'	(kPa)	305.0
Major Stress At Failure	σ_1'	(kPa)	1291.1
Principal Stress At Failure	σ_1'/σ_3'	(kPa)	4.233

Notes



UKAS TESTING 4043

Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH03 5.10-5.50m CS2
Database: .\SQLEXPRESS \ tester-2		Test Date	24/10/2018
Site Reference		Borehole	BH03
Jobfile	DAA Surveys	Sample	5.10-5.50m CS2
Client	Causeway Geotech Ltd	Depth	5.10-5.50m CS2

Operator * Checked * Approved *

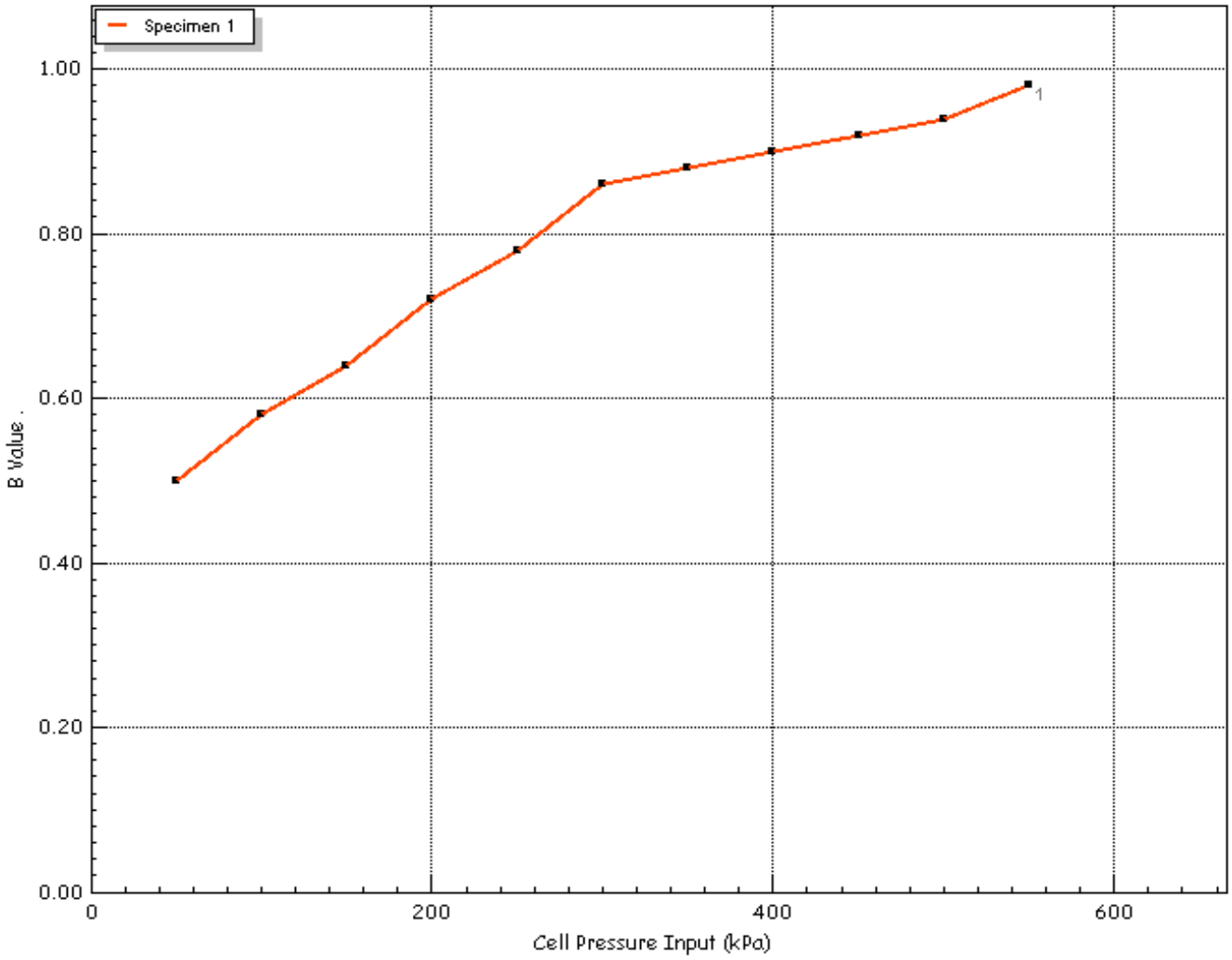
PSL Professional Soils Laboratory

Effective Stress Triaxial Compression

Consolidated Undrained

Saturation Plots

Saturation Method			Stepped
Cell Pressure Input	σ	(kPa)	550
Pore Water Pressure Input	u pwp	(kPa)	525
B Value	B	.	0.98



UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH03 5.10-5.50m CS2
	Database: .\SQLEXPRESS \ tester-2			Test Date	24/10/2018
	Site Reference			Borehole	BH03
	Jobfile	DAA Surveys		Sample	5.10-5.50m CS2
	Client	Causeway Geotech Ltd		Depth	5.10-5.50m CS2
	Operator	*	Checked *		Approved *

PSL Professional Soils Laboratory

Effective Stress Triaxial Compression

Consolidated Undrained

Consolidation Plots

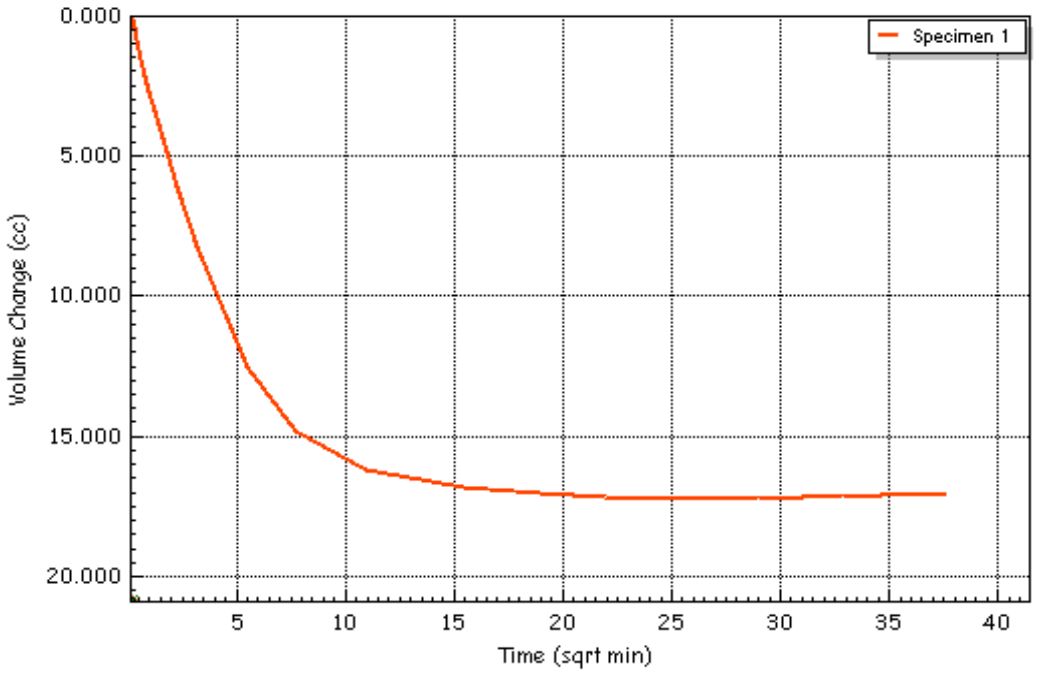
Initial Conditions

Initial Cell Pressure	σ_3	(kPa)	670
Initial Back Pressure	u_{bi}	(kPa)	550
Pore Water Pressure Input	u_{pwp}	(kPa)	636
Drainage Method			Radial+One End

Final Conditions

PWP Dissipation %	U%	(%)	100.00
Volumetric Strain	ε_v%	(%)	0.93
Corrected Length	L_C	(mm)	208.4
Corrected Area	A_C	(cm2)	87.70
Corrected Volume	V_C	(cc)	1827.283
T100 Time to Failure	t_{100}	(min)	39.27
Consolidation	c_V	(m2/year	6.044
Compressibility	m_V	(m2/MN)	0.108
Test Time	t_F	(h:m:s)	02:00:00
Estimated Strain to Failure	ε %	(%)	5.0
Shear Machine Speed	d_r	(mm/min	0.08681

Notes



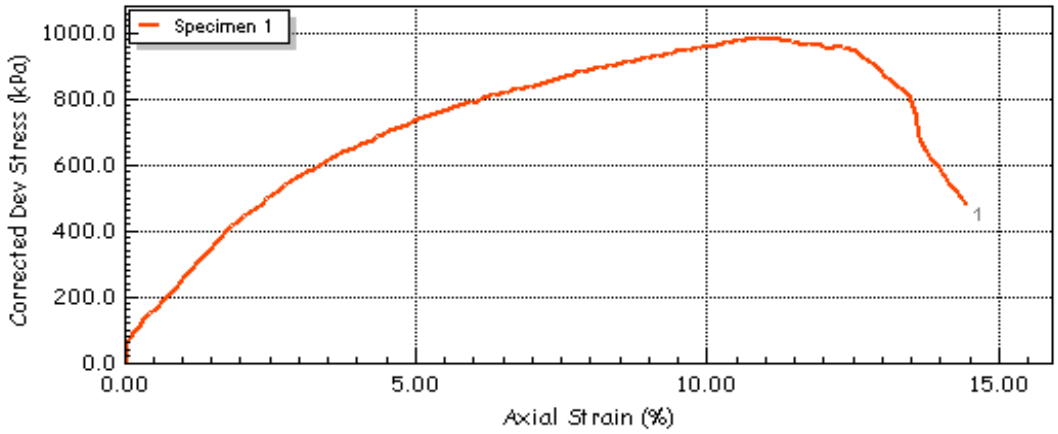
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	Site Reference			Borehole	BH03
	Jobfile	DAA Surveys		Sample	5.10-5.50m CS2
	Client	Causeway Geotech Ltd		Depth	5.10-5.50m CS2
	Operator *		Checked *		Approved *

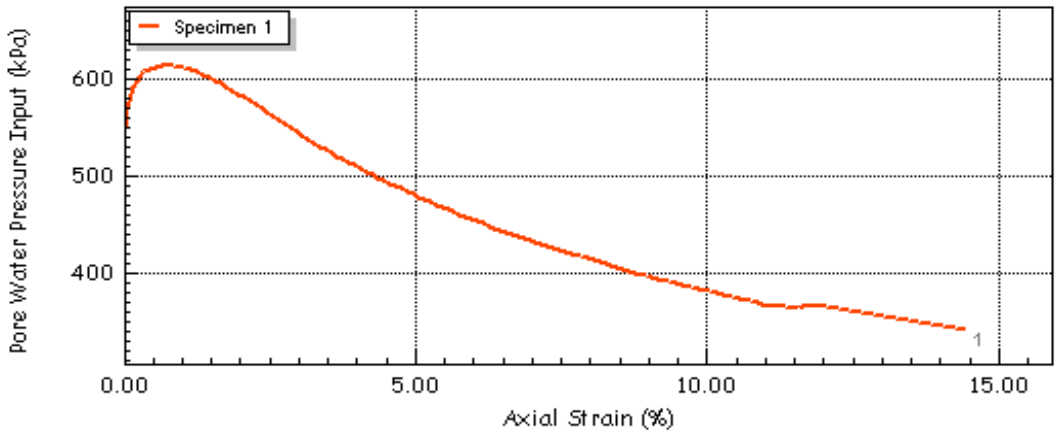
PSL Professional Soils Laboratory

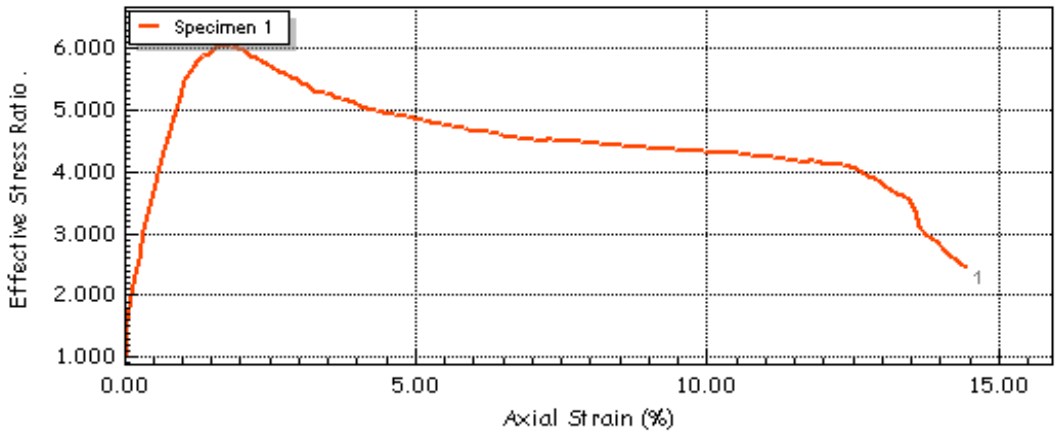
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots







Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH03 5.10-5.50m CS2
Database: .\SQLEXPRESS \ tester-2		Test Date	24/10/2018
Site Reference		Borehole	BH03
Jobfile	DAA Surveys	Sample	5.10-5.50m CS2
Client	Causeway Geotech Ltd	Depth	5.10-5.50m CS2
Operator *	Checked *	Approved *	

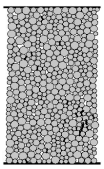
UKAS TESTING 4043

PSL Professional Soils Laboratory

Effective Stress Triaxial Compression

Consolidated Undrained

Summary Report

Sample Details				
 *sketch showing specimen location in original sample*	Depth	9.25-9.70m CS3		
	Description	Brown gravelly sandy silty CLAY.		
	Type	Undisturbed, Vertical orientation.		
	Initial Sample Length	L_0	(mm)	211.1
	Initial Sample Diameter	D_0	(mm)	104.3
	Initial Sample Weight	W_0	(gr)	3573.0
	Initial Bulk Density	ρ_0	(Mg/m3)	1.98
	Particle Density	ρ_s	(Mg/m3)	2.65

Initial Conditions			Stage 1
Initial Cell Pressure	σ_{3i}	(kPa)	670
Initial Back Pressure	U_{bi}	(kPa)	450
Membrane Thickness	m_b	(mm)	0.400
Displacement Input	L_{IP}	(mm)	CH 2
Load Input	N_{IP}	(N)	CH 1
Pore Water Pressure Input	u_{pwp}	(kPa)	CH 3
Sample Volume	V	(cc)	CH 2
Initial Moisture	ω_i	(%)	27
Initial Dry Density	ρ_{di}	(Mg/m3)	1.56
Initial Voids Ratio	e_i	.	0.697
Initial Degree of Saturation	S_i	(%)	100
B Value	B	.	0.99

Final Conditions			
Final Moisture	ω_f	(%)	25
Final Dry Density	ρ_{df}	(Mg/m3)	1.61
Final Voids Ratio	e_f	.	0.650
Final Degree of Saturation	S_f	(%)	100.0
			Stage 1
Failure Criteria		.	Max. Dev. Stress
Strain At Failure	ε_f	(%)	7.75
Stress At Failure	$(\sigma_1-\sigma_3)$	(kPa)	561.8
Minor Stress At Failure	σ_3'	(kPa)	224.0
Major Stress At Failure	σ_1'	(kPa)	785.8
Principal Stress At Failure	σ_1'/σ_3'		3.508



Notes

Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH04 9.25-9.70m
		Test Date	24/10/2018
Site Reference		Borehole	BH04
Jobfile	DAA Surveys	Sample	9.25-9.70m
Client	Causeway Geotech	Depth	9.25-9.70m CS3

Operator	*	Checked	*	Approved	*

Database: .\SQLEXPRESS \ tester-2

UKAS TESTING 4043

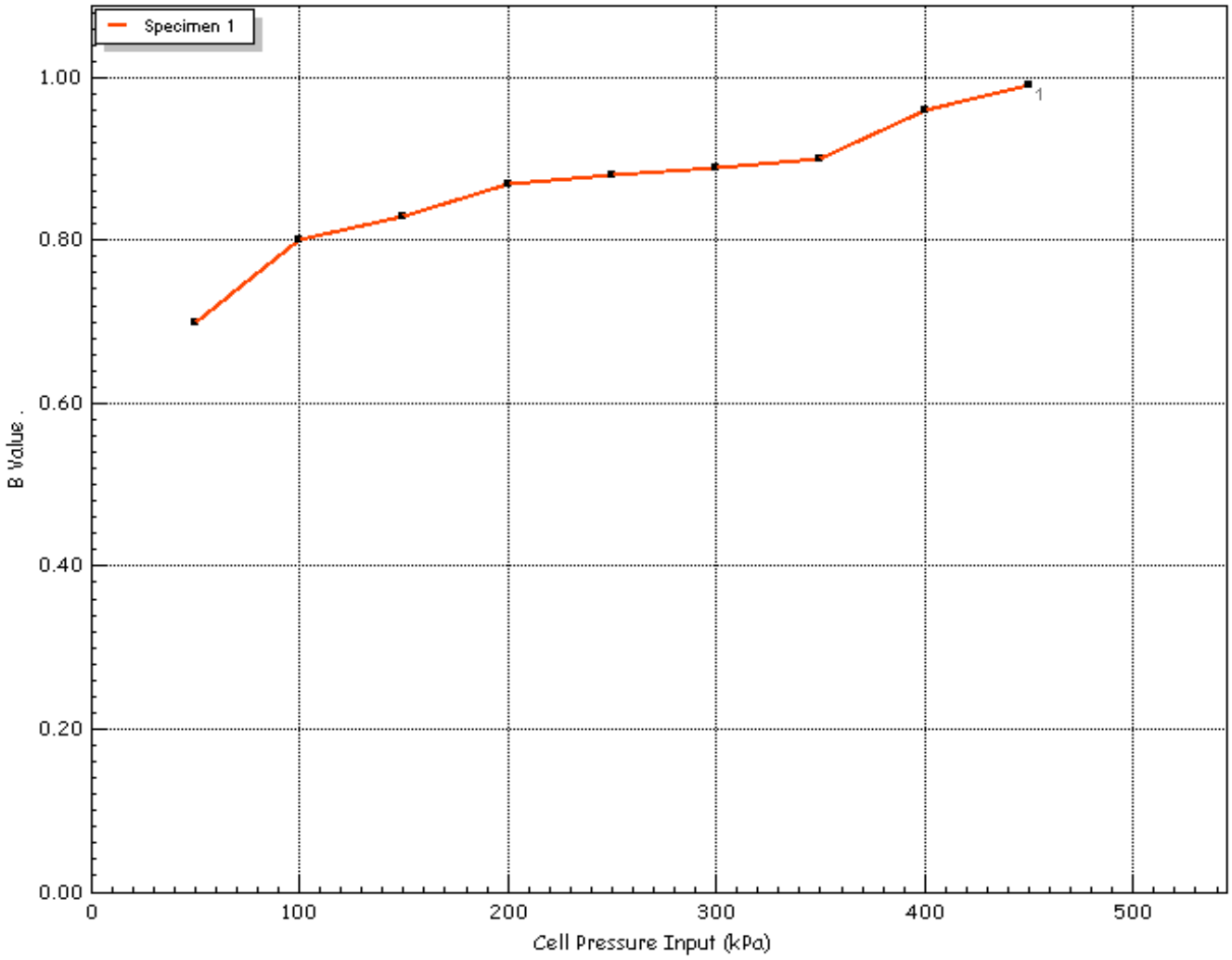
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Effective Stress Triaxial Compression

Consolidated Undrained

Saturation Plots

Saturation Method			Stepped
Cell Pressure Input	σ	(kPa)	450
Pore Water Pressure Input	u pwp	(kPa)	435
B Value	B	.	0.99



UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH04 9.25-9.70m
	Database: .\SQLEXPRESS \ tester-2			Test Date	24/10/2018
	Site Reference			Borehole	BH04
	Jobfile	DAA Surveys		Sample	9.25-9.70m
	Client	Causeway Geotech		Depth	9.25-9.70m CS3
	Operator	*	Checked *	Approved	*

PSL Professional Soils Laboratory

Effective Stress Triaxial Compression

Consolidated Undrained

Consolidation Plots

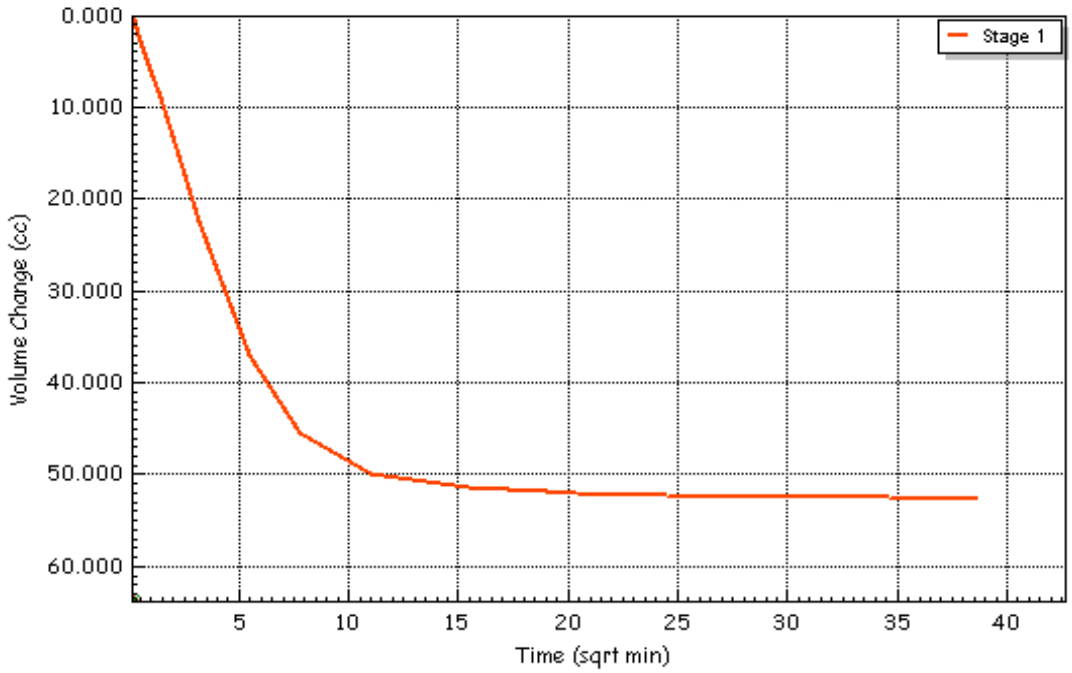
Initial Conditions

Initial Cell Pressure	σ_3	(kPa)	670
Initial Back Pressure	u_{bi}	(kPa)	450
Pore Water Pressure Input	u_{pwp}	(kPa)	646
Drainage Method			Radial+One End

Final Conditions

PWP Dissipation %	U%	(%)	100.00
Volumetric Strain	ε_v%	(%)	2.92
Corrected Length	L_C	(mm)	209.0
Corrected Area	A_C	(cm2)	83.78
Corrected Volume	V_C	(cc)	1750.963
T100 Time to Failure	t_{100}	(min)	49.90
Consolidation	c_V	(m2/year)	4.502
Compressibility	m_V	(m2/MN)	0.149
Test Time	t_F	(h:m:s)	02:00:00
Estimated Strain to Failure	ε %	(%)	5.0
Shear Machine Speed	d_r	(mm/min)	0.08710

Notes



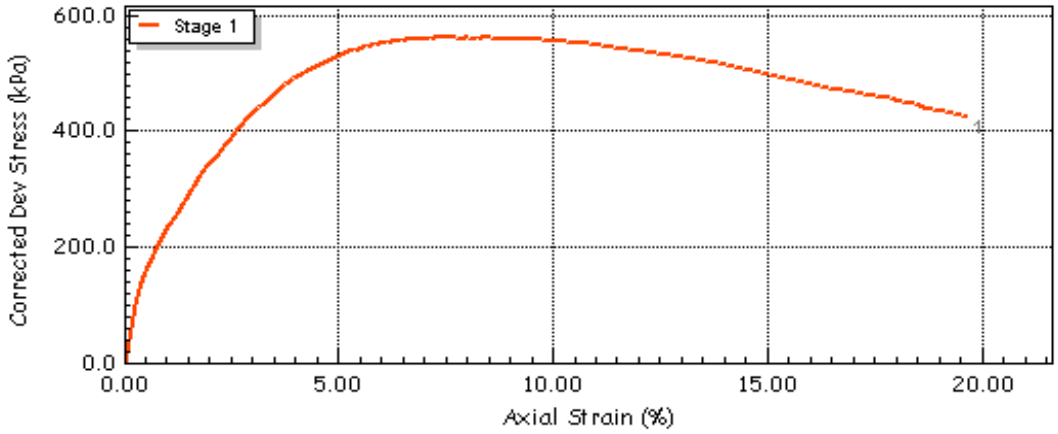
UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH04 9.25-9.70m
	Database: .\SQLEXPRESS \ tester-2			Test Date	24/10/2018
	Site Reference			Borehole	BH04
	Jobfile	DAA Surveys		Sample	9.25-9.70m
	Client	Causeway Geotech		Depth	9.25-9.70m CS3
	Operator *		Checked *		Approved *

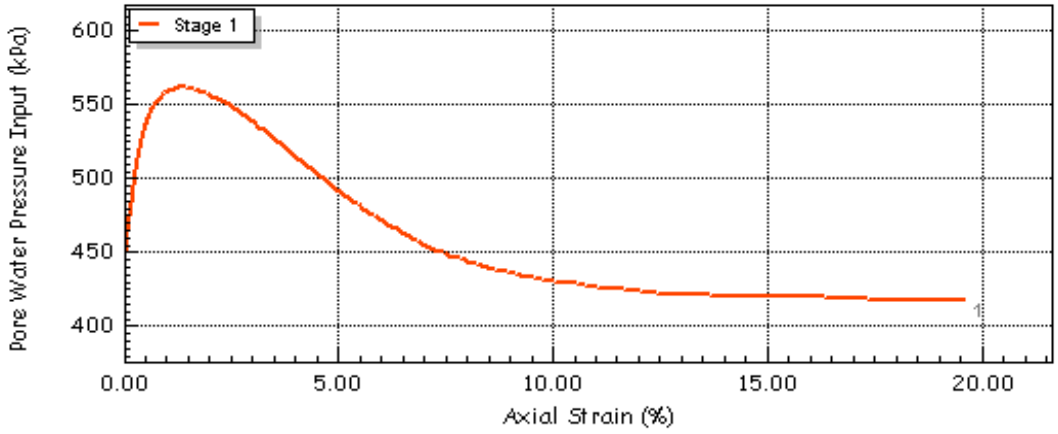
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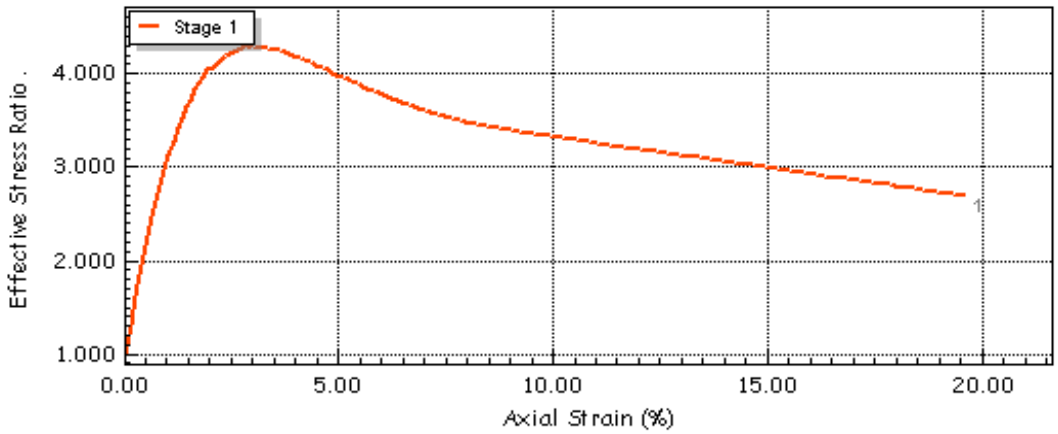
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots







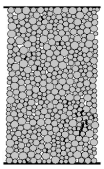
UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH04 9.25-9.70m
	Database: .\SQLEXPRESS \ tester-2		Test Date	24/10/2018
	Site Reference		Borehole	BH04
	Jobfile	DAA Surveys	Sample	9.25-9.70m
	Client	Causeway Geotech	Depth	9.25-9.70m CS3
	Operator *	Checked *	Approved *	

PSL Professional Soils Laboratory

Effective Stress Triaxial Compression

Consolidated Undrained

Summary Report

Sample Details				
 *sketch showing specimen location in original sample*	Depth	8.60-9.05m CS2		
	Description	Brown slightly sandy silty CLAY.		
	Type	Undisturbed, Vertical orientation.		
	Initial Sample Length	L_0	(mm)	211.1
	Initial Sample Diameter	D_0	(mm)	104.4
	Initial Sample Weight	W_0	(gr)	3660.0
	Initial Bulk Density	ρ_0	(Mg/m3)	2.03
	Particle Density	ρ_s	(Mg/m3)	2.65

Initial Conditions			Stage 1
Initial Cell Pressure	σ_{3i}	(kPa)	650
Initial Back Pressure	U_{bi}	(kPa)	450
Membrane Thickness	m_b	(mm)	0.400
Displacement Input	L_{IP}	(mm)	CH 2
Load Input	N_{IP}	(N)	CH 1
Pore Water Pressure Input	u_{pwp}	(kPa)	CH 3
Sample Volume	V	(cc)	CH 6
Initial Moisture	ω_i	(%)	23
Initial Dry Density	ρ_{di}	(Mg/m3)	1.65
Initial Voids Ratio	e_i	.	0.607
Initial Degree of Saturation	S_i	(%)	100
B Value	B	.	0.98

Final Conditions			
Final Moisture	ω_f	(%)	21
Final Dry Density	ρ_{df}	(Mg/m3)	1.73
Final Voids Ratio	e_f	.	0.532
Final Degree of Saturation	S_f	(%)	100.0
			Stage 1
Failure Criteria		.	Max. Dev. Stress
Strain At Failure	ε_f	(%)	2.95
Stress At Failure	$(\sigma_1 - \sigma_3)$	(kPa)	174.2
Minor Stress At Failure	σ_3'	(kPa)	114.0
Major Stress At Failure	σ_1'	(kPa)	288.2
Principal Stress At Failure	σ_1'/σ_3'		2.528



Notes

Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH06 8.60-9.05m CS2
		Test Date	24/10/2018
Site Reference		Borehole	BH06
Jobfile	DAA Surveys	Sample	8.60-9.05m CS2
Client	Causeway Geotech	Depth	8.60-9.05m CS2

Operator	*	Checked	*	Approved	*

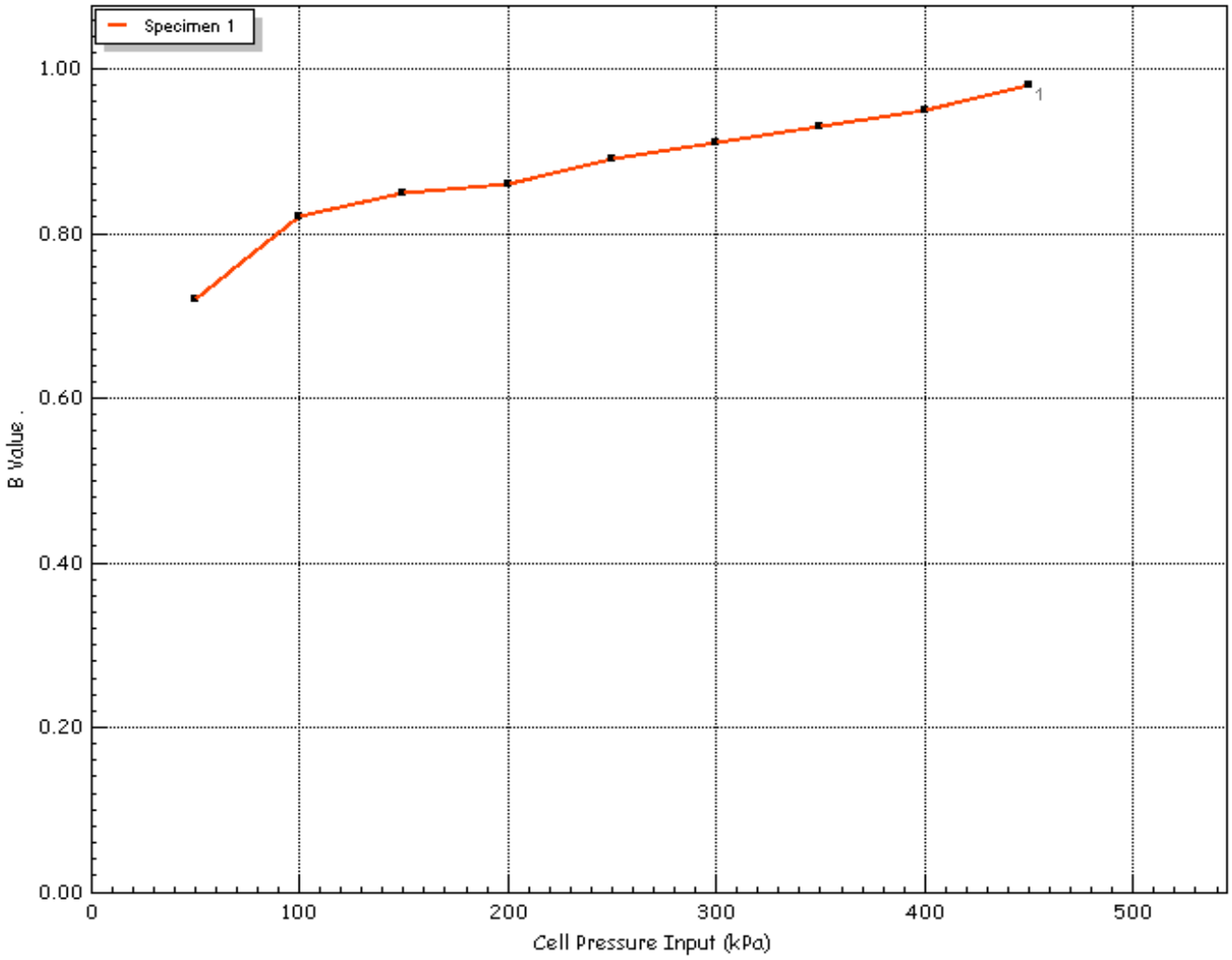
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Effective Stress Triaxial Compression

Consolidated Undrained

Saturation Plots

Saturation Method			Stepped
Cell Pressure Input	σ	(kPa)	450
Pore Water Pressure Input	u pwp	(kPa)	446
B Value	B	.	0.98



Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH06 8.60-9.05m CS2
Database: .\SQLEXPRESS \ tester-2		Test Date	24/10/2018
Site Reference		Borehole	BH06
Jobfile	DAA Surveys	Sample	8.60-9.05m CS2
Client	Causeway Geotech	Depth	8.60-9.05m CS2
Operator *	Checked *	Approved *	

UKAS TESTING 4043

PSL Professional Soils Laboratory

Effective Stress Triaxial Compression

Consolidated Undrained

Consolidation Plots

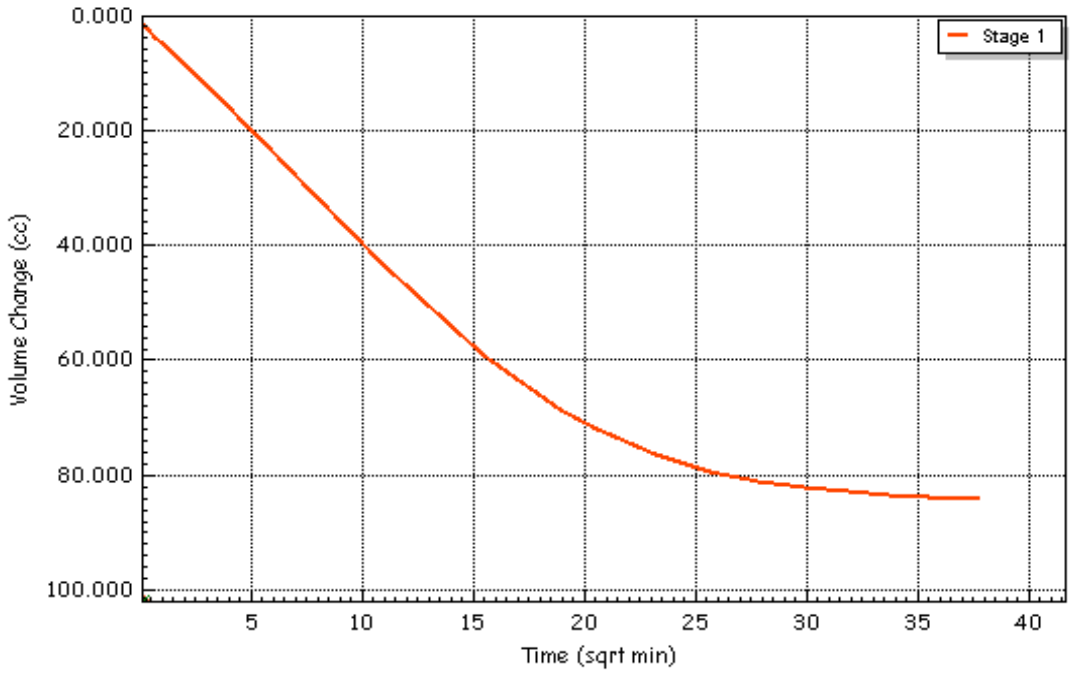
Initial Conditions

Initial Cell Pressure	σ_3	(kPa)	650
Initial Back Pressure	u_{bi}	(kPa)	450
Pore Water Pressure Input	u_{pwp}	(kPa)	640
Drainage Method			Radial+One End

Final Conditions

PWP Dissipation %	U%	(%)	100.00
Volumetric Strain	ε_v%	(%)	4.66
Corrected Length	L_C	(mm)	207.8
Corrected Area	A_C	(cm2)	82.95
Corrected Volume	V_C	(cc)	1722.955
T100 Time to Failure	t_{100}	(min)	453.14
Consolidation	c_V	(m2/year)	0.497
Compressibility	m_V	(m2/MN)	0.245
Test Time	t_F	(h:m:s)	13:35:39
Estimated Strain to Failure	ε %	(%)	5.0
Shear Machine Speed	d_r	(mm/min)	0.01274

Notes



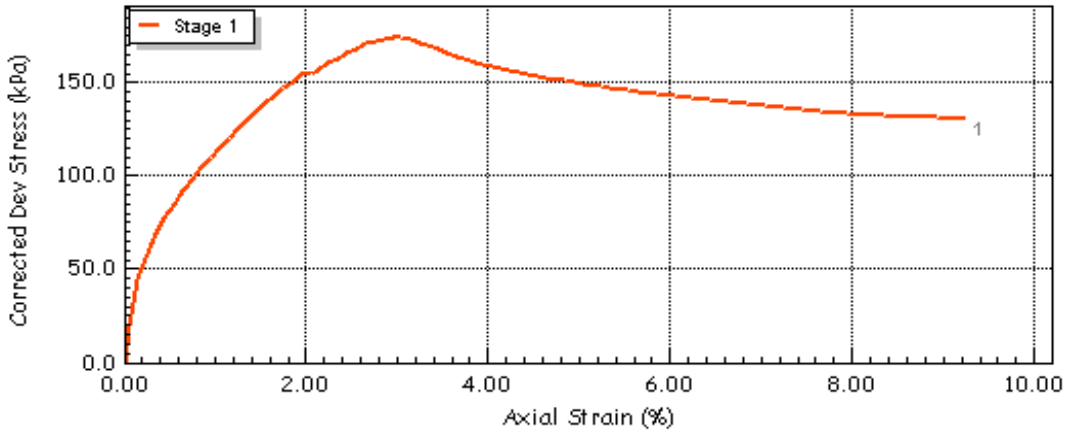
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	Database: .\SQLEXPRESS \ tester-2			Test Date	24/10/2018
	Site Reference			Borehole	BH06
	Jobfile	DAA Surveys		Sample	8.60-9.05m CS2
	Client	Causeway Geotech		Depth	8.60-9.05m CS2
	Operator	*	Checked *	Approved	*

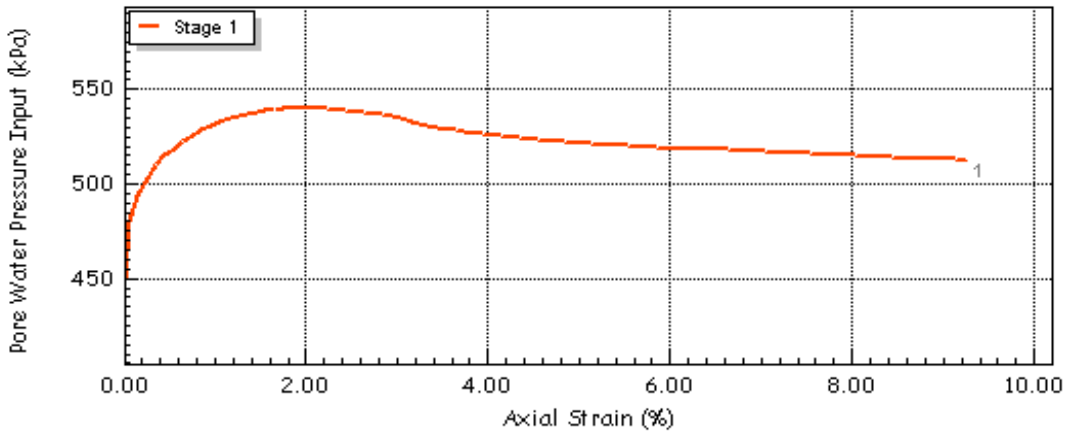
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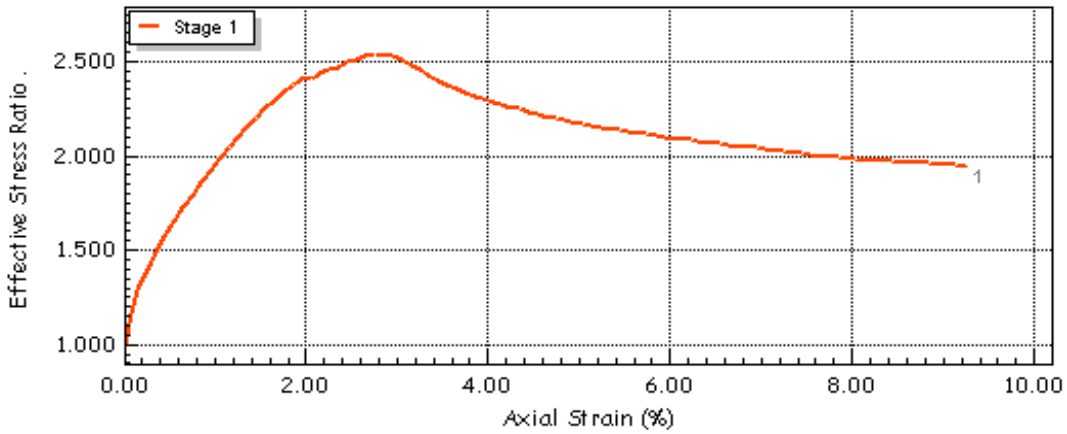
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots







Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH06 8.60-9.05m CS2
Database: .\SQLEXPRESS \ tester-2		Test Date	24/10/2018
Site Reference		Borehole	BH06
Jobfile	DAA Surveys	Sample	8.60-9.05m CS2
Client	Causeway Geotech	Depth	8.60-9.05m CS2
Operator *	Checked *	Approved *	

UKAS TESTING 4043

PSL Professional Soils Laboratory

LABORATORY RESTRICTION REPORT

Project Reference	18-0577	To	Colm Hurley
Project Name	DAA Surveys and Investigations	Position	Project Manager
TR reference	18-0577 / 3	From	Stephen Watson
		Position	Laboratory Manager

The following sample(s) and test(s) are restricted as detailed below. Could you please complete the "Required Action" column and return the completed form to the laboratory.

Hole Number	Sample			Test Type	Reason for Restriction	Required Action
	Number	Depth (m)	Type			
BH03		4.3	C	Oedometer	Gravel content too high to obtain test specimen	Cancel
BH03		4.30	C	Lab Vane	Gravel content in sample too high to carry out test	Cancel
BH04		5.10	C	Lab Vane	Insufficient material remaining after UUT carried out	Cancel
BH04		11.80	C	Lab Vane	Gravel content in sample too high to carry out test	Cancel
BH04		14.70	C	Lab Vane	Gravel content in sample too high to carry out test	Cancel

For electronic reporting a form of electronic signature or printed name is acceptable

Laboratory Signature	Project Manager Signature
Stephen Watson	Colm Hurley
Date	Date
04 September 2018	04 September 2018

CAUSEWAY GEOTECH

UKAS TESTING
10122

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SOIL AND ROCK SAMPLE ANALYSIS
LABORATORY TEST REPORT

Project Name:	DAA Surveys and Investigations
Project No.:	18-0577
Client:	Dublin Airport Authority
Engineer:	Balfour Beatty
Date:	30/10/18

We are pleased to attach the results of laboratory testing carried out for the above project. This memo and its attachments constitute a report of the results of tests as detailed in the Contents page(s).

The attached results complete the testing requested and we would therefore wish to confirm that samples will be retained without charge for a period of 28 days from the above date after which they will be appropriately disposed of unless we receive written instructions to the contrary prior to that date.

We trust our report meets with your approval but if you have any queries or require additional information, please do not hesitate to contact the undersigned.

Approved Signatory



Stephen Watson
Laboratory Manager

Signed for and on behalf of Causeway Geotech Ltd

CAUSEWAY GEOTECH

10122

+44 (0)28 2766 6640
info@causewaygeotech.com
www.causewaygeotech.com

Project Name: DAA Surveys and Investigations

Report Reference: Core Schedule 2 - FINAL

The table below details the tests carried out, the specifications used, and the number of tests included in this report.

Tests marked with* in this report are not United Kingdom Accreditation Service (UKAS) accredited and are not included in Causeway Geotech Limited's scope of UKAS Accreditation Schedule of Tests. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL	Undrained shear strength – triaxial compression without measurement of pore pressure (loads from 0.12 to 24 kN)	BS 1377-7: 1990: Cl 8	2

SUB-CONTRACTED TESTS

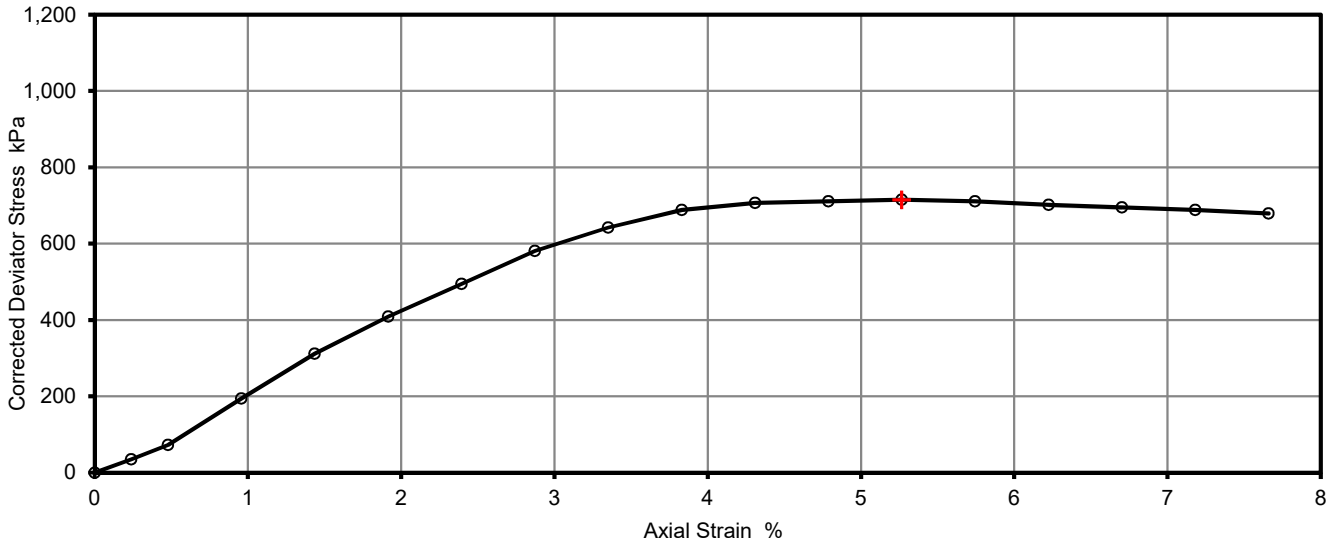
In agreement with Client, the following tests were conducted by an approved sub-contractor. All sub-contracting laboratories used are UKAS accredited.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL – subcontracted to Pro Soils Limited *(UKAS 4043)*	Consolidated undrained TX with pwp measurement	BS 1377: Part 8:1990	3
	Extra over days (more than initial 5 days)		0
SOIL	Laboratory Vane Shear Strength (3 determinations) *	BS 1377-7: 1990: Cl 3	3

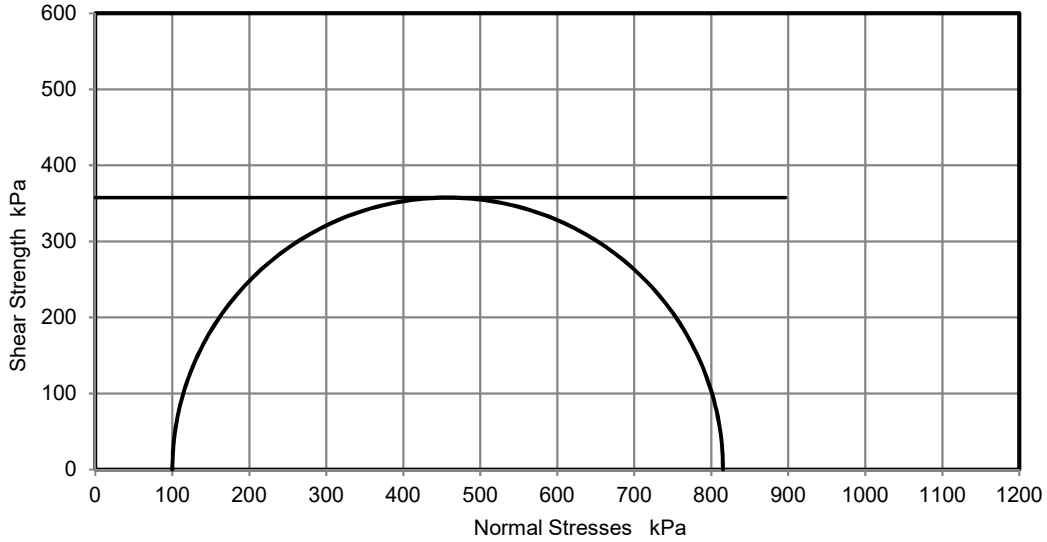
CAUSEWAY GEOTECH	**Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen**				Job Ref	18-0577
					Borehole/Pit No.	BH01
Site Name	DAA Surveys and Investigations				Sample No.	
Soil Description	Dark grey slightly sandy slightly gravelly CLAY.				Depth	5.15
Specimen Reference	3	Specimen Depth	5.15	m	Sample Type	C
Specimen Description	Very stiff dark grey slightly sandy slightly gravelly CLAY.				KeyLAB ID	Caus2018082949
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen				Date of test	13/09/2018

Test Number		1	
Length		208.9	mm
Diameter		103.2	mm
Bulk Density		2.34	Mg/m^3
Moisture Content		7.9	%
Dry Density		2.17	Mg/m^3
Rate of Strain		2.0	%/min
Cell Pressure		100	kPa
At failure	Axial Strain	5.3	%
	Deviator Stress, $(\sigma_1 - \sigma_3)_f$	715	kPa
	Undrained Shear Strength, c_u	358	kPa $\frac{1}{2}(\sigma_1 - \sigma_3)_f$
	Mode of Failure	Brittle	

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377.
This is provided for information only.

Remarks

Strengths corrected for area change, and membrane effects based on Fig 11 BS1377

Approved: Stephen.Watson

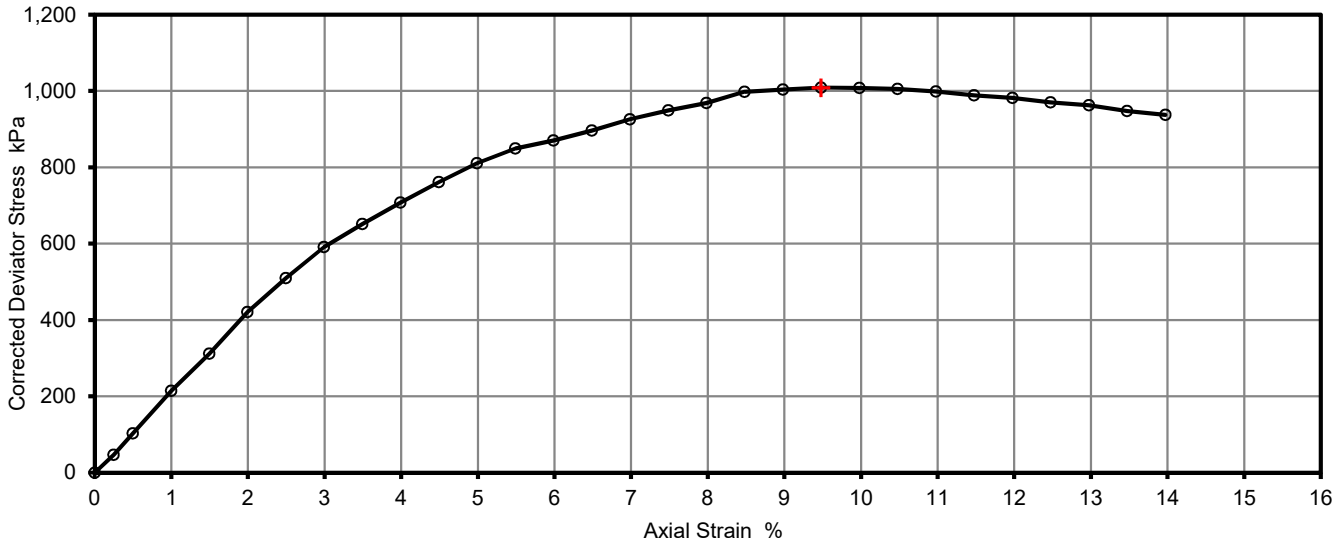
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UKAS TESTING
10122

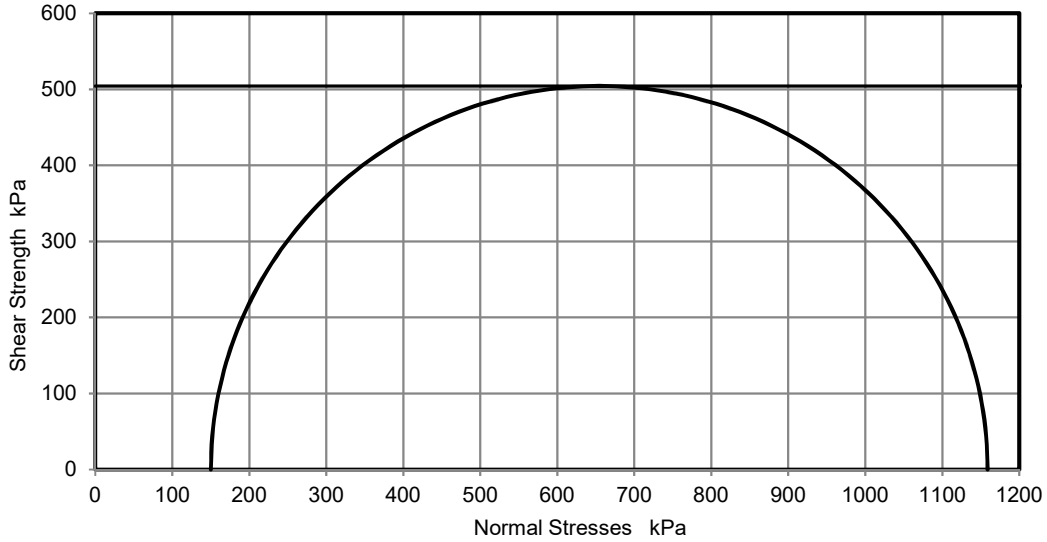
CAUSEWAY GEOTECH	**Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen**				Job Ref	18-0577
					Borehole/Pit No.	BH01
Site Name	DAA Surveys and Investigations				Sample No.	
Soil Description	Light brown slightly sandy slightly gravelly CLAY.				Depth	8.70
Specimen Reference	2	Specimen Depth	8.70	m	Sample Type	C
Specimen Description	Light brown slightly sandy slightly gravelly CLAY.				KeyLAB ID	Caus2018082951
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen				Date of test	13/09/2018

Test Number		1	
Length		200.4	mm
Diameter		81.6	mm
Bulk Density		3.13	Mg/m^3
Moisture Content		14.0	%
Dry Density		2.75	Mg/m^3
Rate of Strain		2.0	%/min
Cell Pressure		150	kPa
At failure	Axial Strain	9.5	%
	Deviator Stress, $(\sigma_1 - \sigma_3)_f$	1009	kPa
	Undrained Shear Strength, c_u	504	kPa $\frac{1}{2}(\sigma_1 - \sigma_3)_f$
	Mode of Failure	Brittle	

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377.
This is provided for information only.

Remarks

Strengths corrected for area change, and membrane effects based on Fig 11 BS1377

Approved	Printed
Stephen.Watson	19/09/2018 12:56

UKAS TESTING
10122

LABORATORY REPORT

REPORT

4043

Contract Number: PSL18/4642

Report Date: 30 October 2018

Client's Reference: 18-0577

Client Name: Causeway Geotech
8 Drumahiskey Road
Ballymoney
Co.Antrim
BT53 7QL

For the attention of: Stephen Watson

Contract Title: DAA Surveys

Date Received: 13/9/2018
Date Commenced: 13/9/2018
Date Completed: 30/10/2018

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)	S Eyre (Senior Technician)	A Fry (Senior Technician)

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Doncaster DN4 0AR
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awatkins@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH01	2	CS	6.85	7.36	Brown gravelly slightly sandy CLAY.
BH01	4	CS	11.80	12.30	Brown slightly gravelly very sandy silty CLAY.
BH01	6	CS	14.30	14.60	Grey gravelly sandy CLAY.

UKAS TESTING
4043

Professional Soils Laboratory

DAA Surveys

Contract No:
PSL18/4642
Client Ref:
18-0577

SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 9 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Peak Shear Strength kPa	Residual Shear Strength kPa	Remarks
BH01	2	CS	6.85	7.36	10.0			Too granular
BH01	4	CS	11.80	12.30	39	74		
BH01	6	CS	14.30	14.60	8.9			Too granular

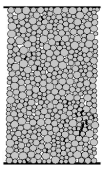
* This test is out of our UKAS scope

PSL Professional Soils Laboratory	DAA Surveys	Contract No: PSL18/4642 Client Ref: 18-0577

Effective Stress Triaxial Compression

Consolidated Undrained

Summary Report

Sample Details				
 *sketch showing specimen location in original sample*	Depth	6.85-7.36m CS2		
	Description	Brown gravelly slightly sandy CLAY.		
	Type	Undisturbed, Vertical orientation.		
	Initial Sample Length	L_0	(mm)	207.8
	Initial Sample Diameter	D_0	(mm)	100.6
	Initial Sample Weight	W_0	(gr)	3985.0
	Initial Bulk Density	ρ_0	(Mg/m3)	2.41
	Particle Density	ρ_s	(Mg/m3)	2.65

Initial Conditions			Stage 1
Initial Cell Pressure	σ_{3i}	(kPa)	820
Initial Back Pressure	U_{bi}	(kPa)	700
Membrane Thickness	m_b	(mm)	0.400
Displacement Input	L_{IP}	(mm)	CH 2
Load Input	N_{IP}	(N)	CH 1
Pore Water Pressure Input	u_{pwp}	(kPa)	CH 3
Sample Volume	V	(cc)	CH 2
Initial Moisture	ω_i	(%)	10
Initial Dry Density	ρ_{di}	(Mg/m3)	2.19
Initial Voids Ratio	e_i	.	0.211
Initial Degree of Saturation	S_i	(%)	100
B Value	B	.	0.99

Final Conditions			
Final Moisture	ω_f	(%)	9.30
Final Dry Density	ρ_{df}	(Mg/m3)	2.26
Final Voids Ratio	e_f	.	0.174
Final Degree of Saturation	S_f	(%)	100.0
			Stage 1
Failure Criteria		.	Max. Dev. Stress
Strain At Failure	ε_f	(%)	16.85
Stress At Failure	$(\sigma_1-\sigma_3)$	(kPa)	1070.7
Minor Stress At Failure	σ_3'	(kPa)	476.0
Major Stress At Failure	σ_1'	(kPa)	1546.7
Principal Stress At Failure	σ_1'/σ_3'		3.249

Notes



Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH01 6.85-7.36m CS2
		Test Date	22/10/2018
Site Reference		Borehole	BH01
Jobfile	DAA Surveys	Sample	6.85-7.36m CS2
Client	Causeway Geotech	Depth	6.85-7.36m CS2

UKAS TESTING 4043

Operator *	Checked *	Approved *

Database: .\SQLEXPRESS \ tester-2

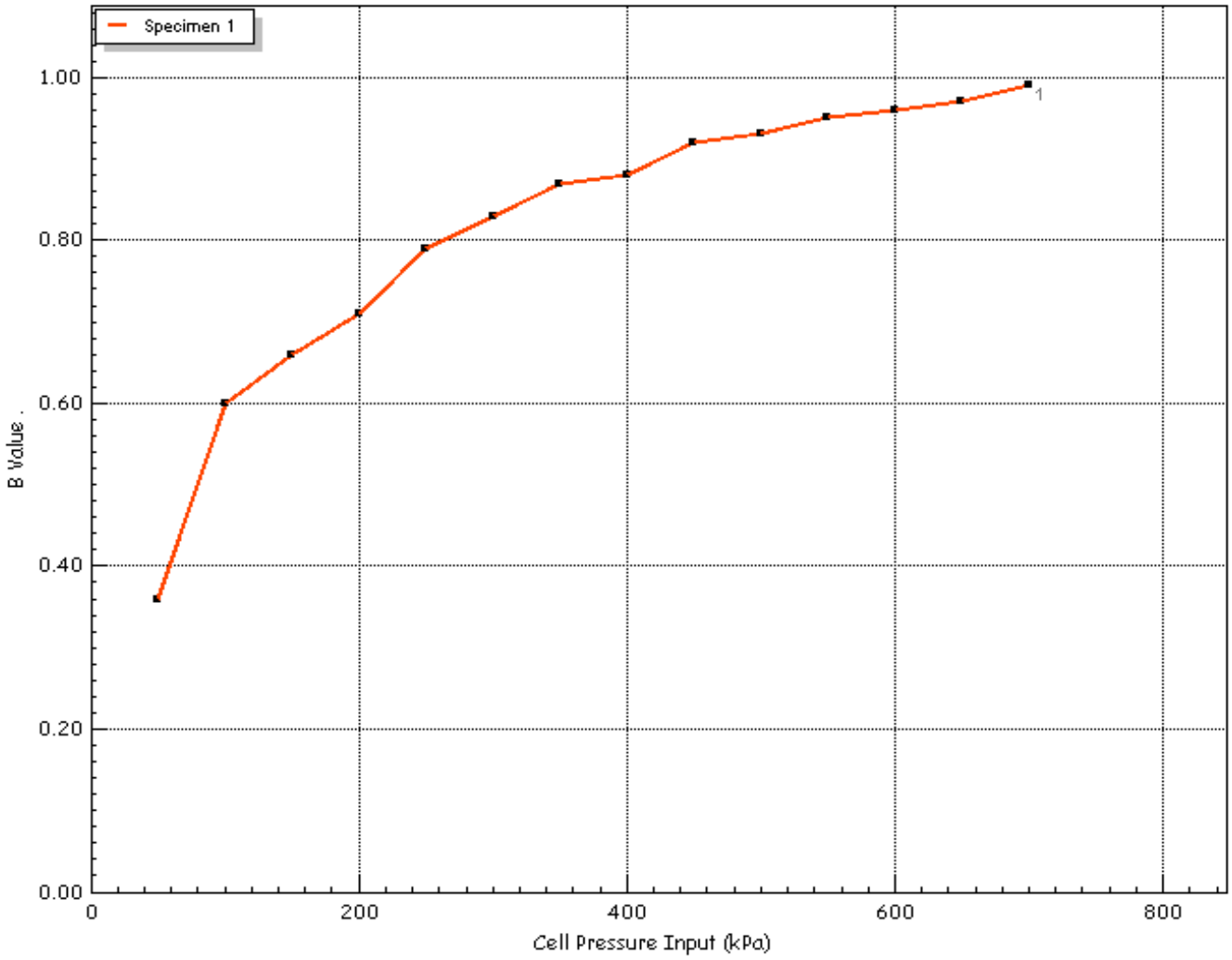
PSL Professional Soils Laboratory

Effective Stress Triaxial Compression

Consolidated Undrained

Saturation Plots

Saturation Method			Stepped
Cell Pressure Input	σ	(kPa)	700
Pore Water Pressure Input	u pwp	(kPa)	685
B Value	B	.	0.99



UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH01 6.85-7.36m CS2
	Database: .\SQLEXPRESS \ tester-2			Test Date	22/10/2018
	Site Reference			Borehole	BH01
	Jobfile	DAA Surveys		Sample	6.85-7.36m CS2
	Client	Causeway Geotech		Depth	6.85-7.36m CS2
	Operator	*	Checked *		Approved *

PSL Professional Soils Laboratory

Effective Stress Triaxial Compression

Consolidated Undrained

Consolidation Plots

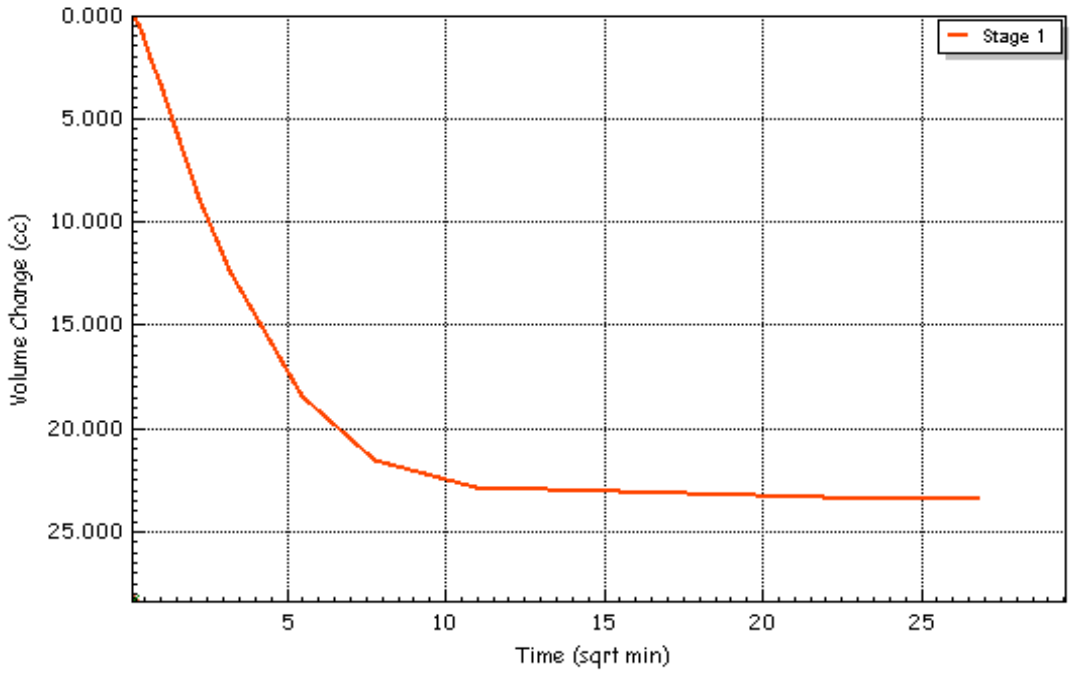
Initial Conditions

Initial Cell Pressure	σ_3	(kPa)	820
Initial Back Pressure	u_{bi}	(kPa)	700
Pore Water Pressure Input	u_{pwp}	(kPa)	800
Drainage Method			Radial+One End

Final Conditions

PWP Dissipation %	U%	(%)	100.00
Volumetric Strain	ε_v%	(%)	1.42
Corrected Length	L_C	(mm)	206.8
Corrected Area	A_C	(cm2)	78.73
Corrected Volume	V_C	(cc)	1628.296
T100 Time to Failure	t_{100}	(min)	29.30
Consolidation	c_V	(m2/year)	7.133
Compressibility	m_V	(m2/MN)	0.141
Test Time	t_F	(h:m:s)	02:00:00
Estimated Strain to Failure	ε %	(%)	5.0
Shear Machine Speed	d_r	(mm/min)	0.08617

Notes



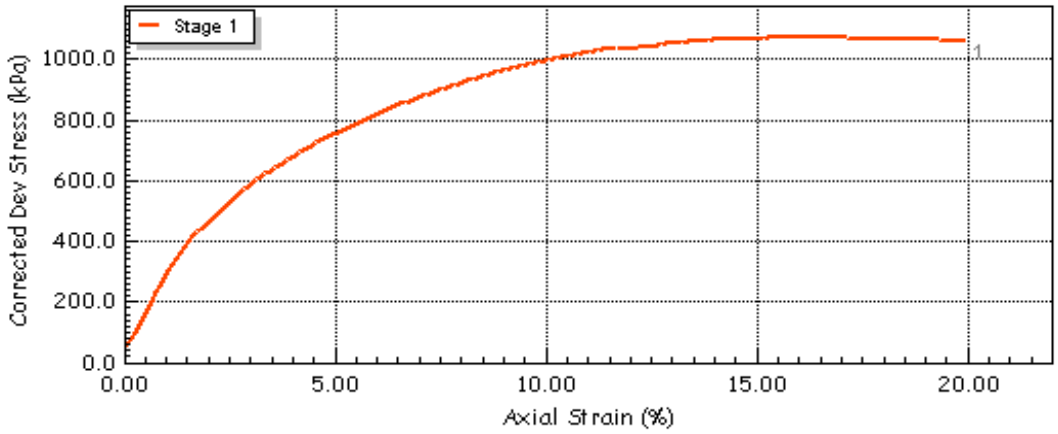
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	Database: .\SQLEXPRESS \ tester-2			Test Date	22/10/2018
	Site Reference			Borehole	BH01
	Jobfile	DAA Surveys		Sample	6.85-7.36m CS2
	Client	Causeway Geotech		Depth	6.85-7.36m CS2
	Operator	*	Checked *	Approved	*

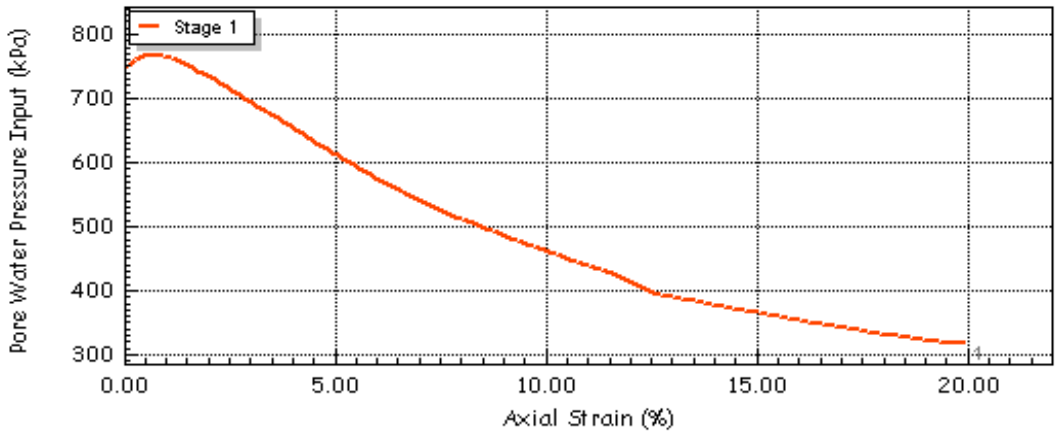
PSL Professional Soils Laboratory

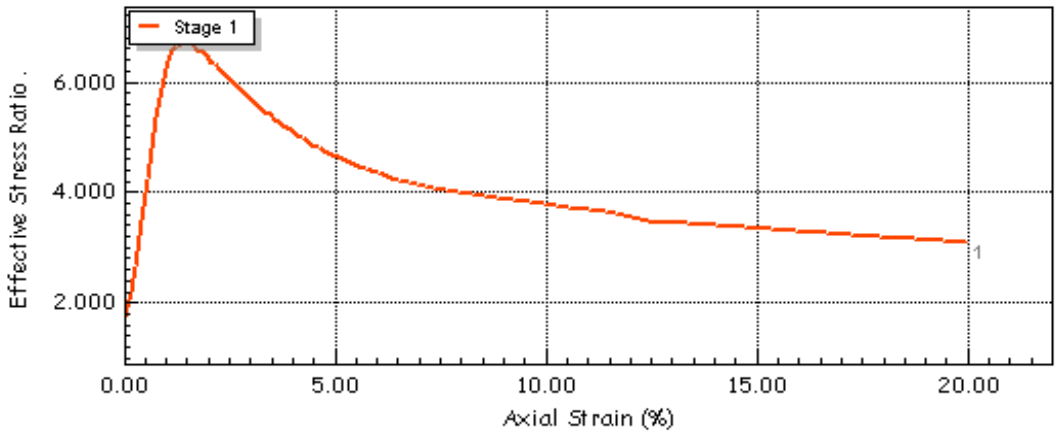
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots







UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH01 6.85-7.36m CS2
	Database: .\SQLEXPRESS \ tester-2		Test Date	22/10/2018
	Site Reference		Borehole	BH01
	Jobfile	DAA Surveys	Sample	6.85-7.36m CS2
	Client	Causeway Geotech	Depth	6.85-7.36m CS2
	Operator *	Checked *	Approved *	

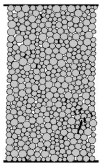
PSL Professional Soils Laboratory

Effective Stress Triaxial Compression

Consolidated Undrained

Summary Report

Sample Details



sketch showing specimen location in original sample

Depth			11.80-12.30m CS4
Description			Brown slightly gravelly very sandy silty CLAY.
Type			Undisturbed, Vertical orientation.
Initial Sample Length	L_0	(mm)	207.6
Initial Sample Diameter	D_0	(mm)	105.1
Initial Sample Weight	W_0	(gr)	3585.0
Initial Bulk Density	ρ_0	(Mg/m3)	1.99
Particle Density	ρ_s	(Mg/m3)	2.65

Initial Conditions

Initial Cell Pressure	σ_{3i}	(kPa)	500
Initial Back Pressure	U_{bi}	(kPa)	300
Membrane Thickness	m_b	(mm)	0.400
Displacement Input	L_{IP}	(mm)	CH 2
Load Input	N_{IP}	(N)	CH 1
Pore Water Pressure Input	u_{pwp}	(kPa)	CH 3
Sample Volume	V	(cc)	CH 2
Initial Moisture	ω_i	(%)	39
Initial Dry Density	ρ_{di}	(Mg/m3)	1.43
Initial Voids Ratio	e_i	.	0.854
Initial Degree of Saturation	S_i	(%)	100
B Value	B	.	0.98

Final Conditions

Final Moisture	ω_f	(%)	37
Final Dry Density	ρ_{df}	(Mg/m3)	1.55
Final Voids Ratio	e_f	.	0.713
Final Degree of Saturation	S_f	(%)	100.0
Failure Criteria		.	Max. Dev. Stress
Strain At Failure	ε_f	(%)	10.21
Stress At Failure	$(\sigma_1-\sigma_3)_f$	(kPa)	355.2
Minor Stress At Failure	σ_3'	(kPa)	107.0
Major Stress At Failure	σ_1'	(kPa)	462.2
Principal Stress At Failure	σ_1'/σ_3'	(kPa)	4.319

Notes



Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH01 11.80-12.30m CS4
Database: .\SQLEXPRESS \ tester-2		Test Date	22/10/2018
Site Reference		Borehole	BH01
Jobfile	DAA Surveys	Sample	11.80-12.30m CS4
Client	Causeway Geotech Ltd	Depth	11.80-12.30m CS4
Operator *	Checked *	Approved *	

UKAS TESTING 4043

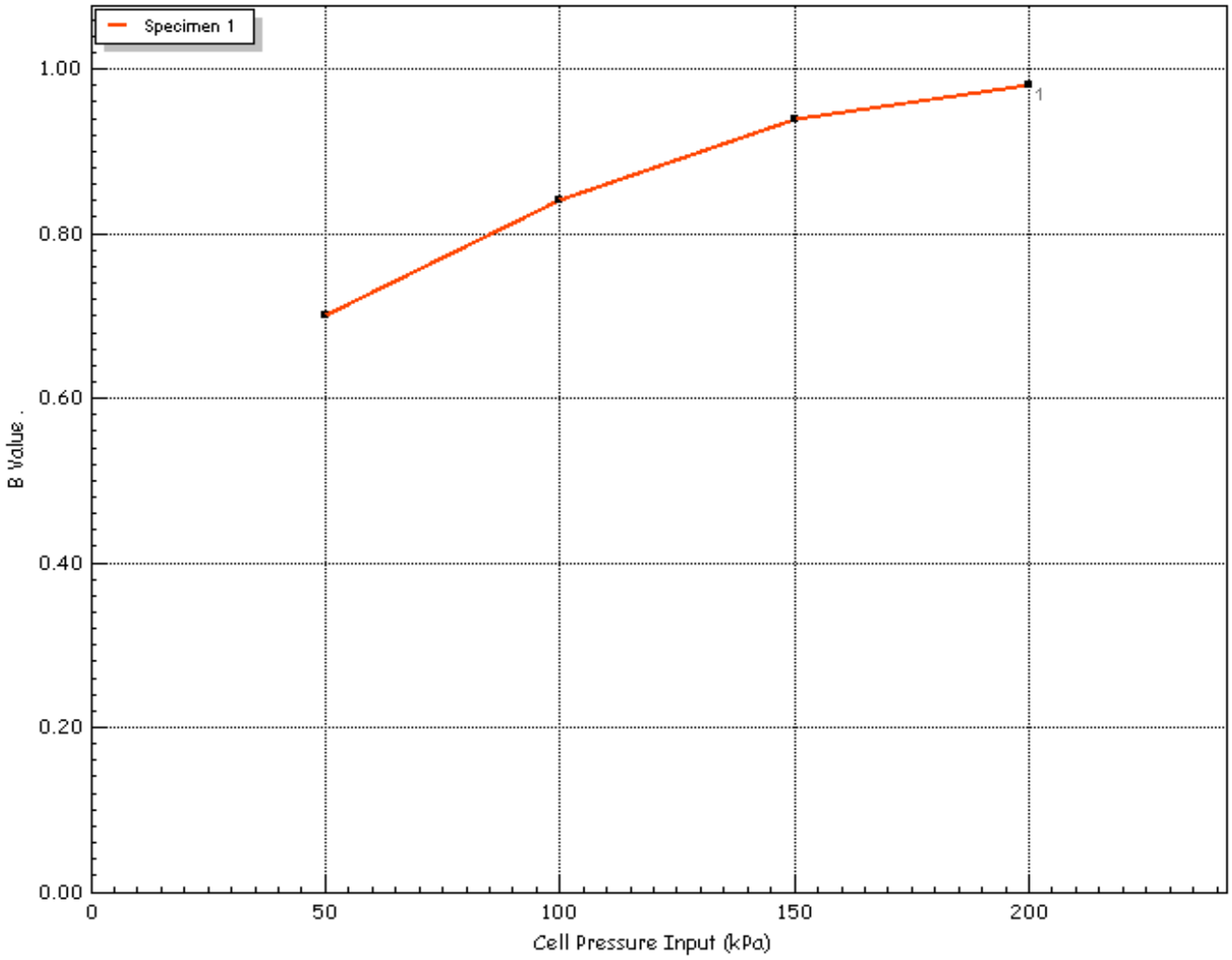
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Effective Stress Triaxial Compression

Consolidated Undrained

Saturation Plots

Saturation Method			Stepped
Cell Pressure Input	σ	(kPa)	200
Pore Water Pressure Input	u pwp	(kPa)	173
B Value	B	.	0.98



UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH01 11.80-12.30m CS4
	Database: .\SQLEXPRESS \ tester-2			Test Date	22/10/2018
	Site Reference			Borehole	BH01
	Jobfile	DAA Surveys		Sample	11.80-12.30m CS4
	Client	Causeway Geotech Ltd		Depth	11.80-12.30m CS4
	Operator	*	Checked *	Approved	*

PSL Professional Soils Laboratory

Effective Stress Triaxial Compression

Consolidated Undrained

Consolidation Plots

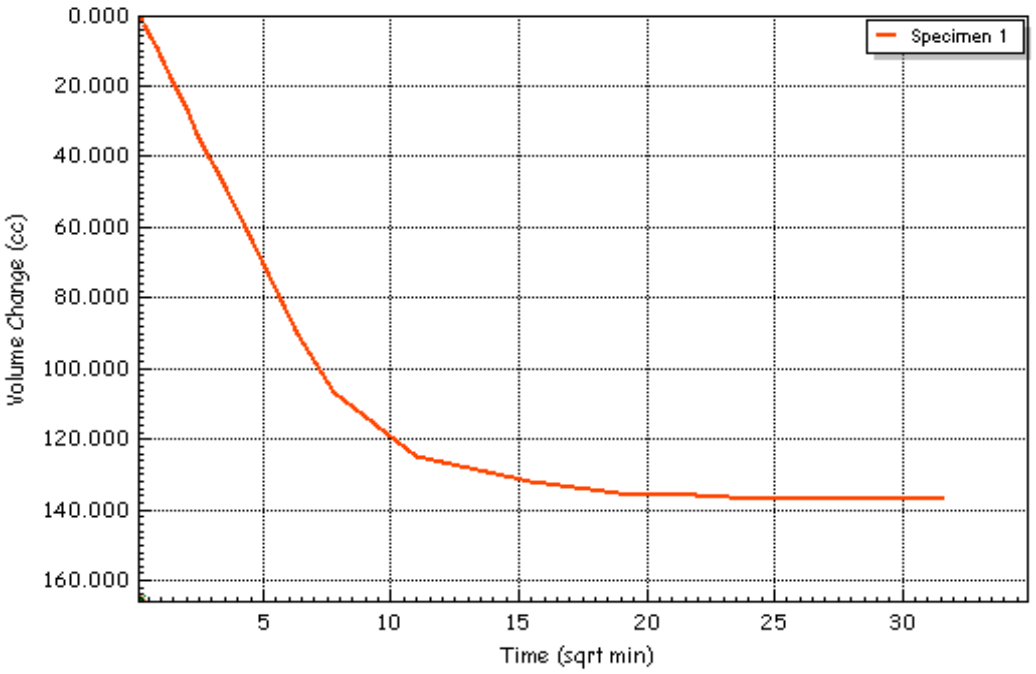
Initial Conditions

Initial Cell Pressure	σ_3	(kPa)	500
Initial Back Pressure	u_{bi}	(kPa)	300
Pore Water Pressure Input	u_{pwp}	(kPa)	501
Drainage Method			Radial+One End

Final Conditions

PWP Dissipation %	U%	(%)	100.00
Volumetric Strain	ε_v%	(%)	7.60
Corrected Length	L_C	(mm)	202.3
Corrected Area	A_C	(cm2)	82.36
Corrected Volume	V_C	(cc)	1664.108
T100 Time to Failure	t_{100}	(min)	88.32
Consolidation	c_v	(m2/year	2.635
Compressibility	m_v	(m2/MN)	0.378
Test Time	t_F	(h:m:s)	02:38:58
Estimated Strain to Failure	ε_f	(%)	5.0
Shear Machine Speed	d_r	(mm/min	0.06364

Notes



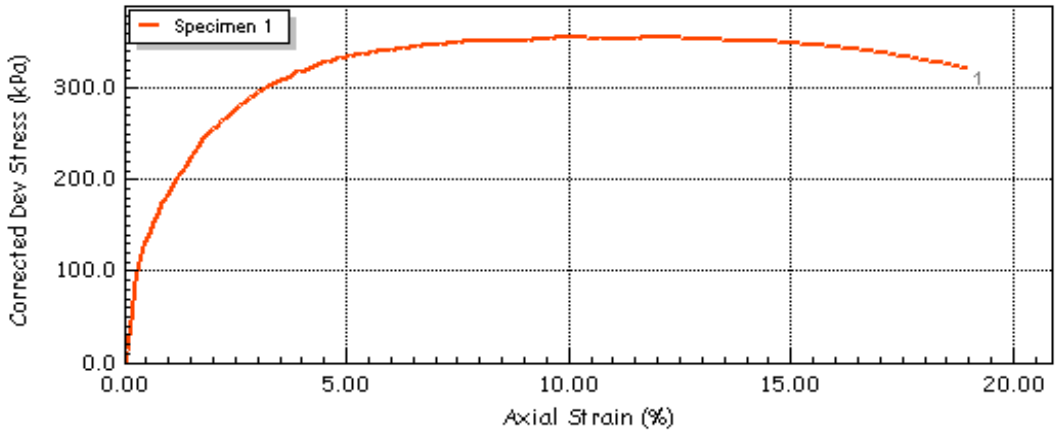
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	Site Reference			Borehole	BH01
	Jobfile	DAA Surveys		Sample	11.80-12.30m CS4
	Client	Causeway Geotech Ltd		Depth	11.80-12.30m CS4
	Operator	*	Checked *	Approved	*

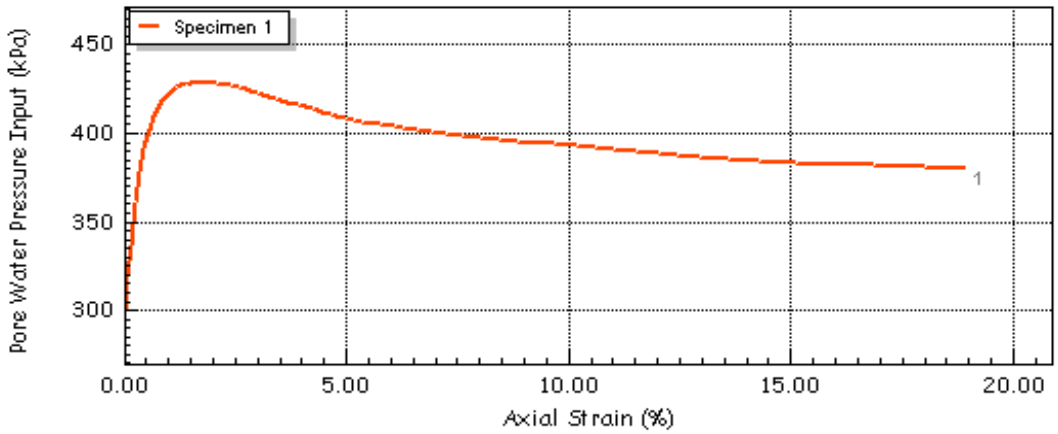
PSL Professional Soils Laboratory

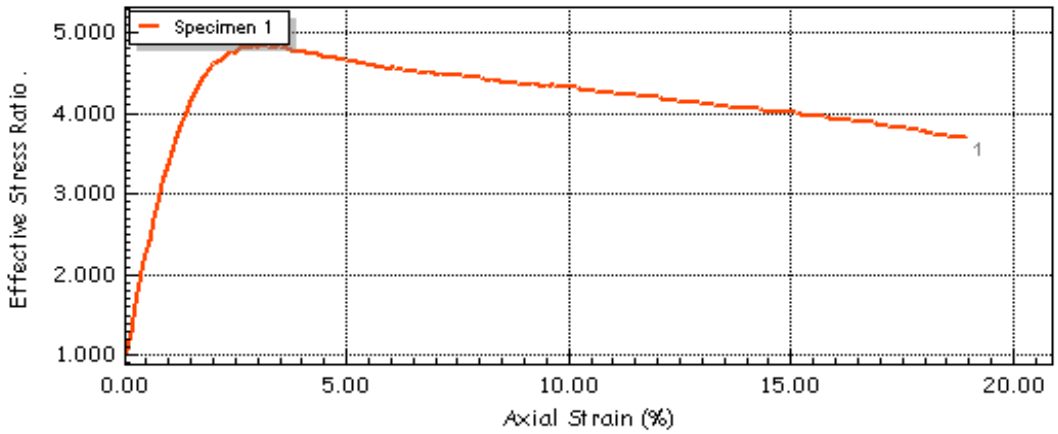
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots







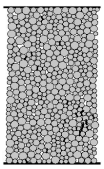
UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH01 11.80-12.30m CS4
	Database: .\SQLEXPRESS \ tester-2		Test Date	22/10/2018
	Site Reference		Borehole	BH01
	Jobfile	DAA Surveys	Sample	11.80-12.30m CS4
	Client	Causeway Geotech Ltd	Depth	11.80-12.30m CS4
	Operator *	Checked *	Approved *	

PSL Professional Soils Laboratory

Effective Stress Triaxial Compression

Consolidated Undrained

Summary Report

Sample Details				
 *sketch showing specimen location in original sample*	Depth	14.30-14.60m CS6		
	Description	Grey gravelly sandy CLAY.		
	Type	Undisturbed, Vertical orientation.		
	Initial Sample Length	L_0	(mm)	209.0
	Initial Sample Diameter	D_0	(mm)	105.0
	Initial Sample Weight	W_0	(gr)	4074.9
	Initial Bulk Density	ρ_0	(Mg/m3)	2.25
	Particle Density	ρ_s	(Mg/m3)	2.65

Initial Conditions			Stage 1
Initial Cell Pressure	σ_{3i}	(kPa)	625
Initial Back Pressure	U_{bi}	(kPa)	400
Membrane Thickness	m_b	(mm)	0.400
Displacement Input	L_{IP}	(mm)	CH 2
Load Input	N_{IP}	(N)	CH 1
Pore Water Pressure Input	u_{pwp}	(kPa)	CH 3
Sample Volume	V	(cc)	CH 2
Initial Moisture	ω_i	(%)	8.90
Initial Dry Density	ρ_{di}	(Mg/m3)	2.07
Initial Voids Ratio	e_i	.	0.282
Initial Degree of Saturation	S_i	(%)	84
B Value	B	.	0.98

Final Conditions			
Final Moisture	ω_f	(%)	9.01
Final Dry Density	ρ_{df}	(Mg/m3)	2.10
Final Voids Ratio	e_f	.	0.262
Final Degree of Saturation	S_f	(%)	91.1
			Stage 1
Failure Criteria		.	Max. Dev. Stress
Strain At Failure	ε_f	(%)	15.41
Stress At Failure	$(\sigma_1-\sigma_3)$	(kPa)	981.3
Minor Stress At Failure	σ_3'	(kPa)	409.0
Major Stress At Failure	σ_1'	(kPa)	1390.3
Principal Stress At Failure	σ_1'/σ_3'		3.399



Notes

Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH01 14.30-14.60m CS6
		Test Date	23/10/2018
Site Reference		Borehole	BH01
Jobfile	DAA Surveys	Sample	14.30-14.60m CS6
Client	Causeway Geotech	Depth	14.30-14.60m CS6

UKAS TESTING 4043

Operator	*	Checked	*	Approved	*

Database: .\SQLEXPRESS \ tester-2

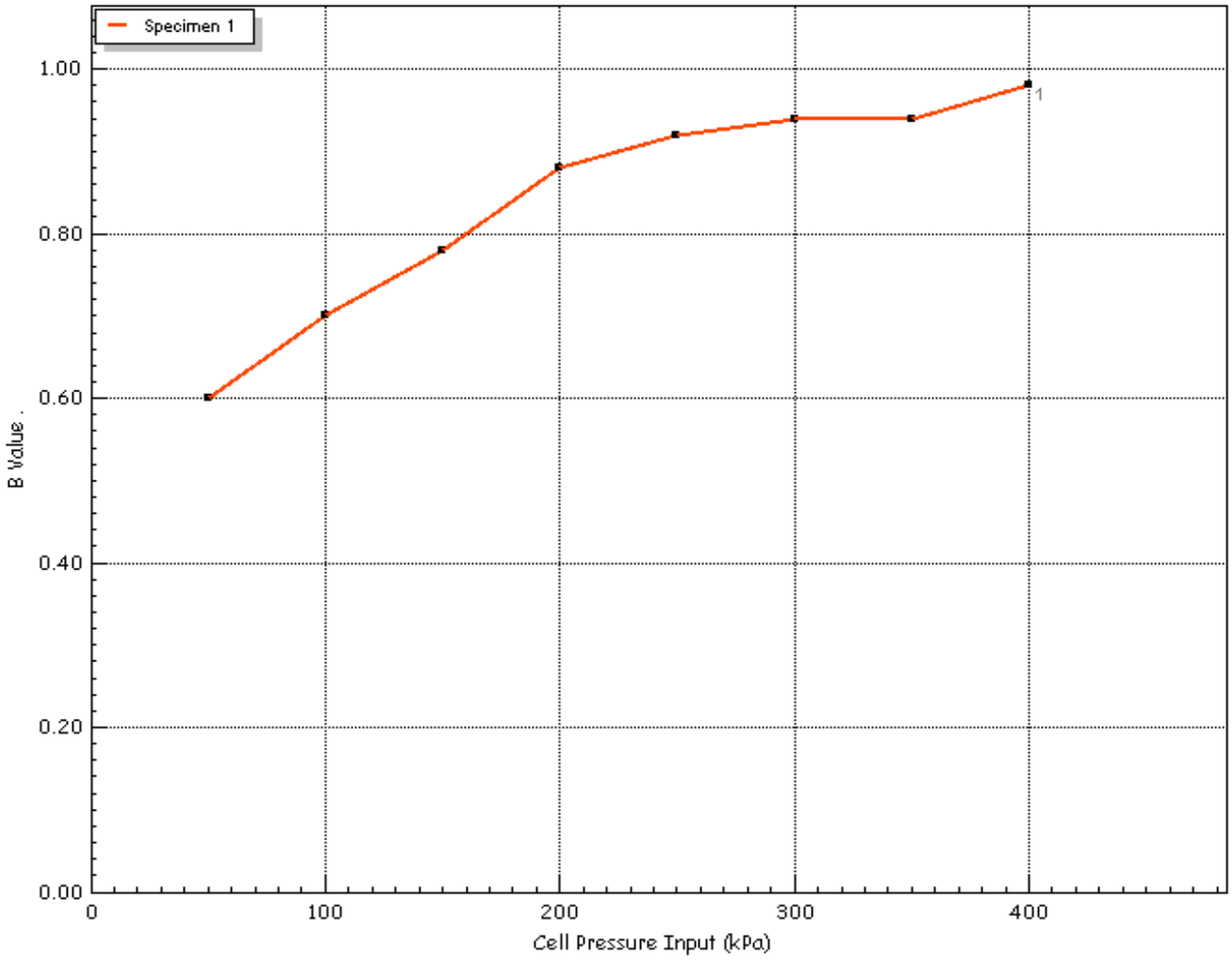
PSL Professional Soils Laboratory

Effective Stress Triaxial Compression

Consolidated Undrained

Saturation Plots

Saturation Method			Stepped
Cell Pressure Input	σ	(kPa)	400
Pore Water Pressure Input	u pwp	(kPa)	387
B Value	B	.	0.98



UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH01 14.30-14.60m CS6
	Database: .\SQLEXPRESS \ tester-2			Test Date	23/10/2018
	Site Reference			Borehole	BH01
	Jobfile	DAA Surveys		Sample	14.30-14.60m CS6
	Client	Causeway Geotech		Depth	14.30-14.60m CS6
	Operator	*	Checked *	Approved	*

PSL Professional Soils Laboratory

Effective Stress Triaxial Compression

Consolidated Undrained

Consolidation Plots

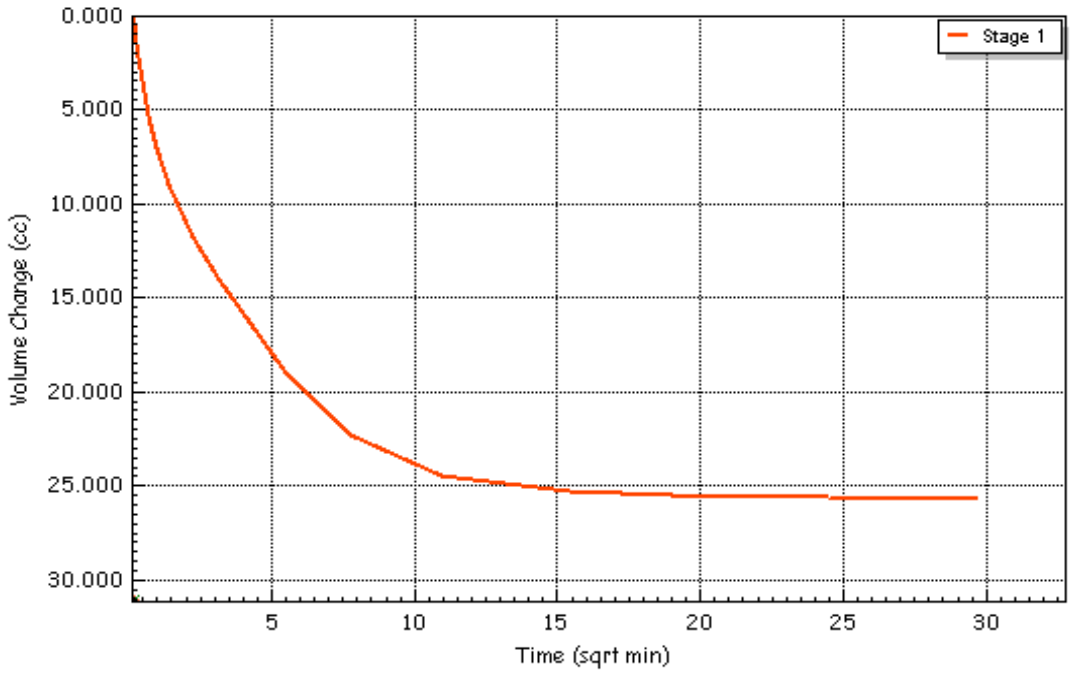
Initial Conditions

Initial Cell Pressure	σ_3	(kPa)	625
Initial Back Pressure	u_{bi}	(kPa)	400
Pore Water Pressure Input	u_{pwp}	(kPa)	604
Drainage Method			Radial+One End

Final Conditions

PWP Dissipation %	U%	(%)	100.00
Volumetric Strain	ε_v%	(%)	1.42
Corrected Length	L_C	(mm)	208.0
Corrected Area	A_C	(cm2)	85.77
Corrected Volume	V_C	(cc)	1784.038
T100 Time to Failure	t_{100}	(min)	22.61
Consolidation	c_V	(m2/year)	10.145
Compressibility	m_V	(m2/MN)	0.070
Test Time	t_F	(h:m:s)	02:00:00
Estimated Strain to Failure	ε%	(%)	5.0
Shear Machine Speed	d_r	(mm/min)	0.08667

Notes



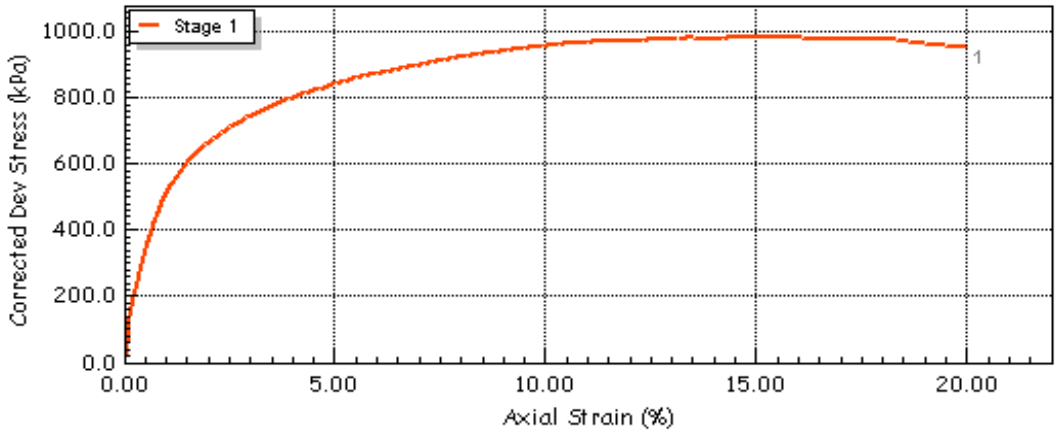
UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH01 14.30-14.60m CS6
	Database: .\SQLEXPRESS \ tester-2			Test Date	23/10/2018
	Site Reference			Borehole	BH01
	Jobfile	DAA Surveys		Sample	14.30-14.60m CS6
	Client	Causeway Geotech		Depth	14.30-14.60m CS6
	Operator	*	Checked *	Approved	*

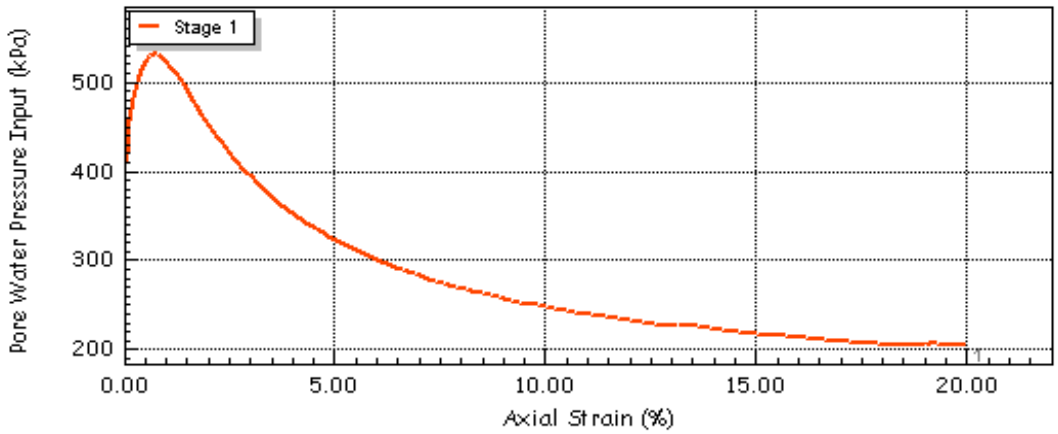
PSL Professional Soils Laboratory

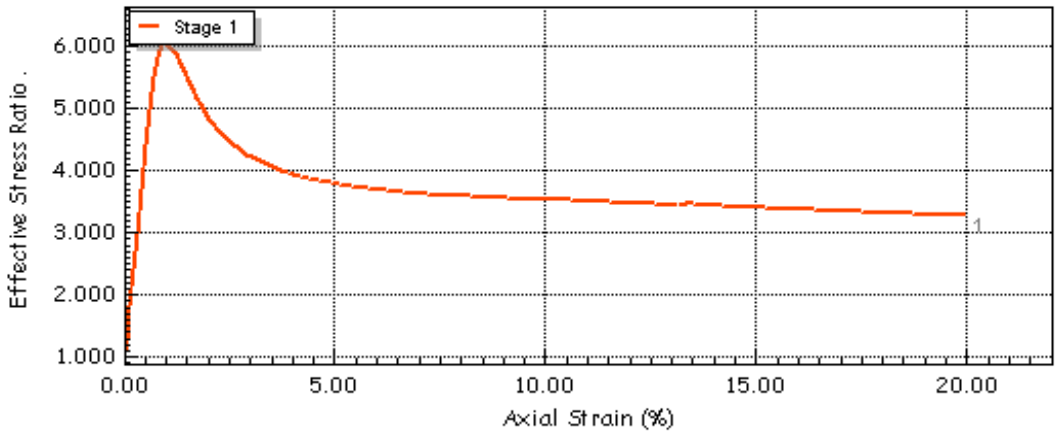
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots







UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH01 14.30-14.60m CS6
	Database: .\SQLEXPRESS \ tester-2		Test Date	23/10/2018
	Site Reference		Borehole	BH01
	Jobfile	DAA Surveys	Sample	14.30-14.60m CS6
	Client	Causeway Geotech	Depth	14.30-14.60m CS6
	Operator *	Checked *	Approved *	

PSL Professional Soils Laboratory

LABORATORY RESTRICTION REPORT

Project Reference	18-0577	To	Colm Hurley
Project Name	DAA Surveys and Investigations	Position	Project Manager
TR reference	18-0577 / 4	From	Stephen Watson
		Position	Laboratory Manager

The following sample(s) and test(s) are restricted as detailed below. Could you please complete the "Required Action" column and return the completed form to the laboratory.

Hole Number	Sample			Test Type	Reason for Restriction	Required Action
	Number	Depth (m)	Type			
BH01	CS1	5.15	C	Oedometer, Lab Vane	Gravel content too high to obtain test specimen	Cancel
BH01	CS3	8.7	C	Lab Vane	Gravel content too high to perform test	Cancel
BH01	CS5	13.7	C	Lab Vane, UU Triaxial	Gravel content too high to obtain test specimen	Cancel
BH01	CS7	16.3	C	Lab Vane, UU Triaxial	Gravel content too high to obtain test specimen	Cancel

For electronic reporting a form of electronic signature or printed name is acceptable

Laboratory Signature	Project Manager Signature
Stephen Watson	Colm Hurley
Date	Date
17 September 2018	17 September 2018

CAUSEWAY GEOTECH

APPENDIX G

ENVIRONMENTAL LABORATORY TEST RESULTS



Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	18-23385-1
Initial Date of Issue:	14-Aug-2018
Client	Causeway Geotech Ltd
Client Address:	8 Drumahiskey Road Balnamore Ballymoney County Antrim BT53 7QL
Contact(s):	Carin Cornwall Colm Hurley Darren O'Mahony Gabriella Horan John Cameron Lucy Newland Matthew Gilbert Neil Haggan Paul Dunlop Paul McNamara Sean Ross Stephen Franey Stephen Watson Stuart Abraham
Project	18-0577 - DAA Surveys

Quotation No.:		**Date Received:**	06-Aug-2018
Order No.:		**Date Instructed:**	07-Aug-2018
No. of Samples:	38		
Turnaround (Wkdays):	4	**Results Due:**	10-Aug-2018
Date Approved:	14-Aug-2018		

Approved By:



Details: Martin Dyer, Laboratory Manager

Results - Leachate

Project: 18-0577 - DAA Surveys

Client: Causeway Geotech Ltd					**Chemtest Job No.:**	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385
Quotation No.:					**Chemtest Sample ID.:**	666482	666485	666488	666490	666493	666495	666500	666502	666510
Order No.:					Client Location ID.:	TP17	TP24	TP25	TP28	TP29	TP03	TP30	TP02	TP11
					Client Sample Ref.:	ES2	ES1	ES2	ES2	ES1	ES1	ES2	ES2	ES2
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.5	0.5	1.0	1.0	0.5	0.5	1.0	1.5	1.5
					Date Sampled:	03-Aug-2018	30-Jul-2018	30-Jul-2018	31-Jul-2018	01-Aug-2018	01-Aug-2018	31-Jul-2018	31-Jul-2018	02-Aug-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Ammonium	U	1220	mg/l	0.050		0.092	< 0.050	0.19	0.095	0.18	0.21	0.19	0.13	0.13
Ammonium	N	1220	mg/kg	0.10		0.92	0.32	1.9	0.95	1.8	2.1	1.9	1.3	1.3

Results - Leachate

Project: 18-0577 - DAA Surveys

Client: Causeway Geotech Ltd					**Chemtest Job No.:**	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385
Quotation No.:					**Chemtest Sample ID.:**	666511	666514	666516	666517	666520	666521	666525	666527	666529
Order No.:					Client Location ID.:	TP09	TP19	TP04	TP21	TP22	TP06	TP27	TP14	TP18
					Client Sample Ref.:	ES1	ES2	ES2	ES1	ES2	ES1	ES1	ES1	ES1
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.5	1.5	1.5	0.5	1.0	0.5	0.5	0.5	0.5
					Date Sampled:	02-Aug-2018	02-Aug-2018	01-Aug-2018	31-Jul-2018	31-Jul-2018	01-Aug-2018	01-Aug-2018	01-Aug-2018	02-Aug-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Ammonium	U	1220	mg/l	0.050		0.18	0.16	0.14	0.13	0.25	0.14	0.41	0.30	0.15
Ammonium	N	1220	mg/kg	0.10		1.8	1.6	1.4	1.3	2.5	1.4	4.1	3.0	1.5

Results - Leachate

Project: 18-0577 - DAA Surveys

Client: Causeway Geotech Ltd			**Chemtest Job No.:**		18-23385
Quotation No.:			**Chemtest Sample ID.:**		666532
Order No.:			Client Location ID.:		TP08
			Client Sample Ref.:		ES2
			Sample Type:		SOIL
			Top Depth (m):		1.5
			Date Sampled:		02-Aug-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Ammonium	U	1220	mg/l	0.050	0.24
Ammonium	N	1220	mg/kg	0.10	2.4

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 18-0577 - DAA Surveys

Client: Causeway Geotech Ltd				**Chemtest Job No.:**	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385
Quotation No.:				**Chemtest Sample ID.:**	666482	666483	666485	666486	666487	666488	666489	666490	666493
Order No.:				Client Location ID.:	TP17	TP17	TP24	TP24	TP25	TP25	TP28	TP28	TP29
				Client Sample Ref.:	ES2	ES1	ES1	ES2	ES1	ES2	ES1	ES2	ES1
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.5	0.5	0.5	1.0	0.5	1.0	0.5	1.0	0.5
				Date Sampled:	03-Aug-2018	03-Aug-2018	30-Jul-2018	30-Jul-2018	30-Jul-2018	30-Jul-2018	31-Jul-2018	31-Jul-2018	01-Aug-2018
				Asbestos Lab:	COVENTRY		COVENTRY			COVENTRY		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-		-			-		-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected		No Asbestos Detected			No Asbestos Detected		No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	11	11	11	7.9	6.6	9.0	11	8.7	17
Dry Matter	N		%	N/A		89		92	93		89		
pH	U	2010		N/A	8.4		8.1			8.4		8.4	8.1
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40		< 0.40			< 0.40		< 0.40	0.70
Sulphur (Elemental)	U	2180	mg/kg	1.0	< 1.0		< 1.0			< 1.0		< 1.0	1.5
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50		< 0.50			< 0.50		< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	9.1		1.2			9.4		8.8	9.8
Sulphate (Total)	U	2430	%	0.010	0.048		0.021			0.044		0.14	0.13
Arsenic	U	2450	mg/kg	1.0	27		22			28		35	57
Barium	U	2450	mg/kg	10	73		190			96		200	430
Cadmium	U	2450	mg/kg	0.10	1.9		3.7			2.0		1.8	6.0
Chromium	U	2450	mg/kg	1.0	19		31			20		14	26
Molybdenum	U	2450	mg/kg	2.0	6.0		5.8			5.7		3.3	< 2.0
Antimony	N	2450	mg/kg	2.0	2.0		3.1			2.0		2.2	2.5
Copper	U	2450	mg/kg	0.50	30		45			31		20	32
Mercury	U	2450	mg/kg	0.10	< 0.10		0.10			< 0.10		< 0.10	0.32
Nickel	U	2450	mg/kg	0.50	53		99			55		33	30
Lead	U	2450	mg/kg	0.50	22		32			21		63	170
Selenium	U	2450	mg/kg	0.20	0.56		0.79			0.48		0.21	1.1
Zinc	U	2450	mg/kg	0.50	65		120			68		160	4100
Chromium (Trivalent)	N	2490	mg/kg	1.0	19		31			20		14	26
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50		< 0.50			< 0.50		< 0.50	< 0.50
Total Organic Carbon	U	2625	%	0.20	0.37		0.73			0.60		0.40	1.9
Mineral Oil	N	2670	mg/kg	10	< 10		< 10			< 10		< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[C] < 1.0		< 1.0			< 1.0		< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[C] < 1.0		< 1.0			< 1.0		< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[C] < 1.0		< 1.0			< 1.0		< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[C] < 1.0		< 1.0			< 1.0		< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[C] < 1.0		< 1.0			< 1.0		< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[C] < 1.0		< 1.0			< 1.0		< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[C] < 1.0		< 1.0			< 1.0		< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[C] < 1.0		< 1.0			< 1.0		< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[C] < 5.0		< 5.0			< 5.0		< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[C] < 1.0		< 1.0			< 1.0		< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[C] < 1.0		< 1.0			< 1.0		< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 18-0577 - DAA Surveys

Client: Causeway Geotech Ltd					**Chemtest Job No.:**	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385
Quotation No.:					**Chemtest Sample ID.:**	666482	666483	666485	666486	666487	666488	666489	666490	666493
Order No.:					Client Location ID.:	TP17	TP17	TP24	TP24	TP25	TP25	TP28	TP28	TP29
					Client Sample Ref.:	ES2	ES1	ES1	ES2	ES1	ES2	ES1	ES2	ES1
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.5	0.5	0.5	1.0	0.5	1.0	0.5	1.0	0.5
					Date Sampled:	03-Aug-2018	03-Aug-2018	30-Jul-2018	30-Jul-2018	30-Jul-2018	30-Jul-2018	31-Jul-2018	31-Jul-2018	01-Aug-2018
					Asbestos Lab:	COVENTRY		COVENTRY			COVENTRY		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0		[C] < 1.0		< 1.0			< 1.0		< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0		[C] < 1.0		< 1.0			< 1.0		< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0		[C] < 1.0		< 1.0			< 1.0		< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0		[C] < 1.0		< 1.0			< 1.0		< 1.0	2.7
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0		[C] < 1.0		< 1.0			< 1.0		< 1.0	6.6
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		[C] < 1.0		< 1.0			< 1.0		< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		[C] < 5.0		< 5.0			< 5.0		< 5.0	9.4
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		[C] < 10		< 10			< 10		< 10	< 10
Benzene	U	2760	µg/kg	1.0		[C] < 1.0		< 1.0			< 1.0		< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0		[C] < 1.0		< 1.0			< 1.0		< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0		[C] < 1.0		< 1.0			< 1.0		< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0		[C] < 1.0		< 1.0			< 1.0		< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0		[C] < 1.0		< 1.0			< 1.0		< 1.0	< 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0		[C] < 1.0		< 1.0			< 1.0		< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10		< 0.10		< 0.10			< 0.10		< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10		< 0.10		< 0.10			< 0.10		< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10		< 0.10		< 0.10			< 0.10		< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10		< 0.10		< 0.10			< 0.10		< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10		< 0.10		< 0.10			< 0.10		< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10		< 0.10		< 0.10			< 0.10		< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10		< 0.10		< 0.10			< 0.10		< 0.10	0.23
Pyrene	U	2800	mg/kg	0.10		< 0.10		< 0.10			< 0.10		< 0.10	0.21
Benzo[a]anthracene	U	2800	mg/kg	0.10		< 0.10		< 0.10			< 0.10		< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10		< 0.10		< 0.10			< 0.10		< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10		< 0.10		< 0.10			< 0.10		< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10		< 0.10		< 0.10			< 0.10		< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10		< 0.10		< 0.10			< 0.10		< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10		< 0.10		< 0.10			< 0.10		< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10		< 0.10		< 0.10			< 0.10		< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10		< 0.10		< 0.10			< 0.10		< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10		< 0.10		< 0.10			< 0.10		< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0		< 2.0		< 2.0			< 2.0		< 2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010		[C] < 0.010		< 0.010			< 0.010		< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010		[C] < 0.010		< 0.010			< 0.010		< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010		[C] < 0.010		< 0.010			< 0.010		< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010		[C] < 0.010		< 0.010			< 0.010		< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010		[C] < 0.010		< 0.010			< 0.010		< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010		[C] < 0.010		< 0.010			< 0.010		< 0.010	< 0.010

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 18-0577 - DAA Surveys

Client: Causeway Geotech Ltd			**Chemtest Job No.:**		18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385
Quotation No.:			**Chemtest Sample ID.:**		666482	666483	666485	666486	666487	666488	666489	666490	666493
Order No.:			Client Location ID.:		TP17	TP17	TP24	TP24	TP25	TP25	TP28	TP28	TP29
			Client Sample Ref.:		ES2	ES1	ES1	ES2	ES1	ES2	ES1	ES2	ES1
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.5	0.5	0.5	1.0	0.5	1.0	0.5	1.0	0.5
			Date Sampled:		03-Aug-2018	03-Aug-2018	30-Jul-2018	30-Jul-2018	30-Jul-2018	30-Jul-2018	31-Jul-2018	31-Jul-2018	01-Aug-2018
			Asbestos Lab:		COVENTRY		COVENTRY			COVENTRY		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
PCB 180	U	2815	mg/kg	0.010	[C] < 0.010		< 0.010			< 0.010		< 0.010	< 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	[C] < 0.10		< 0.10			< 0.10		< 0.10	< 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30		< 0.30			< 0.30		< 0.30	< 0.30

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 18-0577 - DAA Surveys

Client: Causeway Geotech Ltd				**Chemtest Job No.:**	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385
Quotation No.:				**Chemtest Sample ID.:**	666494	666495	666496	666499	666500	666501	666502	666509	666510
Order No.:				Client Location ID.:	TP29	TP03	TP03	TP30	TP30	TP02	TP02	TP11	TP11
				Client Sample Ref.:	ES2	ES1	ES2	ES1	ES2	ES1	ES2	ES1	ES2
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.0	0.5	1.5	0.5	1.0	0.5	1.5	0.5	1.5
				Date Sampled:	01-Aug-2018	01-Aug-2018	01-Aug-2018	31-Jul-2018	31-Jul-2018	31-Jul-2018	31-Jul-2018	02-Aug-2018	02-Aug-2018
				Asbestos Lab:		COVENTRY			COVENTRY		COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A		-			-		-		-
Asbestos Identification	U	2192	%	0.001		No Asbestos Detected			No Asbestos Detected		No Asbestos Detected		No Asbestos Detected
Moisture	N	2030	%	0.020	7.0	11	9.1	10	7.6	6.4	14	8.9	9.8
Dry Matter	N		%	N/A	93		91	90		94		91	
pH	U	2010		N/A		8.1			8.4		8.4		8.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40		0.57			< 0.40		< 0.40		< 0.40
Sulphur (Elemental)	U	2180	mg/kg	1.0		4.3			< 1.0		< 1.0		< 1.0
Cyanide (Total)	U	2300	mg/kg	0.50		< 0.50			< 0.50		< 0.50		< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50		4.1			9.4		35		8.1
Sulphate (Total)	U	2430	%	0.010		0.080			0.058		0.050		0.046
Arsenic	U	2450	mg/kg	1.0		22			59		30		22
Barium	U	2450	mg/kg	10		110			190		76		81
Cadmium	U	2450	mg/kg	0.10		1.7			1.7		0.65		1.5
Chromium	U	2450	mg/kg	1.0		21			12		21		15
Molybdenum	U	2450	mg/kg	2.0		2.9			2.2		< 2.0		4.2
Antimony	N	2450	mg/kg	2.0		2.8			3.4		2.1		2.2
Copper	U	2450	mg/kg	0.50		36			20		28		28
Mercury	U	2450	mg/kg	0.10		0.24			< 0.10		< 0.10		< 0.10
Nickel	U	2450	mg/kg	0.50		46			39		56		53
Lead	U	2450	mg/kg	0.50		60			99		31		21
Selenium	U	2450	mg/kg	0.20		0.55			< 0.20		< 0.20		1.2
Zinc	U	2450	mg/kg	0.50		150			260		100		64
Chromium (Trivalent)	N	2490	mg/kg	1.0		21			12		21		15
Chromium (Hexavalent)	N	2490	mg/kg	0.50		< 0.50			< 0.50		< 0.50		< 0.50
Total Organic Carbon	U	2625	%	0.20		1.5			0.29		0.39		0.70
Mineral Oil	N	2670	mg/kg	10		< 10			< 10		< 10		< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0		< 5.0			< 5.0		< 5.0		< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 18-0577 - DAA Surveys

Client: Causeway Geotech Ltd					Chemtest Job No.:	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385
Quotation No.:					Chemtest Sample ID.:	666494	666495	666496	666499	666500	666501	666502	666509	666510
Order No.:					Client Location ID.:	TP29	TP03	TP03	TP30	TP30	TP02	TP02	TP11	TP11
					Client Sample Ref.:	ES2	ES1	ES2	ES1	ES2	ES1	ES2	ES1	ES2
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.0	0.5	1.5	0.5	1.0	0.5	1.5	0.5	1.5
					Date Sampled:	01-Aug-2018	01-Aug-2018	01-Aug-2018	31-Jul-2018	31-Jul-2018	31-Jul-2018	31-Jul-2018	02-Aug-2018	02-Aug-2018
					Asbestos Lab:		COVENTRY			COVENTRY		COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0	
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0	
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0	
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		< 5.0			< 5.0		< 5.0		< 5.0	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		< 10			< 10		< 10		< 10	
Benzene	U	2760	µg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0	
Toluene	U	2760	µg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0	
Ethylbenzene	U	2760	µg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0	
m & p-Xylene	U	2760	µg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0	
o-Xylene	U	2760	µg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0	
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0		< 1.0			< 1.0		< 1.0		< 1.0	
Naphthalene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10		< 0.10	
Acenaphthylene	N	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10		< 0.10	
Acenaphthene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10		< 0.10	
Fluorene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10		< 0.10	
Phenanthrene	U	2800	mg/kg	0.10		0.24			< 0.10		< 0.10		< 0.10	
Anthracene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10		< 0.10	
Fluoranthene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10		< 0.10	
Pyrene	U	2800	mg/kg	0.10		0.10			< 0.10		< 0.10		< 0.10	
Benzo[a]anthracene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10		< 0.10	
Chrysene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10		< 0.10	
Benzo[b]fluoranthene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10		< 0.10	
Benzo[k]fluoranthene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10		< 0.10	
Benzo[a]pyrene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10		< 0.10	
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10		< 0.10	
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10		< 0.10	
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10		< 0.10	
Coronene	N	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10		< 0.10	
Total Of 17 PAH's	N	2800	mg/kg	2.0		< 2.0			< 2.0		< 2.0		< 2.0	
PCB 28	U	2815	mg/kg	0.010		< 0.010			< 0.010		< 0.010		< 0.010	
PCB 52	U	2815	mg/kg	0.010		< 0.010			< 0.010		< 0.010		< 0.010	
PCB 90+101	U	2815	mg/kg	0.010		< 0.010			< 0.010		< 0.010		< 0.010	
PCB 118	U	2815	mg/kg	0.010		< 0.010			< 0.010		< 0.010		< 0.010	
PCB 153	U	2815	mg/kg	0.010		< 0.010			< 0.010		< 0.010		< 0.010	
PCB 138	U	2815	mg/kg	0.010		< 0.010			< 0.010		< 0.010		< 0.010	

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 18-0577 - DAA Surveys

Client: Causeway Geotech Ltd					**Chemtest Job No.:**	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385
Quotation No.:					**Chemtest Sample ID.:**	666494	666495	666496	666499	666500	666501	666502	666509	666510
Order No.:					Client Location ID.:	TP29	TP03	TP03	TP30	TP30	TP02	TP02	TP11	TP11
					Client Sample Ref.:	ES2	ES1	ES2	ES1	ES2	ES1	ES2	ES1	ES2
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.0	0.5	1.5	0.5	1.0	0.5	1.5	0.5	1.5
					Date Sampled:	01-Aug-2018	01-Aug-2018	01-Aug-2018	31-Jul-2018	31-Jul-2018	31-Jul-2018	31-Jul-2018	02-Aug-2018	02-Aug-2018
					Asbestos Lab:		COVENTRY			COVENTRY		COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
PCB 180	U	2815	mg/kg	0.010		< 0.010			< 0.010		< 0.010		< 0.010	
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10		< 0.10			< 0.10		< 0.10		< 0.10	
Total Phenols	U	2920	mg/kg	0.30		< 0.30			< 0.30		< 0.30		< 0.30	

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 18-0577 - DAA Surveys

Client: Causeway Geotech Ltd				**Chemtest Job No.:**	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385
Quotation No.:				**Chemtest Sample ID.:**	666511	666512	666513	666514	666515	666516	666517	666518	666519
Order No.:				Client Location ID.:	TP09	TP09	TP19	TP19	TP04	TP04	TP21	TP21	TP22
				Client Sample Ref.:	ES1	ES2	ES1	ES2	ES1	ES2	ES1	ES2	ES1
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.0	0.5
				Date Sampled:	02-Aug-2018	02-Aug-2018	02-Aug-2018	02-Aug-2018	01-Aug-2018	01-Aug-2018	31-Jul-2018	31-Jul-2018	31-Jul-2018
				Asbestos Lab:	COVENTRY			COVENTRY		COVENTRY	COVENTRY		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-			-		-	-		
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected			No Asbestos Detected		No Asbestos Detected	No Asbestos Detected		
Moisture	N	2030	%	0.020	8.6	8.3	8.3	10	7.2	8.4	8.3	6.8	11
Dry Matter	N		%	N/A		92	92		93			93	89
pH	U	2010		N/A	8.1			8.1		8.4	8.0		
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.42			< 0.40		< 0.40	< 0.40		
Sulphur (Elemental)	U	2180	mg/kg	1.0	1.2			< 1.0		< 1.0	< 1.0		
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50			< 0.50		< 0.50	< 0.50		
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	6.7			2.3		9.8	3.2		
Sulphate (Total)	U	2430	%	0.010	0.054			0.043		0.10	0.045		
Arsenic	U	2450	mg/kg	1.0	18			16		26	21		
Barium	U	2450	mg/kg	10	71			62		80	74		
Cadmium	U	2450	mg/kg	0.10	1.3			1.5		1.6	2.0		
Chromium	U	2450	mg/kg	1.0	21			20		18	24		
Molybdenum	U	2450	mg/kg	2.0	2.7			3.2		4.9	3.5		
Antimony	N	2450	mg/kg	2.0	2.2			2.2		2.3	2.5		
Copper	U	2450	mg/kg	0.50	33			30		31	33		
Mercury	U	2450	mg/kg	0.10	0.29			< 0.10		< 0.10	< 0.10		
Nickel	U	2450	mg/kg	0.50	48			52		57	65		
Lead	U	2450	mg/kg	0.50	56			31		22	30		
Selenium	U	2450	mg/kg	0.20	0.34			0.59		5.9	1.0		
Zinc	U	2450	mg/kg	0.50	83			84		78	97		
Chromium (Trivalent)	N	2490	mg/kg	1.0	21			20		18	24		
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50			< 0.50		< 0.50	< 0.50		
Total Organic Carbon	U	2625	%	0.20	1.2			0.69		0.67	0.72		
Mineral Oil	N	2670	mg/kg	10	< 10			< 10		< 10	< 10		
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0			< 1.0		< 1.0	< 1.0		
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0			< 1.0		< 1.0	< 1.0		
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0			< 1.0		< 1.0	< 1.0		
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0			< 1.0		< 1.0	< 1.0		
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0			< 1.0		< 1.0	< 1.0		
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0			< 1.0		< 1.0	< 1.0		
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0			< 1.0		< 1.0	< 1.0		
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0			< 1.0		< 1.0	< 1.0		
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0			< 5.0		< 5.0	< 5.0		
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0			< 1.0		< 1.0	< 1.0		
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0			< 1.0		< 1.0	< 1.0		

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 18-0577 - DAA Surveys

Client: Causeway Geotech Ltd					**Chemtest Job No.:**	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385
Quotation No.:					**Chemtest Sample ID.:**	666511	666512	666513	666514	666515	666516	666517	666518	666519
Order No.:					Client Location ID.:	TP09	TP09	TP19	TP19	TP04	TP04	TP21	TP21	TP22
					Client Sample Ref.:	ES1	ES2	ES1	ES2	ES1	ES2	ES1	ES2	ES1
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.0	0.5
					Date Sampled:	02-Aug-2018	02-Aug-2018	02-Aug-2018	02-Aug-2018	01-Aug-2018	01-Aug-2018	31-Jul-2018	31-Jul-2018	31-Jul-2018
					Asbestos Lab:	COVENTRY			COVENTRY		COVENTRY	COVENTRY		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0	< 1.0		
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0	< 1.0		
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0	< 1.0		
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0	< 1.0		
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0	< 1.0		
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0			< 1.0		< 1.0	< 1.0		
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		< 5.0			< 5.0		< 5.0	< 5.0		
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		< 10			< 10		< 10	< 10		
Benzene	U	2760	µg/kg	1.0		< 1.0			< 1.0		< 1.0	< 1.0		
Toluene	U	2760	µg/kg	1.0		< 1.0			< 1.0		< 1.0	< 1.0		
Ethylbenzene	U	2760	µg/kg	1.0		< 1.0			< 1.0		< 1.0	< 1.0		
m & p-Xylene	U	2760	µg/kg	1.0		< 1.0			< 1.0		< 1.0	< 1.0		
o-Xylene	U	2760	µg/kg	1.0		< 1.0			< 1.0		< 1.0	< 1.0		
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0		< 1.0			< 1.0		< 1.0	< 1.0		
Naphthalene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10	< 0.10		
Acenaphthylene	N	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10	< 0.10		
Acenaphthene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10	< 0.10		
Fluorene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10	< 0.10		
Phenanthrene	U	2800	mg/kg	0.10		0.13			< 0.10		< 0.10	< 0.10		
Anthracene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10	< 0.10		
Fluoranthene	U	2800	mg/kg	0.10		0.14			< 0.10		< 0.10	< 0.10		
Pyrene	U	2800	mg/kg	0.10		0.15			< 0.10		< 0.10	< 0.10		
Benzo[a]anthracene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10	< 0.10		
Chrysene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10	< 0.10		
Benzo[b]fluoranthene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10	< 0.10		
Benzo[k]fluoranthene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10	< 0.10		
Benzo[a]pyrene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10	< 0.10		
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10	< 0.10		
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10	< 0.10		
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10	< 0.10		
Coronene	N	2800	mg/kg	0.10		< 0.10			< 0.10		< 0.10	< 0.10		
Total Of 17 PAH's	N	2800	mg/kg	2.0		< 2.0			< 2.0		< 2.0	< 2.0		
PCB 28	U	2815	mg/kg	0.010		< 0.010			< 0.010		< 0.010	< 0.010		
PCB 52	U	2815	mg/kg	0.010		< 0.010			< 0.010		< 0.010	< 0.010		
PCB 90+101	U	2815	mg/kg	0.010		< 0.010			< 0.010		< 0.010	< 0.010		
PCB 118	U	2815	mg/kg	0.010		< 0.010			< 0.010		< 0.010	< 0.010		
PCB 153	U	2815	mg/kg	0.010		< 0.010			< 0.010		< 0.010	< 0.010		
PCB 138	U	2815	mg/kg	0.010		< 0.010			< 0.010		< 0.010	< 0.010		

Results - Soil

Project: 18-0577 - DAA Surveys

Client: Causeway Geotech Ltd					**Chemtest Job No.:**	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385
Quotation No.:					**Chemtest Sample ID.:**	666511	666512	666513	666514	666515	666516	666517	666518	666519
Order No.:					Client Location ID.:	TP09	TP09	TP19	TP19	TP04	TP04	TP21	TP21	TP22
					Client Sample Ref.:	ES1	ES2	ES1	ES2	ES1	ES2	ES1	ES2	ES1
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.0	0.5
					Date Sampled:	02-Aug-2018	02-Aug-2018	02-Aug-2018	02-Aug-2018	01-Aug-2018	01-Aug-2018	31-Jul-2018	31-Jul-2018	31-Jul-2018
					Asbestos Lab:	COVENTRY			COVENTRY		COVENTRY	COVENTRY		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
PCB 180	U	2815	mg/kg	0.010		< 0.010			< 0.010		< 0.010	< 0.010		
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10		< 0.10			< 0.10		< 0.10	< 0.10		
Total Phenols	U	2920	mg/kg	0.30		< 0.30			< 0.30		< 0.30	< 0.30		

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 18-0577 - DAA Surveys

Client: Causeway Geotech Ltd				**Chemtest Job No.:**	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385
Quotation No.:				**Chemtest Sample ID.:**	666520	666521	666522	666525	666526	666527	666528	666529	666530
Order No.:				Client Location ID.:	TP22	TP06	TP06	TP27	TP27	TP14	TP14	TP18	TP18
				Client Sample Ref.:	ES2	ES1	ES2	ES1	ES2	ES1	ES2	ES1	ES2
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.0	0.5	1.5	0.5	1.0	0.5	1.3	0.5	1.5
				Date Sampled:	31-Jul-2018	01-Aug-2018	01-Aug-2018	01-Aug-2018	01-Aug-2018	01-Aug-2018	01-Aug-2018	02-Aug-2018	02-Aug-2018
				Asbestos Lab:	COVENTRY	COVENTRY		COVENTRY		COVENTRY		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-		-		-		-	
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected		No Asbestos Detected		No Asbestos Detected		No Asbestos Detected	
Moisture	N	2030	%	0.020	8.5	9.8	9.9	5.0	7.8	10	13	9.9	10
Dry Matter	N		%	N/A			90		92		87		90
pH	U	2010		N/A	8.3	7.9		8.4		8.1		8.3	
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	0.51		< 0.40		0.47		< 0.40	
Sulphur (Elemental)	U	2180	mg/kg	1.0	< 1.0	< 1.0		< 1.0		3.6		< 1.0	
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50		< 0.50		< 0.50		< 0.50	
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	8.8	1.7		10		4.7		7.4	
Sulphate (Total)	U	2430	%	0.010	0.045	0.063		0.048		0.11		0.038	
Arsenic	U	2450	mg/kg	1.0	27	16		36		21		21	
Barium	U	2450	mg/kg	10	93	96		150		86		70	
Cadmium	U	2450	mg/kg	0.10	1.7	1.4		0.86		1.6		1.5	
Chromium	U	2450	mg/kg	1.0	17	25		17		24		21	
Molybdenum	U	2450	mg/kg	2.0	4.8	2.5		< 2.0		2.7		2.0	
Antimony	N	2450	mg/kg	2.0	2.2	< 2.0		< 2.0		< 2.0		< 2.0	
Copper	U	2450	mg/kg	0.50	30	36		11		32		26	
Mercury	U	2450	mg/kg	0.10	< 0.10	0.19		< 0.10		0.16		< 0.10	
Nickel	U	2450	mg/kg	0.50	60	42		30		55		55	
Lead	U	2450	mg/kg	0.50	22	52		27		53		22	
Selenium	U	2450	mg/kg	0.20	0.52	0.63		< 0.20		0.27		< 0.20	
Zinc	U	2450	mg/kg	0.50	74	97		550		98		76	
Chromium (Trivalent)	N	2490	mg/kg	1.0	17	25		17		24		21	
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50		< 0.50		< 0.50		< 0.50	
Total Organic Carbon	U	2625	%	0.20	0.50	1.3		0.33		1.4		0.48	
Mineral Oil	N	2670	mg/kg	10	< 10	< 10		< 10		< 10		< 10	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0		< 5.0		< 5.0		< 5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 18-0577 - DAA Surveys

Client: Causeway Geotech Ltd		**Chemtest Job No.:**			18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385
Quotation No.:		**Chemtest Sample ID.:**			666520	666521	666522	666525	666526	666527	666528	666529	666530
Order No.:		Client Location ID.:			TP22	TP06	TP06	TP27	TP27	TP14	TP14	TP18	TP18
		Client Sample Ref.:			ES2	ES1	ES2	ES1	ES2	ES1	ES2	ES1	ES2
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			1.0	0.5	1.5	0.5	1.0	0.5	1.3	0.5	1.5
		Date Sampled:			31-Jul-2018	01-Aug-2018	01-Aug-2018	01-Aug-2018	01-Aug-2018	01-Aug-2018	01-Aug-2018	02-Aug-2018	02-Aug-2018
		Asbestos Lab:			COVENTRY	COVENTRY		COVENTRY		COVENTRY		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0		< 5.0		< 5.0		< 5.0	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10		< 10		< 10		< 10	
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10		0.28		< 0.10	
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10		< 0.10		< 0.10	
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10		0.10		< 0.10	
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10		< 0.10		< 0.10	
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	0.14		< 0.10		0.69		< 0.10	
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10		< 0.10		< 0.10	
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	0.11		< 0.10		0.39		< 0.10	
Pyrene	U	2800	mg/kg	0.10	< 0.10	0.15		< 0.10		0.36		< 0.10	
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10		< 0.10		< 0.10	
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10		< 0.10		< 0.10	
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10		< 0.10		< 0.10	
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10		< 0.10		< 0.10	
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10		< 0.10		< 0.10	
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10		< 0.10		< 0.10	
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10		< 0.10		< 0.10	
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10		< 0.10		< 0.10	
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10		< 0.10		< 0.10	
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0		< 2.0		2.0		< 2.0	
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010		< 0.010		< 0.010		< 0.010	
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010		< 0.010		< 0.010		< 0.010	
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010		< 0.010		< 0.010		< 0.010	
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010		< 0.010		< 0.010		< 0.010	
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010		< 0.010		< 0.010		< 0.010	
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010		< 0.010		< 0.010		< 0.010	

Results - Soil

Project: 18-0577 - DAA Surveys

Client: Causeway Geotech Ltd			**Chemtest Job No.:**		18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385	18-23385
Quotation No.:			**Chemtest Sample ID.:**		666520	666521	666522	666525	666526	666527	666528	666529	666530
Order No.:			Client Location ID.:		TP22	TP06	TP06	TP27	TP27	TP14	TP14	TP18	TP18
			Client Sample Ref.:		ES2	ES1	ES2	ES1	ES2	ES1	ES2	ES1	ES2
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.0	0.5	1.5	0.5	1.0	0.5	1.3	0.5	1.5
			Date Sampled:		31-Jul-2018	01-Aug-2018	01-Aug-2018	01-Aug-2018	01-Aug-2018	01-Aug-2018	01-Aug-2018	02-Aug-2018	02-Aug-2018
			Asbestos Lab:		COVENTRY	COVENTRY		COVENTRY		COVENTRY		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010		< 0.010		< 0.010		< 0.010	
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10	< 0.10		< 0.10		< 0.10		< 0.10	
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30		< 0.30		< 0.30		< 0.30	

Results - Soil

Project: 18-0577 - DAA Surveys

Client: Causeway Geotech Ltd			**Chemtest Job No.:**		18-23385	18-23385
Quotation No.:			**Chemtest Sample ID.:**		666531	666532
Order No.:			Client Location ID.:		TP08	TP08
			Client Sample Ref.:		ES1	ES2
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.5	1.5
			Date Sampled:		02-Aug-2018	02-Aug-2018
			Asbestos Lab:			COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A		-
Asbestos Identification	U	2192	%	0.001		No Asbestos Detected
Moisture	N	2030	%	0.020	9.1	7.0
Dry Matter	N		%	N/A	91	
pH	U	2010		N/A		8.3
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40		< 0.40
Sulphur (Elemental)	U	2180	mg/kg	1.0		< 1.0
Cyanide (Total)	U	2300	mg/kg	0.50		< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50		6.8
Sulphate (Total)	U	2430	%	0.010		0.082
Arsenic	U	2450	mg/kg	1.0		24
Barium	U	2450	mg/kg	10		110
Cadmium	U	2450	mg/kg	0.10		1.7
Chromium	U	2450	mg/kg	1.0		16
Molybdenum	U	2450	mg/kg	2.0		6.5
Antimony	N	2450	mg/kg	2.0		2.3
Copper	U	2450	mg/kg	0.50		31
Mercury	U	2450	mg/kg	0.10		< 0.10
Nickel	U	2450	mg/kg	0.50		53
Lead	U	2450	mg/kg	0.50		27
Selenium	U	2450	mg/kg	0.20		2.6
Zinc	U	2450	mg/kg	0.50		69
Chromium (Trivalent)	N	2490	mg/kg	1.0		16
Chromium (Hexavalent)	N	2490	mg/kg	0.50		< 0.50
Total Organic Carbon	U	2625	%	0.20		0.80
Mineral Oil	N	2670	mg/kg	10		< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0		< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0		< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0		< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0		< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0		< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0		< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0		< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0		< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0		< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0		< 1.0

Results - Soil

Project: 18-0577 - DAA Surveys

Client: Causeway Geotech Ltd			**Chemtest Job No.:**		18-23385	18-23385
Quotation No.:			**Chemtest Sample ID.:**		666531	666532
Order No.:			Client Location ID.:		TP08	TP08
			Client Sample Ref.:		ES1	ES2
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.5	1.5
			Date Sampled:		02-Aug-2018	02-Aug-2018
			Asbestos Lab:			COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0		< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0		< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0		< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0		< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0		< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		< 10
Benzene	U	2760	µg/kg	1.0		< 1.0
Toluene	U	2760	µg/kg	1.0		< 1.0
Ethylbenzene	U	2760	µg/kg	1.0		< 1.0
m & p-Xylene	U	2760	µg/kg	1.0		< 1.0
o-Xylene	U	2760	µg/kg	1.0		< 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0		< 1.0
Naphthalene	U	2800	mg/kg	0.10		< 0.10
Acenaphthylene	N	2800	mg/kg	0.10		< 0.10
Acenaphthene	U	2800	mg/kg	0.10		< 0.10
Fluorene	U	2800	mg/kg	0.10		< 0.10
Phenanthrene	U	2800	mg/kg	0.10		< 0.10
Anthracene	U	2800	mg/kg	0.10		< 0.10
Fluoranthene	U	2800	mg/kg	0.10		< 0.10
Pyrene	U	2800	mg/kg	0.10		< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10		< 0.10
Chrysene	U	2800	mg/kg	0.10		< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10		< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10		< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10		< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10		< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10		< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10		< 0.10
Coronene	N	2800	mg/kg	0.10		< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0		< 2.0
PCB 28	U	2815	mg/kg	0.010		< 0.010
PCB 52	U	2815	mg/kg	0.010		< 0.010
PCB 90+101	U	2815	mg/kg	0.010		< 0.010
PCB 118	U	2815	mg/kg	0.010		< 0.010
PCB 153	U	2815	mg/kg	0.010		< 0.010
PCB 138	U	2815	mg/kg	0.010		< 0.010

Results - Soil

Project: 18-0577 - DAA Surveys

Client: Causeway Geotech Ltd			**Chemtest Job No.:**		18-23385	18-23385
Quotation No.:			**Chemtest Sample ID.:**		666531	666532
Order No.:			Client Location ID.:		TP08	TP08
			Client Sample Ref.:		ES1	ES2
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.5	1.5
			Date Sampled:		02-Aug-2018	02-Aug-2018
			Asbestos Lab:			COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
PCB 180	U	2815	mg/kg	0.010		< 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10		< 0.10
Total Phenols	U	2920	mg/kg	0.30		< 0.30

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666482						
Sample Location ID:	TP17						
Sample Ref:	ES2						
Top Depth(m):	1.5						
Bottom Depth(m):							
Sampling Date:	03-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.37	3	5	6
Loss On Ignition	2610	U	%	2.0	--	--	10
Total BTEX	2760	U	mg/kg	[C] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[C] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.10	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0073	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.016	0.16	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	0.0019	0.019	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.22	2.2	10	150	500
Sulphate	1220	U	2.2	22	1000	20000	50000
Total Dissolved Solids	1020	N	51	510	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	7.3	73	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	11

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666483						
Sample Location ID:	TP17						
Sample Ref:	ES1						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:	03-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	1.2	3	5	6
Loss On Ignition	2610	U	%	4.3	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	U		7.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.014	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0013	< 0.050	0.5	2	25
Barium	1450	U	0.0036	< 0.50	20	100	300
Cadmium	1450	U	0.00011	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0028	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0052	0.052	0.5	10	30
Nickel	1450	U	0.0030	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0056	< 0.50	4	50	200
Chloride	1220	U	2.4	24	800	15000	25000
Fluoride	1220	U	0.37	3.7	10	150	500
Sulphate	1220	U	2.8	28	1000	20000	50000
Total Dissolved Solids	1020	N	60	600	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	12	120	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	11

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666485						
Sample Location ID:	TP24						
Sample Ref:	ES1						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:	30-Jul-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.73	3	5	6
Loss On Ignition	2610	U	%	3.6	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.011	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0031	< 0.050	0.5	2	25
Barium	1450	U	0.0026	< 0.50	20	100	300
Cadmium	1450	U	0.00019	< 0.010	0.04	1	5
Chromium	1450	U	0.0022	< 0.050	0.5	10	70
Copper	1450	U	0.0062	0.062	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0025	< 0.050	0.5	10	30
Nickel	1450	U	0.011	0.11	0.4	10	40
Lead	1450	U	0.0023	0.023	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.017	< 0.50	4	50	200
Chloride	1220	U	2.7	27	800	15000	25000
Fluoride	1220	U	0.45	4.5	10	150	500
Sulphate	1220	U	5.7	57	1000	20000	50000
Total Dissolved Solids	1020	N	42	420	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	12	120	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	11

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666486						
Sample Location ID:	TP24						
Sample Ref:	ES2						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:	30-Jul-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.52	3	5	6
Loss On Ignition	2610	U	%	2.3	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.084	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0052	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0082	0.082	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	1.6	16	800	15000	25000
Fluoride	1220	U	0.49	4.9	10	150	500
Sulphate	1220	U	4.6	46	1000	20000	50000
Total Dissolved Solids	1020	N	56	560	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	7.7	77	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.9

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666487						
Sample Location ID:	TP25						
Sample Ref:	ES1						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:	30-Jul-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	2.5	3	5	6
Loss On Ignition	2610	U	%	5.8	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	1000	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.058	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0057	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0022	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.011	0.11	0.5	10	30
Nickel	1450	U	0.0011	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	3.1	31	800	15000	25000
Fluoride	1220	U	0.29	2.9	10	150	500
Sulphate	1220	U	3.4	34	1000	20000	50000
Total Dissolved Solids	1020	N	130	1300	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	22	220	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	6.6

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666488						
Sample Location ID:	TP25						
Sample Ref:	ES2						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:	30-Jul-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.60	3	5	6
Loss On Ignition	2610	U	%	2.3	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.12	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.010	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.021	0.21	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.6	26	800	15000	25000
Fluoride	1220	U	0.31	3.1	10	150	500
Sulphate	1220	U	3.0	30	1000	20000	50000
Total Dissolved Solids	1020	N	56	560	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	9.1	91	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.0

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666489						
Sample Location ID:	TP28						
Sample Ref:	ES1						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:	31-Jul-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	1.1	3	5	6
Loss On Ignition	2610	U	%	4.5	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	42	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.018	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.013	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0015	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.0	20	800	15000	25000
Fluoride	1220	U	0.34	3.4	10	150	500
Sulphate	1220	U	4.4	44	1000	20000	50000
Total Dissolved Solids	1020	N	56	560	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	8.9	89	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	11

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666490						
Sample Location ID:	TP28						
Sample Ref:	ES2						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:	31-Jul-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.40	3	5	6
Loss On Ignition	2610	U	%	2.0	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.048	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.30	3.0	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0041	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	1.9	19	800	15000	25000
Fluoride	1220	U	0.28	2.8	10	150	500
Sulphate	1220	U	9.9	99	1000	20000	50000
Total Dissolved Solids	1020	N	62	620	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.4	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.7

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666493						
Sample Location ID:	TP29						
Sample Ref:	ES1						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:	01-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	1.9	3	5	6
Loss On Ignition	2610	U	%	6.3	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.043	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0028	< 0.050	0.5	2	25
Barium	1450	U	0.061	0.61	20	100	300
Cadmium	1450	U	0.00048	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0023	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0014	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	0.0047	0.047	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.065	0.65	4	50	200
Chloride	1220	U	3.0	30	800	15000	25000
Fluoride	1220	U	0.73	7.3	10	150	500
Sulphate	1220	U	3.2	32	1000	20000	50000
Total Dissolved Solids	1020	N	68	680	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	14	140	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	17

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666494						
Sample Location ID:	TP29						
Sample Ref:	ES2						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:	01-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.51	3	5	6
Loss On Ignition	2610	U	%	1.8	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	21	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.12	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.33	3.3	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0040	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0013	0.013	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	1.4	14	800	15000	25000
Fluoride	1220	U	0.40	4.0	10	150	500
Sulphate	1220	U	4.5	45	1000	20000	50000
Total Dissolved Solids	1020	N	50	500	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	7.7	77	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.0

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666495						
Sample Location ID:	TP03						
Sample Ref:	ES1						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:	01-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	1.5	3	5	6
Loss On Ignition	2610	U	%	5.3	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.026	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0085	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0024	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0065	0.065	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0035	< 0.50	4	50	200
Chloride	1220	U	2.3	23	800	15000	25000
Fluoride	1220	U	0.58	5.8	10	150	500
Sulphate	1220	U	5.9	59	1000	20000	50000
Total Dissolved Solids	1020	N	83	830	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	10	100	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	11

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666496						
Sample Location ID:	TP03						
Sample Ref:	ES2						
Top Depth(m):	1.5						
Bottom Depth(m):							
Sampling Date:	01-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.54	3	5	6
Loss On Ignition	2610	U	%	2.5	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	130	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.093	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0082	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0093	0.093	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	1.0	10	800	15000	25000
Fluoride	1220	U	0.25	2.5	10	150	500
Sulphate	1220	U	1.7	17	1000	20000	50000
Total Dissolved Solids	1020	N	51	510	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	8.2	82	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.1

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666499						
Sample Location ID:	TP30						
Sample Ref:	ES1						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:	31-Jul-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	1.1	3	5	6
Loss On Ignition	2610	U	%	4.5	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.034	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.26	2.6	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0025	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	8.0	80	800	15000	25000
Fluoride	1220	U	0.38	3.8	10	150	500
Sulphate	1220	U	13	130	1000	20000	50000
Total Dissolved Solids	1020	N	91	910	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	9.4	94	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	10

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666500						
Sample Location ID:	TP30						
Sample Ref:	ES2						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:	31-Jul-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.29	3	5	6
Loss On Ignition	2610	U	%	1.7	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.050	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.093	0.93	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0028	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	1.9	19	800	15000	25000
Fluoride	1220	U	0.18	1.8	10	150	500
Sulphate	1220	U	6.4	64	1000	20000	50000
Total Dissolved Solids	1020	N	52	520	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	7.4	74	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.6

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666501						
Sample Location ID:	TP02						
Sample Ref:	ES1						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:	31-Jul-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.65	3	5	6
Loss On Ignition	2610	U	%	3.0	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.031	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0072	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0011	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0057	0.057	0.5	10	30
Nickel	1450	U	0.0016	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0024	< 0.50	4	50	200
Chloride	1220	U	3.4	34	800	15000	25000
Fluoride	1220	U	0.47	4.7	10	150	500
Sulphate	1220	U	2.8	28	1000	20000	50000
Total Dissolved Solids	1020	N	73	730	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	9.0	90	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	6.4

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666502						
Sample Location ID:	TP02						
Sample Ref:	ES2						
Top Depth(m):	1.5						
Bottom Depth(m):							
Sampling Date:	31-Jul-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.39	3	5	6
Loss On Ignition	2610	U	%	2.7	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.092	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.011	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0040	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	3.0	30	800	15000	25000
Fluoride	1220	U	0.30	3.0	10	150	500
Sulphate	1220	U	2.9	29	1000	20000	50000
Total Dissolved Solids	1020	N	59	590	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	7.8	78	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666509						
Sample Location ID:	TP11						
Sample Ref:	ES1						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:	02-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.63	3	5	6
Loss On Ignition	2610	U	%	3.2	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.077	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0038	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0043	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	1.7	17	800	15000	25000
Fluoride	1220	U	0.44	4.4	10	150	500
Sulphate	1220	U	2.6	26	1000	20000	50000
Total Dissolved Solids	1020	N	77	770	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.1	51	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.9

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666510						
Sample Location ID:	TP11						
Sample Ref:	ES2						
Top Depth(m):	1.5						
Bottom Depth(m):							
Sampling Date:	02-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.70	3	5	6
Loss On Ignition	2610	U	%	7.6	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.10	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0059	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.011	0.11	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.1	21	800	15000	25000
Fluoride	1220	U	0.28	2.8	10	150	500
Sulphate	1220	U	1.9	19	1000	20000	50000
Total Dissolved Solids	1020	N	55	550	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.7	67	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.8

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666511						
Sample Location ID:	TP09						
Sample Ref:	ES1						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:	02-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	1.2	3	5	6
Loss On Ignition	2610	U	%	4.3	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.034	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0039	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0013	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0093	0.093	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	3.4	34	800	15000	25000
Fluoride	1220	U	0.36	3.6	10	150	500
Sulphate	1220	U	2.7	27	1000	20000	50000
Total Dissolved Solids	1020	N	72	720	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	8.3	83	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.6

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666512						
Sample Location ID:	TP09						
Sample Ref:	ES2						
Top Depth(m):	1.5						
Bottom Depth(m):							
Sampling Date:	02-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.71	3	5	6
Loss On Ignition	2610	U	%	2.5	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.094	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0042	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0037	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.12	1.2	10	150	500
Sulphate	1220	U	1.1	11	1000	20000	50000
Total Dissolved Solids	1020	N	36	360	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	7.0	70	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.3

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666513						
Sample Location ID:	TP19						
Sample Ref:	ES1						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:	02-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.40	3	5	6
Loss On Ignition	2610	U	%	2.5	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.070	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0026	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0017	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.11	1.1	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	33	330	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.3

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666514						
Sample Location ID:	TP19						
Sample Ref:	ES2						
Top Depth(m):	1.5						
Bottom Depth(m):							
Sampling Date:	02-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.69	3	5	6
Loss On Ignition	2610	U	%	3.5	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.026	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0023	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	1.5	15	800	15000	25000
Fluoride	1220	U	0.14	1.4	10	150	500
Sulphate	1220	U	1.2	12	1000	20000	50000
Total Dissolved Solids	1020	N	38	380	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	8.3	83	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	10

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666515						
Sample Location ID:	TP04						
Sample Ref:	ES1						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:	01-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.69	3	5	6
Loss On Ignition	2610	U	%	3.2	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.090	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0036	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0024	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	1.7	17	800	15000	25000
Fluoride	1220	U	0.18	1.8	10	150	500
Sulphate	1220	U	1.9	19	1000	20000	50000
Total Dissolved Solids	1020	N	41	410	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	8.1	81	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.2

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666516						
Sample Location ID:	TP04						
Sample Ref:	ES2						
Top Depth(m):	1.5						
Bottom Depth(m):							
Sampling Date:	01-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.67	3	5	6
Loss On Ignition	2610	U	%	2.7	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.12	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0050	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0041	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0044	0.044	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	1.7	17	800	15000	25000
Fluoride	1220	U	0.16	1.6	10	150	500
Sulphate	1220	U	2.2	22	1000	20000	50000
Total Dissolved Solids	1020	N	36	360	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	9.2	92	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.4

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666517						
Sample Location ID:	TP21						
Sample Ref:	ES1						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:	31-Jul-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.72	3	5	6
Loss On Ignition	2610	U	%	3.4	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.034	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0026	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	1.7	17	800	15000	25000
Fluoride	1220	U	0.17	1.7	10	150	500
Sulphate	1220	U	2.4	24	1000	20000	50000
Total Dissolved Solids	1020	N	48	480	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	7.1	71	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.3

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666518						
Sample Location ID:	TP21						
Sample Ref:	ES2						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:	31-Jul-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.51	3	5	6
Loss On Ignition	2610	U	%	1.7	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.082	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0032	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0020	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	1.4	14	800	15000	25000
Fluoride	1220	U	0.14	1.4	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	41	410	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.1	61	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	6.8

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666519						
Sample Location ID:	TP22						
Sample Ref:	ES1						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:	31-Jul-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.49	3	5	6
Loss On Ignition	2610	U	%	2.9	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.015	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0015	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0015	< 0.50	4	50	200
Chloride	1220	U	1.1	11	800	15000	25000
Fluoride	1220	U	0.14	1.4	10	150	500
Sulphate	1220	U	1.6	16	1000	20000	50000
Total Dissolved Solids	1020	N	33	330	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	8.9	89	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	11

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666520						
Sample Location ID:	TP22						
Sample Ref:	ES2						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:	31-Jul-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.50	3	5	6
Loss On Ignition	2610	U	%	2.2	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.096	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0025	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0020	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.6	26	800	15000	25000
Fluoride	1220	U	0.12	1.2	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	27	270	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.9	59	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.5

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666521						
Sample Location ID:	TP06						
Sample Ref:	ES1						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:	01-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	1.3	3	5	6
Loss On Ignition	2610	U	%	4.7	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		7.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.019	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	< 0.0010	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.14	1.4	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	17	170	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	8.2	82	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	10

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666522						
Sample Location ID:	TP06						
Sample Ref:	ES2						
Top Depth(m):	1.5						
Bottom Depth(m):							
Sampling Date:	01-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.56	3	5	6
Loss On Ignition	2610	U	%	2.5	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.084	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0058	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0034	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	1.0	10	800	15000	25000
Fluoride	1220	U	0.13	1.3	10	150	500
Sulphate	1220	U	1.6	16	1000	20000	50000
Total Dissolved Solids	1020	N	38	380	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.3	63	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.9

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666525						
Sample Location ID:	TP27						
Sample Ref:	ES1						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:	01-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.33	3	5	6
Loss On Ignition	2610	U	%	1.5	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.076	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0028	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0037	< 0.50	4	50	200
Chloride	1220	U	6.6	66	800	15000	25000
Fluoride	1220	U	0.22	2.2	10	150	500
Sulphate	1220	U	1.4	14	1000	20000	50000
Total Dissolved Solids	1020	N	26	260	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	8.3	83	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	5.0

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666526						
Sample Location ID:	TP27						
Sample Ref:	ES2						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:	01-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.46	3	5	6
Loss On Ignition	2610	U	%	1.0	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.10	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0032	< 0.050	0.5	2	25
Barium	1450	U	0.0051	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	0.0013	0.013	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.015	< 0.50	4	50	200
Chloride	1220	U	1.1	11	800	15000	25000
Fluoride	1220	U	0.15	1.5	10	150	500
Sulphate	1220	U	1.1	11	1000	20000	50000
Total Dissolved Solids	1020	N	32	320	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	9.6	96	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.8

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666527						
Sample Location ID:	TP14						
Sample Ref:	ES1						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:	01-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	1.4	3	5	6
Loss On Ignition	2610	U	%	3.5	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	2.0	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.075	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0021	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.5	25	800	15000	25000
Fluoride	1220	U	0.14	1.4	10	150	500
Sulphate	1220	U	2.3	23	1000	20000	50000
Total Dissolved Solids	1020	N	38	380	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	9.9	99	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	10

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666528						
Sample Location ID:	TP14						
Sample Ref:	ES2						
Top Depth(m):	1.3						
Bottom Depth(m):							
Sampling Date:	01-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	1.4	3	5	6
Loss On Ignition	2610	U	%	4.2	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.071	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0025	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0011	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	3.9	39	800	15000	25000
Fluoride	1220	U	0.16	1.6	10	150	500
Sulphate	1220	U	2.7	27	1000	20000	50000
Total Dissolved Solids	1020	N	43	430	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	11	110	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666529						
Sample Location ID:	TP18						
Sample Ref:	ES1						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:	02-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.48	3	5	6
Loss On Ignition	2610	U	%	2.4	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.041	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0019	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	1.2	12	800	15000	25000
Fluoride	1220	U	0.13	1.3	10	150	500
Sulphate	1220	U	1.7	17	1000	20000	50000
Total Dissolved Solids	1020	N	29	290	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	9.7	97	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.9

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666530						
Sample Location ID:	TP18						
Sample Ref:	ES2						
Top Depth(m):	1.5						
Bottom Depth(m):							
Sampling Date:	02-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.48	3	5	6
Loss On Ignition	2610	U	%	1.8	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.094	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0026	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0066	0.066	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	0.0011	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	1.6	16	800	15000	25000
Fluoride	1220	U	0.12	1.2	10	150	500
Sulphate	1220	U	1.3	13	1000	20000	50000
Total Dissolved Solids	1020	N	32	320	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.5	55	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	10

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666531						
Sample Location ID:	TP08						
Sample Ref:	ES1						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:	02-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	2.0	3	5	6
Loss On Ignition	2610	U	%	6.0	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.011	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0011	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	1.6	16	800	15000	25000
Fluoride	1220	U	0.17	1.7	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	29	290	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	9.4	94	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.4

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 18-0577 - DAA Surveys

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-23385						
Chemtest Sample ID:	666532						
Sample Location ID:	TP08						
Sample Ref:	ES2						
Top Depth(m):	1.5						
Bottom Depth(m):							
Sampling Date:	02-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.80	3	5	6
Loss On Ignition	2610	U	%	2.9	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.089	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0049	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0029	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0021	0.021	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	6.2	62	800	15000	25000
Fluoride	1220	U	0.14	1.4	10	150	500
Sulphate	1220	U	5.2	52	1000	20000	50000
Total Dissolved Solids	1020	N	39	390	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.4	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.0

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Location ID:	Sample Ref:	Sampled Date:	Deviation Code(s):	Containers Received:
666482	TP17	ES2	03-Aug-2018	C	Plastic Tub 500g

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

CAUSEWAY GEOTECH

APPENDIX H

SPT HAMMER ENERGY MEASUREMENT REPORT



Southern Testing
Environmental & Geotechnical

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Neil Burrows
Southern Testing Laboratories
Unit 11
Charlwoods Road
East Grinstead
RH19 2HU

SPT Hammer Ref:	T7
Test Date:	14/04/2018
Report Date:	15/04/2018
File Name:	T7.spt
Test Operator:	CAUSEWAY

Instrumented Rod Data

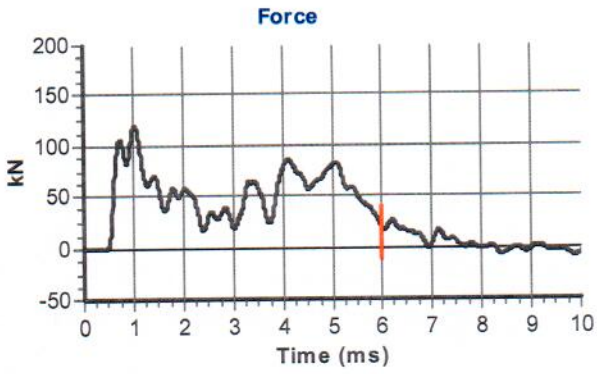
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.0
Assumed Modulus E_a (GPa):	200
Accelerometer No.1:	6458
Accelerometer No.2:	9607

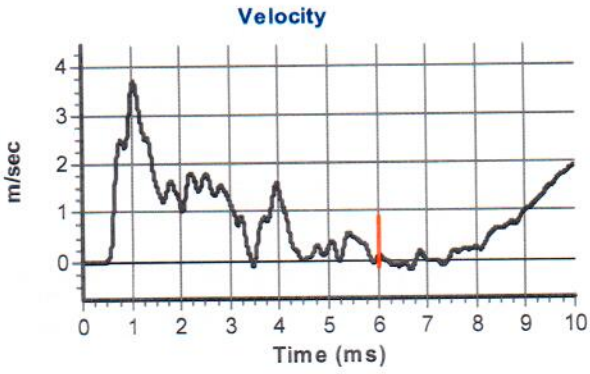
SPT Hammer Information

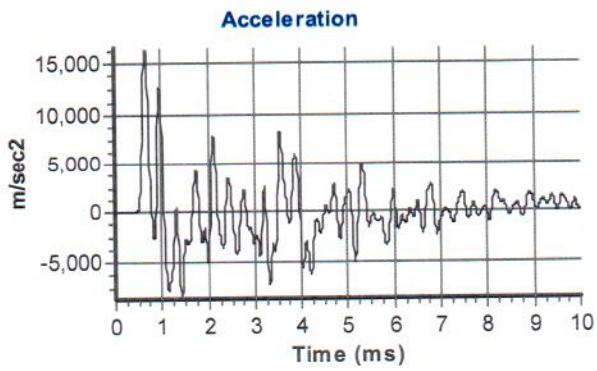
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	10.5

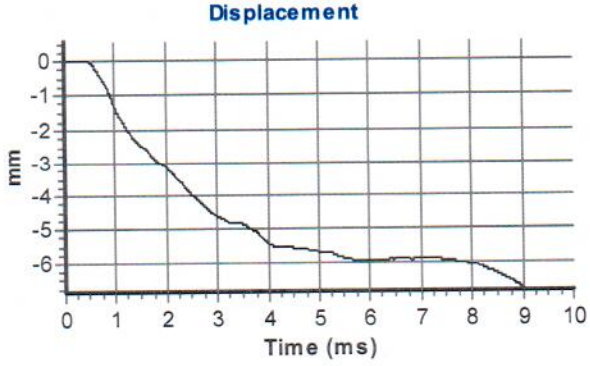
Comments / Location

Causeway Yard









Calculations

Area of Rod A (mm2):	905
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	367

Energy Ratio E_r (%): **78**

N P Burrows

Signed: N P Burrows

Title: Field Operations Manager

The recommended calibration interval is 12 months

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